

New Approaches to the Scientific Study of Religion

12

Series Editors: Lluís Oviedo · Aku Visala

Pierre-Yves Brandt ·

Zhargalma Dandarova-Robert ·

Christelle Cocco · Dominique Vinck ·

Frédéric Darbellay *Editors*

When Children Draw Gods

A Multicultural and Interdisciplinary
Approach to Children's Representations
of Supernatural Agents

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New Approaches to the Scientific Study of Religion

Volume 12

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Pierre-Yves Brandt
Zhargalma Dandarova-Robert
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Editors

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Chapter 1

Introduction to the Interdisciplinary and Intercultural Project *Children's Drawings of Gods*: Presentation of the Project and of this Book



Pierre-Yves Brandt , Zhargalma Dandarova-Robert , Christelle Cocco , Dominique Vinck , and Frédéric Darbellay 

Abstract This introduction presents the project *Children's Drawings of Gods*, relating its history from its origins through the present day. Following this recounting, we explain the organisation of this volume, introduce its parts and subparts, and briefly describe the content of each chapter.

Keywords Drawings of gods · Interdisciplinarity · Interculturality · Comparison · Procedure

Presentation of the *Children's Drawings of Gods* Project

The international project *Drawings of Gods: A Multicultural and Interdisciplinary Approach to Children's Representations of Supernatural Agents*, known in French as *Dessins de dieux* (DDD), and referred to in this volume as *Children's Drawings of Gods*, has collected several thousands of pictorial representations of supernatural

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agents drawn by children from different countries. The project aims to conduct an international survey in order to uncover major trends in the ways that children graphically represent supernatural agents, and more specifically, figures of god. This project is resolutely open to receiving drawings from multiple cultural, religious, and linguistic horizons; this project's field of action is not limited to Western Christian cultures. By means of a common protocol for collecting drawings from school-age children, eight countries (to date) have served as survey sites for data collection (Argentina, Brazil, Iran, Japan, Romania, Russia, Switzerland, and The Netherlands). The project has acquired drawings from these eight countries, as well as small number of drawings collected in Nepal (using the same protocol), and nearly a thousand drawings that had been previously collected in the United States (using a different protocol). In total, some 6500 drawings have been produced, digitized and integrated into the project's database (for details, see below).

While the international scope of the *Children's Drawings of Gods* project calls for important organizational management, its main ambition is to offer a rich and varied field that is conducive to an intercultural perspective (Brandt et al., 2009; Dandarova-Robert et al., 2016). In the past, the study of drawings of gods has been approached mainly from a developmental perspective, without much concern for interculturality (Harms, 1944; Hanisch, 1996; Ladd et al., 1998). This project aims to remedy this lack by analysing intercultural comparison and interreligious variation between the drawings of supernatural agents. Acknowledging the intercultural variation allows us to recognize the complexity of the problem and how it is reconfigured in more or less similar/dissimilar cultural contexts.

Why does comparison teach us so much? Comparison allows us to relativize the dominant conception of the anthropomorphic figure of God, which tends towards more and more abstract representations according to the child's development. The attention paid to intercultural and interdenominational comparisons highlights the complexity of the figures of "god". This complexity calls for a dialogue between disciplines, both within the sub-disciplines of psychology (psychology of religion, developmental psychology and intercultural psychology) and among the study of religions, cognitive sciences, social and cultural anthropology, and sociology of science.

A Work in Progress: From the Genesis of the Project to the Present

The project did not have high ambitions when it began. It began in a modest study conducted in 2000 by an undergraduate student, Carole Herren, under the supervision of Pierre-Yves Brandt at the University of Lausanne. Herren attended the course *Introduction to the Psychology of Religion* given by Pierre-Yves Brandt and was especially interested in the lecture on children's representations of God. This lecture presented, among others, the study "The development of religious

experience in children” by Ernest Harms (1944; republished in 1973). Harms based his study on more than 5000 drawings collected among children in public and private schools in the United States. This study can be considered as the *princeps* study of children’s representations of supernatural agents by the method of drawing. Children “were asked to try to imagine how God would look to them, if they were to picture Him in their mind, or to imagine the appearance of the highest being they thought to exist.” (Harms, 1944, p. 114). Herren collected 27 drawings from children between 8 and 13 who attended religious education classes in the *Eglise évangélique réformée du canton de Vaud (EERV)*. This Swiss Evangelical Reformed church has its origin in the sixteenth century, when the canton of Vaud adopted the Reformation professed by Calvin. It is a reformed denomination, and has, in this canton, the status of a state church. The majority of the drawings collected by Herren depict a human figure, drawn from a front view. In some of them, the child has drawn only a human face. These few drawings were the occasion for an initial publication on the psychological roots of the Divine Face that find various expressions in many religious traditions (Brandt, 2002). In autumn 2000, Brandt enriched his course on children’s representations of God by supplementing his lectures with some the drawings collected by Herren. One year later, Yuko Kagata, a Japanese student attended this lecture. Looking at the Swiss drawings through the lens of her own cultural background, she was convinced that the proportion of anthropomorphic representations of gods would be drastically lower in the drawings of Japanese children, when compared to those collected in Western countries. After some discussion with Pierre-Yves Brandt, she decided to test this hypothesis and collected 142 drawings during two stays in Japan in 2003 and 2004. She wrote her master’s level dissertation on these data, under the supervision of Pierre-Yves Brandt and Christiane Gillieron at the University of Geneva (Kagata, 2006). Contrary to her expectations, she obtained a large proportion of drawings with anthropomorphic figures. In another very interesting finding, Kagata noted that almost half of the girls drew female divine figures (Brandt et al., 2009).

After examining this interesting data from an Asian country, a decision was made to collect drawings in Switzerland following the same procedure. Two students of the University of Lausanne, Anja Kniffka and Aurélien Schaller, collected 127 drawings in Swiss public schools and parishes in 2004 and 2005 in partial fulfilment of the requirements for their master’s level grades in the sciences of religions. The students modified the task slightly to reduce the anthropomorphism in the children’s representations of god that could be implicitly suggested by the instruction given to the children. For that reason, they did not ask children to imagine “god”, but instead suggested that they draw “all that comes to your mind when you think to the word ‘god’”. Posterior analyses, comparing the proportion of anthropomorphic representations in this sample with another sample collected in Switzerland in 2008–2010 (which used the same instruction that had been used in Japan) showed that the variation in the instruction had an impact on the results. The proportion of anthropomorphic representation in this Swiss sample from 2004 to 2005 is significantly lower

than in the Swiss sample from 2008 to 2010 (Dandarova-Robert et al., 2016, pp. 349–350). For example, in the 2004–2005 sample, one boy (7 years old) drew a caravan, saying that the word “god” makes him think of family holidays in caravan. Without his explanation, this drawing produced in answer to the instruction to draw “god” would have led researchers to think that, for this child at the time of drawing, “god” had the physical appearance of a caravan. This illustrates the fact that the instruction to draw “all that comes to your mind” tends to induce an associative task (draw something that is associated with the concept of “god”) rather than a descriptive one (try to produce a drawing that illustrates the concept of “god”). This difference in instructions given during the collection process prevented a direct comparison between the drawings from the 2004 to 2005 sample and those collected in Japan in 2003–2004.

Later, in 2008, Zhargalma Dandarova joined the project and began to collect drawings in public schools and Christian Orthodox parishes in Saint Petersburg and in schools in Buryatia (Eastern Siberia). In sum, 754 drawings were collected in these regions between 2008 and 2015. In addition, 2008 was also the year when a new collection of drawings began in public schools and Protestant and Catholic parishes in Switzerland. Researchers ran a first wave from 2008 to 2010. During the same period, an open access, web-based database was launched under the link <https://ddd.unil.ch>. All drawings collected up to that time were scanned and uploaded to the database. In addition, we added to the database 993 drawings collected in 1987 in the United States by Kevin Ladd. Subsequently, new collections have been added. First came 400 drawings collected by Camelia Puzdriac in Romania between 2010 and 2013. Later, 302 drawings were collected during the “Mystères de l’Unil 2014”, a 4-day “Open Days” event in May 2014 during which school classes and families were able to visit the University of Lausanne. This Swiss sub-collection also contains drawings made by adults. Then, thanks to a 4-year research grant from the Swiss National Research Foundation (SNSF), Grégory Dessart completed a second wave data collection to complete the Swiss subcollection, and additional partners from other countries joined the project. Today, the database contains more than 7000 drawings, including 158 drawings collected in the Netherlands under the supervision of Hanneke Muthert and Hanneke Schaap-Jonker, 139 drawings collected in Brazil by Alberto Domeniconi Küntgen-Nery, 13 drawings collected in Nepal by Thierry Luginbühl, and 3032 drawings collected in Iran by a team of researchers under the supervision of Mohammad Khodayarifard. Recently, Ramiro Tau collected drawings in Argentina, and new drawings from Romania have arrived. The integration of these new collections into database is underway. With the exception of Ladd’s 1987 collection, all of the drawings from this database were collected following the same procedure and, apart from the Swiss sub-collection 2004–2005, with a similarly formulated instruction. Almost every chapter of this book presents studies that directly refer to the different sub-collections of this database.

Procedure and Instructions

Overall, the procedure for the participants includes four parts and takes between 30 and 50 min to complete:

1. children are asked to make their drawings;
2. once the drawing task is complete, children are asked to recall and write on the back of the sheet the instruction received at the beginning of the drawing task;
3. children are asked to describe their drawings on the back of the sheet (narratives);
4. children fill out a questionnaire.

Before presenting the main task, researchers ask the children to remain silent (to refrain from speaking any comments or questions aloud). Then they say:

Have you ever heard of the word 'god'? Could you draw, please? You can draw anything that comes up to your mind when you think of the word 'god'. Keep silent and do not let your friends to see your drawing. When you finish your drawing, raise your hand, please.¹ (Dandarova-Robert et al., 2016, p. 349)

The researcher takes care not to use masculine pronouns such as "he" when referring to god. Children are asked to raise their hand if they have questions, so that a researcher can speak to them quietly, one-on-one. These precautions are necessary to minimize the impact of one child's representation of god on other children. For example, if one child asks loudly, "Can I draw Jesus Christ?" or "Can I draw a god in heaven?" it can affect the way other children compose their representation of god.

Children are asked to raise their hands when they have completed their individual drawings. According to our experience, the children do not finish their drawings at the same time, so they receive individual instruction for the second, third, and fourth tasks. As a second task, researchers then ask the children individually to restate the instructions provided to them in the drawing portion of the procedure. Researchers use the following prompt:

Do you remember what I asked you to do? What did I ask you to draw? Please, write the instructions I gave you on the other side of the sheet.

Then, as a third task, the children are asked to write a description of their drawing. Researchers use the following prompt:

Can you now provide a written description of your drawing to explain what you drew?

Another formulation sometimes used, was:

Imagine that you should describe it to a blind child. Can you write it on the back of the sheet?

¹This is a generic English translation of the presentation of the main task formulated first in French. Its use in various linguistic contexts has been accompanied by slight variations in wording.

After the children finish writing their description, they are asked to complete a questionnaire. With the younger age group (5–8 years old), the researcher interviews each child separately and records the child's answers for the three last tasks. At the end of the four tasks, the researcher collects the drawings sheets and the questionnaires. He or she looks over each child's drawing and description. If something is not clear in the drawing and/or in the description, the researcher asks the child to clarify it (for example, if the description contains no information about the figures drawn, or if the researcher sees the need to for additional information about some other details of the drawing). Likewise, the researcher verifies the completion of the questionnaire to assure that all questions have been answered and all necessary information has been provided (for example, date of birth, etc.).

In addition, metadata are collected. This can occur either before or after the drawing task has been completed. Children are asked to write their name, gender, age (date/month/year) the date of the data collection (date/month/year), and the name of the school, all on the back of their drawings.

As material, each child receives one blank sheet of A4 white paper, a box of water-resistant wax crayons (with 8–12 colours; these eight: blue, green, red, orange, yellow, brown, black, white; with the possible addition of these four colours: purple, grey, light blue and dark blue, light green and dark green). In some countries coloured pencils (with the 8–12 above-mentioned colours), and a pencil and an eraser were also provided to children.

Group size did not exceed ten children (one child per desk, in order to avoid the children seeing the drawings of their neighbours and communicating with each other during the session). Children and adolescents ranging in age from 5 to 18 years old participated.

Ethical Considerations

For this research, it is important to preserve the spontaneous composition of the representation. Therefore, it is important that the children do not know in advance precisely what they will be asked to do so that they will not discuss the task beforehand, either amongst themselves or with their parents. Consequently, the researchers provide an information sheet to the parents that presents the general aim of the research. It indicates that their children will participate to an international study in which the children draw pictures and answer some questions. Researchers also requested that parents grant permission for the researchers to display the drawings online, with the guarantee that only the first name of child would be required and that confidentiality would be protected. Parents had the option to ask that their child not participate, or to request that the access to their child's drawing be limited to researchers only. Some parents did request this restricted access. Children also received general information regarding the task. More detailed information was provided to teachers (or school directors), but they were asked not to tell children the specific task of the study in advance.

Researchers informed children that they could decline to participate in the study or could withdraw from any part of the study at any time. In our experience, some children declined to make a drawing saying: "Drawing God is forbidden", or "Only specially trained artists are permitted to draw god", or "I do not know what god looks like". In such cases, researchers asked the child to write on the back of the paper their reason for declining and requested that they fill in the questionnaire. Because such responses have empirical value for the research, researchers retained the blank sheets of paper with the explanations provided on the verso and added them to the database as part of the sample.

God, "God", Gods, Supernatural Agent: A Note on Terminology

In this book, the term *god* sometimes begins with an uppercase letter G, sometimes with a lowercase letter g; it is sometimes presented in the singular, sometimes in the plural. The project, *Children's Drawings of Gods*, is interested in children's representations of the divine. When they receive instructions verbally, in some languages such as French or Japanese, for example, there is no difference in pronunciation between the singular and the plural. Furthermore, the oral pronunciation does not distinguish between upper and lower case letters. This is why, in general, we write "god" with quotation marks when we refer to the instructions provided to the children. The children have heard the word "god" and they have drawn representations of "god". When we write "god" with quotation marks in reference to a French-speaking sample, it means that we refer to the instructions given to the children, which used the French word *dieu*. Similarly, when we refer to samples from other locations, the word "god" with quotation marks indicates the use of a word, in the translated instructions, that stood for god: *kami* in Japan, *bog* in Russia, *khoda* in Iran, *deus* in Brazil, *dios* in Argentina, etc. When we refer to the concept of god or to images of gods, we write the terms *god*, *God*, or *gods* without quotation marks. So, the expression "representations of gods" refer to representations of gods in general. Sometimes, we decided to write "representations of God" and not "representations of gods" because we refer to a cultural context where the possibility of having various gods is not plausible. This is especially the case in Iran where "*khoda*" is understood as the unique God. In the cultural context of Iran, when children receive the instruction to draw "*khoda*", they understand that they are asked to draw representations of God and not of gods.

Finally, the term "supernatural agent" is the most encompassing. We did not use it with the children, since the instructions ask them to draw "god", and also because it is too abstract for them. However, it is clear to some children that they have not really drawn a god. Instead, they drew a supernatural being that they would not spontaneously describe using the term "god". When we want to emphasize that we are aware of this, we use the term "supernatural agent".

Organisation of this Book

This book is composed of this introductory chapter, followed by 19 thematic chapters organised into nine parts.

The first part, “Towards an Integrative Model”, contains a single chapter entitled “Integrative Model of Children’s Representations of God in Drawings” (Brandt, Dandarova-Robert, Dessart, Muthert, & Schaap Jonker, Chap. 2, this volume). This opening chapter emphasizes one of the main goals of our research project: the integration of the results of different psychological studies conducted on children’s drawings of gods. This chapter draws much of its data from several other chapters of the book. Consequently, we could have placed this integrative chapter at the end of book, instead of placing it immediately after this introductory chapter of the book. We decided that it would be more stimulating to put it at the beginning of the book, to offer, from the outset, an overall vision that invites the reader to read the chapters on which this integrative chapter is based. To develop a detailed understanding of data assimilated in Chap. 2, it is worth reading the chapters that undergird this integration, specifically those on anthropomorphic and gender features (Part II), on emotional features and attachment styles (Part IV), and on the impact of the cultural context (Part V). Further, the information found in this chapter moves beyond this volume as it integrates not only the results published in other chapters of this book, but also the results published by other researchers outside of this book. The scope of this chapter serves both to integrate and to contextualize the project and its many facets.

The second part, “Focus on the Main Figure: Anthropomorphic and Gender Features”, consists of five chapters. It begins with a chapter entitled “Children’s God Representations: Are Anthropomorphic God Figures *Only* Human?” (Dessart, Chap. 3, this volume). This first chapter is a theoretical endeavour in which the author reviews the literature on anthropomorphism in children’s representations of gods and proposes a revised developmental model of children’s use of anthropomorphic features in god representations compared to human representations. The next chapter entitled “Humanness and Non-Humanness in Children’s Drawings of God: A Case Study from French-Speaking Switzerland” (Dessart & Brandt, Chap. 4, this volume) takes the model set out in the previous chapter and applies it to a sample of children’s drawings of gods collected in Switzerland. This chapter is followed by a chapter entitled “Construction and Transgression of Gender Categories in Representations of Divine Figures: A Cross-Cultural Study of Children’s Drawings” (Dessart, Dandarova-Robert, & Brandt, Chap. 5, this volume) that explores the dimension of gender features in children’s drawings of gods collected in four cultural areas: Japan, Switzerland, Buryatia (Russia), and Saint Petersburg (Russia). These same samples provide the data for analysis in the last two chapters of the second part of the book. Both of these chapters deal with the location of the god figure in the drawing. The chapter entitled “Where Gods Dwell? Part I: Spatial Imagery in Children’s Drawings of Gods” (Dandarova-Robert, Cocco, Dessart, & Brandt, Chap. 6, this volume) focuses on the background of the god figure. It shows

that, regardless of the culture to which the child belongs, children tend to draw god either in a celestial context or without a background. Based on the ideas of embodied and grounded theory, the chapter entitled “Where Gods Dwell? Part II: Embodied Cognition Approach and Children’s Drawings of Gods” (Dandarova-Robert, Cocco, Dessart, & Brandt, Chap. 7, this volume) takes into consideration the spatial location of the god figure on the sheet of paper, and it shows that children tend to position their god figures in the upper part of the page.

The third part of the book, “Focus on Material Features”, is devoted to the use of computer vision algorithms for analysing the drawings. In the chapter entitled “Automated Colour Identification and Quantification in Children’s Drawings of Gods” (Cocco, Dandarova-Robert, & Brandt, Chap. 8, this volume), the children’s drawings from the same four cultural contexts described for part two, above (Japan, Switzerland, Buryatia and Saint Petersburg), were analysed in terms of colour preferences. Age, gender, and cross-cultural comparisons were conducted. The analyses highlight the privileged role played by the colour yellow in drawings of god. Blue and achromatism (grayscale) play complementary roles that vary across cultural contexts. The chapter entitled “Computer Vision and Mathematical Methods Used to Analyse Children’s Drawings of God(s)” (Cocco & Ceré, Chap. 9, this volume) draws on the same dataset. Analyses were based on features extracted from manually executed annotations (god position, anthropomorphic features) and features that were computed automatically (gravity center, colour frequencies, colour organisation). Then, numerical measures of differences between drawings were calculated from the data, and analyses based on these dissimilarities (multidimensional scaling and clustering) were conducted. The results in this chapter support the consistency of the findings presented in earlier chapters, but these authors analyse the data differently, by means of systematic numerical measurements tied to certain material features of the drawings. It is a first attempt to develop methods for analysing pictures that do not refer only to methodologies that rely on inter-judge convergence.

The fourth part of the book, “Focus on Emotional Features and Attachment Style”, extends the rather cognitive approach that more or less strongly underlies the previous chapters, to include the explicit consideration of the emotional dimension expressed in the drawings. It contains two chapters. In the chapter “Emotional Expression in Children’s Drawings of God” (Jolley & Dessart, Chap. 10, this volume), two artists evaluate the data from the Swiss sample, scoring each drawing for emotional intensity and valence. The emotional dimension of representations of gods had not yet been studied and these data have allowed us to expand our understanding, as shown in the integrative model presented at the beginning of this book. The same can be said of the other chapter in this part, entitled “Different Attachment Styles in Relation to Children’s Drawings of God: A Qualitative Exploration of the Use of Symbols in a Dutch Sample” (Muthert & Schaap-Jonker, Chap. 11, this volume). In this chapter, the authors conduct qualitative analysis on 24 drawings that were collected in the Netherlands. Results show that drawings from children with secure attachment seem to contain more positively connoted god representations. These results are accompanied by a strong literature review on the links between

attachment theory and god representation. As a result of these findings, we have been able to enrich the integrative model that introduces this book with references to the attachment theory.

The fifth part of the book, “Focus on Specific Cultural Contexts”, contains two chapters devoted to specific cultural contexts that are not taken into account in the previous chapters. Both of these studies follow the same methodology of data collections, but the authors use, in part, different methods for analysing the data. For the research described in the chapter entitled “Iranian Children’s Drawings of God: Demographic and Contextual Considerations” (Khodayarifard, Pourhosein, Pakdaman, & Zandi, Chap. 12, this volume), more than 3000 drawings were collected in six different areas of Iran representing a variety of cultural contexts: Tehran, Savojbolagh, Sanandaj, Sari, Neyriz, and Tabriz. In Tehran, Neyriz, and Sari, people speak Persian. However, Mazanderani is the language informally spoken in Sari. In Savojbolagh, people speak both Persian and Azerbaijani. In Tabriz, they speak Azerbaijani, and in Sanandaj, they speak Kurdish. While Shia Islam is the official religion of Iran, people of Sanandaj are Sunni Muslim. The sample size allows a quantitative approach to the data and, thanks to the diversity of the six subsamples, offers the possibility of intra-cultural comparisons within the Iranian society itself. The chapter “The First Discoveries and the Challenges of Researching Representations of Gods in a Continental Country such as Brazil” (Küntgen-Nery, Mendonça Torres, Guerreiro Vasconcellos, & Zangari, Chap. 13, this volume) also proposes an intra-cultural comparison. For this chapter’s research, drawings were collected from two different areas of Brazil: in the city of São Paulo, and among the Guajajaras Indians in the state of Maranhão. In this case, however, due to the size of the sample ($n = 116$), only an exploratory approach was possible. The results of these two studies are also partly included in the integrative model that introduces our book.

The sixth part of the book, “Focus on Non-Representability and Prohibition”, addresses the question of the irrepresentability of God. During each data collection event, when collecting children’s drawings of god, there are always some children who return a blank sheet of paper. Sometimes they explain that the task is impossible because no one has ever seen “god”, sometimes they state that it is forbidden to draw God. This debate is not new in the history of humanity. The chapter “Biblical Aniconism? Representing the Gods of Ancient Israel and Judah” (Römer, Chap. 14, this volume) introduces this topic in the context of the ancient Near East where aniconic representations of gods, like empty thrones, were found. The chapter “The Representation of God in Islam and its Prohibition: Strategies Used by Iranian Children When Asked to Draw God” (Astaneh, Chap. 15, this volume) analyses the Iranian drawings collected by Khodayarifard and colleagues, but from a perspective that specifically seeks to understand both the idea behind the prohibition and ways people (children especially) deal with the limitations imposed by such a prohibition. Astaneh shows that returning a blank sheet of paper is only one strategy, among others, chosen by children to avoid an iconic (or even an anthropomorphic) representation of God.

The seventh part of the book, “Focus on Comparison with Other Supernatural Agents” contains only one chapter entitled “Natural and Supernatural Agents: Children’s Representations of Gods and Dead Entities” (Tau, Chap. 16, this volume). This chapter presents two studies on children’s drawings collected in Argentina. In study 1, children were asked to produce a drawing related to the topic of human death. In study 2, children (a different sample) were asked to draw “god”, following the procedure described earlier in this introductory chapter. Both studies provide data on how children draw supernatural beings and place them in space, but the data were collected under two different sets of instructions. This allows the researchers to draw some comparisons between the samples, not only for differences due to the variation in instructions, but also for differences between the representation of “god” and the representation of supernatural beings (divine or not) after death.

The eighth part of the book, “Focus on the Research Process”, is composed of three chapters that further expand the interdisciplinary dimensions of the project. The chapter “‘Equipping Work’ and the Production of a Large-Scale Digital Infrastructure: An Ethnographic Inquiry into the ‘*Children’s Drawings of Gods*’ Project” (Vinck & Oberhauser, Chap. 17, this volume) adopts an ethnographic approach to describe how the data production and management had an impact on the evolution of our project. The authors include a reorientation of some of the research questions and even produce new ones. The chapter “Brief History of the Database ‘*Children’s Drawings of Gods*’ (2015-2019)” (Serbaeva, Chap. 18, this volume) complements the previous chapter by documenting the evolution of the project’s web-database. The chapter “Interdisciplinarity, Team Science, and the Next Generation of Researchers: The ‘*Children’s Drawings of Gods*’ Project Experience” (Darbellay, Chap. 19, this volume) takes a step back and proposes a broader reflection on the issues of an interdisciplinary project and the challenges faced by such an undertaking.

Finally, the ninth part of this book contains a conclusive chapter entitled “Interdisciplinary Approaches to Drawings of Gods: Challenges, Achievements and Perspectives” (Brandt, Dandarova-Robert, Cocco, Vinck, & Darbellay, Chap. 20, this volume) which discusses the contributions and limitations of the methodology of drawings for studying children’s representations. The authors then assess the benefits and limitations of interdisciplinary approaches that combine computer vision, database management, and developmental psychology. Finally, they appraise new perspectives of research on children’s drawings of gods in the fields of religious sciences and religious art, with regard to both the study of creativity, and the developmental psychology of norms.

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Part I
Towards an Integrative Model

Chapter 2

Integrative Model of Children's Representations of God in Drawings



Pierre-Yves Brandt , Zhargalma Dandarova-Robert , Grégory Dessart ,
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Abstract When confronted with being asked to “draw god”, children have to solve a problem; they are being asked to produce a visual representation of an entity that they have never seen. Resources for solving this problem are available within the child’s cultural context: The shape of the figure itself may be based on various religious representations of gods, iconic figurations of supernatural agents in fictional artefacts (paintings, movies, cartoons even in advertisement), various valences may be attributed to colours or to different parts of an image composition, etc. The drawings produced by children depend also on their cognitive abilities to grasp the concept of god, their emotional abilities to express the accompanying feelings, their creativity and artistic skills. In representing god, children have to solve additional problems. For example, connotations of the concept of god can awaken attachment bonds to parental figures; religious prohibitions against representations of god can be in conflict with the task of drawing god. The purpose of this work is to integrate the results presented in parts II-V of this book, and to articulate the different factors in an integrated model that outlines possible strategies used to carry out the project of drawing god.

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“Have you ever heard the word *god*¹? Try to imagine and draw it.” The task can be puzzling. How is it possible to draw something or somebody that I have never seen? A person receiving this instruction might think: “It is as if I had to draw the infinity, hope, or the emptiness!” That is right, but just because someone has never seen the infinity, hope, or the emptiness, does not mean that the person is unable to draw them. It is not always necessary to have seen what we want to draw. We always have the opportunity to let our imagination gallop, and put colours and lines on a sheet of paper, following our fantasy.

Here, however, there is a complication. I am being asked to draw *god*—not just something that I can imagine. People who look at my drawing should be able to recognize that it represents (a) god. My drawing should refer to a concept expressed by the word *god*.

In some sense, the task of drawing *god* could be considered an impossible task. Nevertheless, when children are asked to draw *god*, very few of them say that it is impossible. They find a host of ways, borrowed from the ambient culture or fruit of their creativity, to provide drawings of *god(s)*. The drawings they create inform us about their understandings of the concept of *god*, their familiarity and relation to it, and the solutions they have employed to accomplish the requested task. Several chapters of this book describe this phenomenon from different vantage points; this chapter tries to integrate these perspectives.

Outline of the Presentation

We will begin with the role of anthropomorphism in the representation of *god*. It is commonly said that *god* representations of young children are more anthropomorphic than those of older children or adults. The psychological development from childhood to adulthood is undoubtedly an axis on which we can observe modifications in the treatment of anthropomorphism in divine representations. Nevertheless, the reason for anthropomorphic features in the representation of living beings or supernatural agents, including *gods*, is not only a result of development, but also the result of cognitive functions. We tend to attribute the properties of what we know to what we do not know. Piaget spoke of this process as assimilation.

¹Why the term *god* begins sometimes with an uppercase letter G, sometimes with a lowercase letter g, and why it appears sometimes in the singular and sometimes in the plural, is explained in the introductory chapter of this book (Chap. 1, this volume).

For this reason, we will begin the presentation by discussing the role of anthropomorphism in the representation of supernatural agents. We will then situate the products of this discussion in a developmental perspective: how do children and adolescents (6–16 years old) manage this question of anthropomorphism when it comes to representing a god?

Then, because most of the anthropomorphic features have gender connotations and because these features and connotations are shaped by culture, the presentation of our integrative model will continue by incorporating these two additional perspectives. We will first discuss the gender aspect: How do children manage the attribution of gender in the treatment of anthropomorphism in the drawing of god(s)? Do they conceptualize god as masculine, feminine, neutral, or a combination of masculine and feminine features? Further, what does the expression of gender tell us about how the children relate to the representations proposed to them by their cultural context?

At this stage of the presentation, we will not yet have moved beyond the conceptual level. Our model will stand temporarily limited to the integration of four perspectives that influence the understanding and thus the representation of the *concept* of god: the cognitive, developmental, gender, and cultural perspectives.

However, the factors that influence the manner in which children draw god are not only located on the conceptual level. That is why we enrich the model by considering the emotional and affective perspectives. Drawing god does not have to be merely an act of transmitting informative knowledge about a concept. Drawing also offers the opportunity to express emotions that reflect the relation between the artist and what he or she is drawing. For this reason, we will continue the presentation of the integrative model by considering, in succession, the relational aspects of attachment and emotionality in the drawings of gods. We also consider the manner in which these two additional perspectives (attachment and emotionality) relate to the four we had considered on the conceptual level (cognitive, developmental, gender, and cultural).

Finally, we will add the educational level, which refers to religious socialisation. If the artist has only a vague connection with discourses and context where “god” is mentioned, emotionality in his or her drawing will probably not be very high. For that reason, we integrate a supplementary perspective, religious education, into the model. This perspective identifies the intensity of religious socialization and formal religious education in the form of courses at school or in the religious community. At this stage of the presentation, we will also discuss the influence of religious education on the other aspects (anthropomorphism, gender, conformity to religious or cultural representations).

In conclusion, we will highlight one transversal feature that can be observed on the cognitive-conceptual level, and on the attachment and emotional levels: ambivalence. God images, god concept, and more generally god representation seem predisposed to be ambivalent. We will present arguments to explain this observation, and conclude with some synthetic remarks.

Definitions

In this chapter, the term *god concept* will be used to refer to the more cognitive understanding of god, while the *god image* refers to experiential views of god which are more affect-laden and partly function on an unconscious level. *God representation* is the umbrella term which comprises both god concept and god image (Hall & Fujikawa, 2013; Davis et al., 2013).

Anthropomorphism in the Representation of Gods: Cognitive and Developmental Perspectives

In a text published in 2001, Justin Barrett tries to answer the question “Do children experience God as adults do?” In this text, he begins by describing what he calls the “standard anthropomorphic-to-abstract shift”. Citing several developmental psychologists (e.g., Goldman, 1964; Heller, 1986), he summarizes the dominant paradigm of the development of god concepts as “a radical shift from crudely anthropomorphic concepts in childhood to the dizzyingly abstract concepts of adulthood” (Barrett, 2001, p. 174). In doing so, Barrett attributes to Piaget the paternity of this developmental paradigm, pretending that Piaget has exposed these ideas in *The Child’s Conception of the World* (1929).

This is a misunderstanding from several points of view. First, Piaget never published a text on the development of the representation of God in children. Second, he does not insist on the anthropomorphic character of the God concept in children. Third, he does not use the opposition between concrete and abstract to describe the evolution of the representation of God in children. Let us take these three points one by one.

First of all, in his prolific career, Piaget never took the time to devote a writing to the representation of God by children. Certainly, some notes can be found on this theme in his book published in 1926 *La représentation du monde chez l’enfant*, translated into English under the title *The Child’s Conception of the World* (1929). However, the scope of that book does not focus primarily on the child’s representation of the concept of God, but rather on the child’s explanations of the origin of various elements belonging to nature: wind, sun, clouds, etc. In this context, the God figure can appear, but Piaget is above all interested in physical causality and the development of causal explanations in children. He observes, in the youngest children, an orientation of mind related to finalism. He identifies this attitude as *pre-causal*: the lake, the mountains, the sun, the moon, the wind, the clouds are there for something. If there are mountains, they exist for the purpose of going for walks; if the sun exists, it is there in order to illuminate. Initially, children are less interested in the questions of origin than in the questions of purpose, so if they are pushed to give explanations in terms of origin, they can as well attribute the origin of the elements of nature to God as to people who would have manufactured them.

Since some children attribute the origin of the world to God, Piaget wonders what role religious education plays in the emergence of such representations. In this context, he refers to the ideas set out by Pierre Bovet in *Le sentiment religieux et la psychologie de l'enfant* (1925). In his book, Bovet speaks of the spontaneous deification of parents by the child. The little child is inclined, spontaneously, to ascribe to his or her parents all of the attributes that theologies ascribe to divinities. In the process of growing up, the child discovers that his or her parents do not possess unlimited powers and removes the ascription of powers such as omniscience or omnipotence from his or her parents, and transfers them to God. In other words, the attribution of powers such as omniscience or omnipotence does not result initially from religious education, but rather it develops as a magnification of parental abilities by small children. This phenomenon, depending on the type of religious education received, may also extend to other figures. In these observations, Piaget speaks much more of the deification of parental figures than of the anthropomorphization of the divine figure.

Piaget never describes representations of God in children using the opposition between “concrete” and “abstract”. On the one hand, in 1926 Piaget has not yet used opposition in his work; on the other hand, for Piaget, it would not make sense to say that a representation of God is concrete or abstract. So, from where does misunderstanding originate? It comes from developmental psychologists who have applied the Piagetian theory of stages to religious development.

In the 1930s, Piaget developed a theory of operative development. It distinguishes a preoperative stage between about 2 and 6 years, a stage of concrete operations until around 12 years, and a stage of the formal operations from 12 years on. Studying representations of God in children, various scholars (e.g., Harms 1944; Goldman, 1964; Fowler, 1981; Oser et al., 1991) describe the development of these representations according to the Piagetian stages. Noting, among other things, a decrease in anthropomorphic traits with age, they conclude that representations without anthropomorphic features are abstract when compared to those exhibiting traits that can be considered more concrete. One could easily conclude that this evolution is in conformity with the description of the development according to the Piagetian stages.

However, there is a complete misunderstanding of what Piaget calls *abstraction*. In his cognitive-developmental theory, he does not speak of the opposition between concrete and abstract, but between concrete and formal. A child reasons at a concrete level when he or she mentally manipulates concrete objects (stones, people, etc.) in order to accomplish, for example, a comparison of quantities. He or she reasons at a formal level when he or she reasons in a hypothetico-deductive way and mentally manipulates formal symbols such as numbers or variables (Piaget & Inhelder, 1969). When it comes to abstraction, it already concerns the extraction of properties. For Piaget, the mental representation is an extension of the action. Already the child of less than 2 years is able to act in thought on the world, to have a mental representation of the world. In this sense, the mental representation is already an abstraction compared to the simple motor action. That is why, from a Piagetian point of view, omnipotence or omniscience are not, as Barrett claims

(2001, p. 182), more abstract properties than having a limited power or a limited knowledge. Indeed, they are just properties attributed to objects, as any other properties that can be attributed to objects. That being said, let's try to build a model that incorporates what we know about the development of the representation of gods from childhood to adulthood.

A Cognitive Perspective

Representations of gods or supernatural agents are never completely independent from the representations of human beings. Ana Maria Rizzuto emphasized this in her book *The Birth of the Living God* (1979). That is what Barrett calls “anthropomorphism in adult God concepts” (2001, pp. 178–181). To demonstrate this, Barrett relies on data collected with adults in various experimental situations (Barrett & Keil, 1996). In these situations, adults were told stories concerning gods and involving suprahuman properties (such as having no attentional or perceptual limitations). For example, one narrative suggested that God performs many tasks simultaneously in different parts of the world. Comprehension and recall of stories was tested under conditions that induced cognitive pressure: the subjects did not have a lot of time to complete the task. Results show that, under cognitive pressure, adults tend to attribute

to God properties such as having a limited focus of attention, having fallible perceptual systems, not knowing everything, and having single location in space and time. In contrast, when these same participants were asked to reflect slowly and care fully on what properties they believed God has, they reverted back to the theologically correct, abstract properties (...) God is all-knowing, has infallible perception, has no single physical location, has unlimited attention, and so forth. (Barrett, 2001, p. 179)

Boyer (1994) inspires Barrett's explanation: “Religious concepts only differ cognitively from ordinary concepts by a few minor violations of intuitive assumptions” (Barrett, 2001, p. 180). When the processing of a narrative demands quick interpretation, “many of the non-intuitive elements are likely to be ignored for the sake of processing efficiency” (Barrett, 2001, p. 181).

This explanation is based on the assumption that attributing omniscience or unlimited attention to an intentional agent is less intuitive than attributing anthropomorphic properties (such as having limited knowledge or a limited attention focus) to the agent. Nonetheless, the explanation is not convincing. As emphasized by Kaufmann and Clément (2007), individuals come to share cultural analogies due to their collective reality, and based on one's anticipation about how others would perceive them and understand their social relevance. That is to say, one may not rely on an “actual” reality of things to depict God but instead attempt to communicate ideas about the divine that are shared in one's social environment. From this perspective, it is in fact rather intuitive to attribute characteristics to God (or religious entities) that seem to be at odds with their general understanding of physics or biology—using the so-called ontological violations. While this is a general

argument against the counterintuitiveness thesis, we will develop this issue further when dealing with developmental aspects of representations of God. We leave this to suffice for now, and turn to another consideration highlighted by Barrett. Among the characteristics associated with the concept of God, there is the characteristic of being an intentional agent, and the prototype of the intentional agent is the human being. According to the prototype theory (Rosch, 1973, 1978), the prototype is the most central member of a category, functioning as its cognitive point of reference. It presents itself as the best example of the category, the one we think of first when the category is mentioned. For example, the robin or sparrow will be more prototypical of the bird category than the ostrich or the penguin. Relative to a given category, a prototype maximizes information with the least cognitive effort. This is shown, for example, by the fact that the time required to handle issues involving a prototypical member (e.g., is a robin a bird?) will be shorter than for non-prototypical members of the same category (i.e., bird).

In our case, the category is *intentional agency*. When we say “god”, especially in stories like those told in the experiment situations described by Barrett and Keil (1996), it is clear that it refers to an entity, an agent endowed with intentionality. For human beings, it appears that a human agent is “the prototypical intentional agent” (Barrett, 2001, p. 180). That is why, when we have to deal with a story depicting an intentional agent without having time for reflection, we will tend to anthropomorphize it. Piaget would speak of assimilating a new situation to already constructed schemes; in this case, the egocentrism pushes us to project onto others what we have learned about ourselves. An example is the tendency, for example, to anthropomorphize the reactions of an animal. From an attachment point of view, one could argue that the ability to mentalize adds to meaningful forms of assimilation. Only securely attached persons can integrate internal and external worlds in such a way that they can ascribe intentions to others and use symbols that refer to otherness in a way that is personally meaningful.

This being said, anthropomorphic features in adult representations of gods are not, in themselves, a sign of a low cognitive level. If the prototypical intentional agent is the human being, it is perfectly understandable that people, including religious artists like Michelangelo in the Sistine Chapel, use human shapes for representing the gods. We just have to be aware that making use of a prototype for referring to some features of an entity does indicate an affinity between the prototype and the entity. We must recognize the potential for the metaphorical use of anthropomorphic traits in a representation of the divine. Its purpose of using anthropomorphic traits is to signify (in a composition that is not reduced to the simple representation of a human being) that the figure represented is, among other things, an intentional agent.

A Developmental Perspective

After considering the integration of anthropomorphic traits in the representation of God from a cognitive point of view, let us see what happens when we add the developmental perspective. In a very nice paper, Barrett and colleagues describe the result of an experiment conducted with very young children (Barrett et al., 2001). They used a *false-belief task*. Three- to seven-year-old Protestant children were shown a cracker box. They were asked what they believed to be inside the box. They answered “crackers” or “cookies”. Then, they were invited to open the box, and they discovered that it contained small rocks. After reclosing the box, they were asked what their mother would think is in the box. Three- and four-year-olds answered “rocks”, while almost all five- to seven-year-olds answered “crackers”. When the same question was asked about God, children of all ages solidly answered “rocks”.

These results show that very young children tend to attribute omniscience to their mother. It is only around 5–6 years that they differentially attribute this property to the mother and to God. Curiously, Barrett (2001) considers that omniscience is an abstract concept. The attribution of omniscience already at 3–4 years would be proof that the child is prepared from an early age to conceive of the divine. In this respect, Barrett and Richert (2003) speak of the preparedness-hypothesis. However, nothing requires the assertion of such bold assumptions. Why not just consider that omniscience is seen by children of 3–4 years as an anthropomorphic property belonging to the concept of the adult human being? This idea of normal human omniscience is sustained by Winnicott’s emphasis on the importance of omnipotence experiences in young children (Winnicott, 1971). Thus, it is not necessary to consider omniscience, which becomes a religious concept in the adult, counterintuitive, as Boyer (1994) proposes. Indeed, Boyer posits that religious concepts differ cognitively from ordinary concepts only by a few minor violations of intuitive assumptions. However, the experiment with the box of crackers shows that, for 3–4 year-olds, omniscience seems more intuitive than believing that adults have limited knowledge. Therefore, if we can agree with Barrett and Richert that “preschoolers seem capable of reasoning about God as an immortal, infallible, super-powerful being” (2003, pp. 310–311), it does not mean that these children reason abstractly. Indeed, these authors seem to forget that at age 4, children attribute this same property of omniscience to their mother (and sometimes to themselves)!

We can conclude that at this age, the construction of the concept of human being is no better than that of god. Between ages 4 and 6, a more accurate understanding of the concept of god goes hand in hand with a more accurate understanding of the concept of human being. This better understanding is achieved by reciprocal differentiation corresponding to selectively attributing the property of omniscience to gods. This evolution can be described as moving towards a less anthropomorphic representation of the concept of god, or it can be described as moving towards a less deified representation of the concept of human being. Both descriptions serve equally well.

This is what Bovet had already observed in 1925, when he spoke of the deification of parents by young children and the loss, when they grow up, of the illusion that their parents are omniscient or omnipotent in order to attribute these properties solely to God, henceforth. To conclude this discussion of Barrett's positions, we can agree with him that "the data cited to support the anthropomorphic-to-abstract shift through development may be understood better as a shift from poor to better general processing abilities (...)" (Barrett, 2001, p. 174). However, we cannot follow him when he identifies non-anthropomorphic properties with abstract ones and sees abstractness in the reasoning of young children.

On the heels of this discussion of the development of the concept of the god from childhood to adulthood, let us concentrate on what can be said, from a developmental point of view, of with regard to the occurrence of anthropomorphic traits in children drawings of god.

Many scholars have observed a decrease, between the ages of 6 and 16, in the proportion of god drawings depicting anthropomorphic figures, both in Western and Christian contexts (Hanisch, 1996; Kay & Ray, 2004; Ladd et al., 1998; Pitts, 1976; Tamm, 1996), and in non-Western and non-Christian contexts such as Japan (Brandt et al., 2009) and Buryatia (Dandarova, 2013). Dessart and Brandt (Chap. 4, this volume), by using a strict binary categorization (presence or absence of anthropomorphic features in the representation of god figure) were able to replicate this finding on a sample of 532 Swiss participants (5–17 years old). In this same study, they note that of the 493 drawings with a single-God figure, drawings devoid of any anthropomorphic features make up only 5.5%. What can we conclude from this observation?

Probably this is a clue that with age, children become more aware that a drawing that looks too much like a human being could be confusing. It might look too much like, well, a human. A kind of otherness is required. Guthrie (1993) has observed that in many religions human and non-human characteristics seem to co-occur in divine representations. He has argued that rather than mere anthropomorphism in such figures we found both sameness to and otherness from the human being. In addition, for an artist (e.g., a child) to wish to convey the idea that God is somewhat like a human but not only human requires that they have developed what Freeman and Sanger (1995) have called a *mentalistic theory of pictures* in order to produce an effect on the beholder. This theory supposes some basic understanding about the fact that pictures are made of intentions.

A person looking at a given drawing may not understand that it represents a supernatural being. For example, Lis, a Swiss girl (12 years, 8 months old), gives the following description of her drawing (ch16_fr_f_rec_12_08_lis) (Fig. 2.1).

In my opinion, God has a physical appearance of a classical shepherd. But you will never see him like that. Because when you have a problem to solve, or that someone tells you they have seen God, in reality, he sends us his spirit. God is everywhere, and watches over each one of us.

This awareness of the ambiguous character of an iconographic representation of god can also be expressed in the case of non-anthropomorphic representations. For

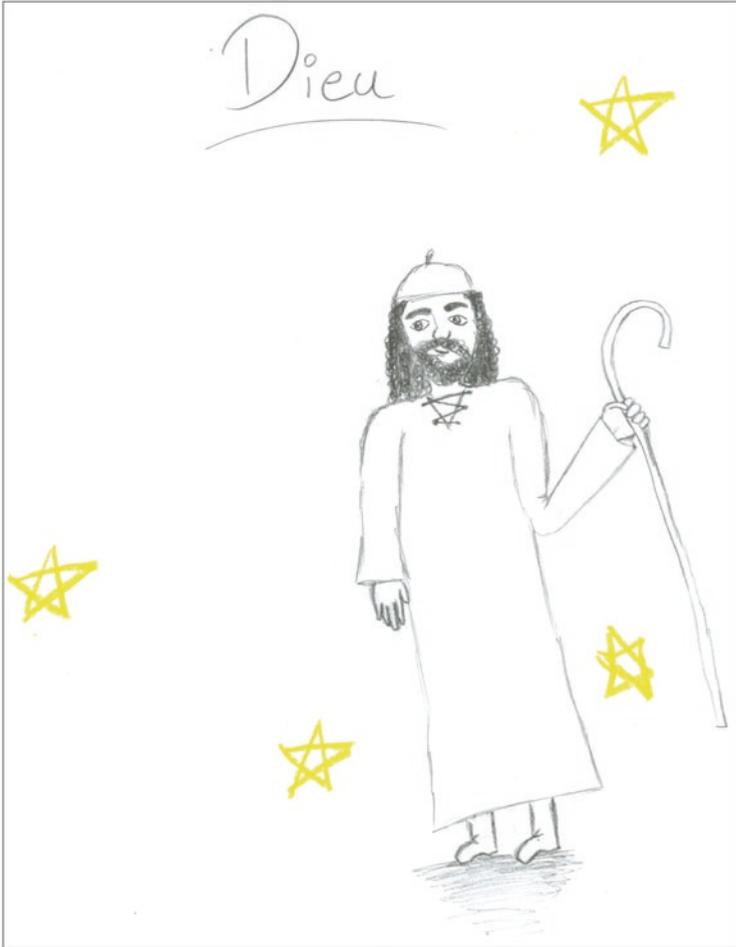


Fig. 2.1 http://ark.dasch.swiss/ark:/72163/1/0105/7ZOI0vnmStyQxIDvS85TEw_.20180702T162642932Z

example, Atx, a Japanese girl (13 years, 10 months old), describes her drawing (jp04_fa_f_pkx_13_10_atx) (Fig. 2.2) as a “kind of sun or moon” in the “form of a globe” and adds: “It is not the form of an object, but it is God (Kami) that I imagine and that I drew like this”.

However, the binary opposition (presence or absence) of any anthropomorphic traits is much too crude to account for the treatment of anthropomorphism in children’s drawings of god. It might lead one to believe, for example, in the case of the Swiss sample analysed by Dessart and Brandt (Chap. 4, this volume), that almost 95% of all children between 6 and 16 years of age draw God as a human being. It is not the same thing, however, if a child draws eyes and a mouth in a cloud, a headless human shape, or a figure, as if he or she had been invited to answer the Draw-A-Man



Fig. 2.2 <http://ark.dasch.swiss/ark:/72163/1/0105/iHPLG1JaRXOv9IAwhLs2hQi.20200415T110320583168Z>

test (Goodenough, 1926). This is why Dessart and Brandt (Chap. 4 this volume) carried out a detailed analysis of the so-called “anthropomorphic” representations. They distinguished human-based ($n = 390$) from non-human based (e.g., eyes and mouth in a cloud) representations ($n = 9$). They showed that children make use of a wide variety of processes to incorporate anthropomorphic traits into god drawings that also contained non-anthropomorphic features. In doing so, the children use different strategies to insert clues into their drawings that signal divergence from a representation of a mere human being. Applied to human-based representations, Dessart (Chap. 3, this volume) calls these processes “de-anthropomorphization”.

Some strategies operate directly on the figure of God. For example, the child adds (e.g., wings) or associates (e.g., aura or halo) non-anthropomorphic traits to a human-based figure. In another strategy, children add or remove human features. They may add extra human features to the basic ones (e.g., adding a pair of arms or eyes), or they may remove some features that would normally be present (e.g., head or face). The child can also de-anthropomorphize the drawing by altering the background (the context in which the figure is set). For example, the anthropomorphic God figure may be drawn in a context uncommon for a human being (e.g., on a cloud, in the sky), or placed in relation to other objects (e.g., abnormally larger than other human figures) to indicate its superhuman nature.

Among the 390 human-based representations of the Swiss sample analysed by Dessart and Brandt (Chap. 4, this volume), nearly 70% are characterized by the use of at least one of these de-anthropomorphization strategies. Interestingly, only age was a statistically significant predictor ($p < .001$) of the distribution of these

strategies in the sample. De-anthropomorphization increases from age seven to age nine, and then again from age 12 to age 15.

Children, by a more or less metaphorical use of anthropomorphic traits, clearly signify that god is an intentional agent. At the same time, they make use of the above described strategies, combining anthropomorphic traits with the presence or absence of other traits that are incompatible with the standard representation of a human, in order to ensure that there will be no possible confusion with a mere human being. The increase of de-anthropomorphization strategies with age indicates that as children age, they become aware that a person viewing their drawing might experience such confusion. At the same time, the large presence of anthropomorphic traits in the drawings shows that these traits remain a valid (graphic) means for expressing that god is an intentional agent.

In concluding this part on anthropomorphism used in drawing god, it is important to remember that the presence of anthropomorphic traits is not in itself an indicator of a low level of development, as suggested by previous works. In other words, the absence of anthropomorphic traits is not a criterion, in itself, to conclude that the representation is the expression of a greater cognitive maturity. It is not so much the presence or absence of anthropomorphic features in the drawing that matters, but rather the way these features are treated.

Gender in Children's Drawings of Gods

Producing a representation of a figure that incorporate anthropomorphic features confronts to the question of gender: are these features specifically associated with a masculine or a feminine representation, or are they not particularly connected to either one? How is this question of gender managed by children when they are drawing gods?

Previous research has shown a same-gender preference among girls and boys when they are simply asked to draw a person (Arteche et al., 2010; Chen & Kantner, 1996; Harris, 1963; Willson, 1977). Concerning representations of God, Vergote and Tamayo (1980) published a series that convincingly shows that these representations encompass typical traits of both a mother figure (e.g., nurturing, supportive) and a father figure (e.g., punishing, powerful). These studies used techniques other than the drawing task, and presented convergent results in different countries of Europe, in North America and in India. However, when studied by the means of the drawing task, the impact of the cultural environment cannot be ignored. The majority of previous research has been conducted in Western environments characterised by Christianity and monotheistic traditions (Bucher, 1992; Daniel, 1997; Hanisch, 1996; Kay & Ray, 2004; Klein, 2000; Ladd et al., 1998). In this context, the gender of God is clearly presented as masculine. Unsurprisingly, material collected in these environments reflected masculine gender traits, and the few figures displaying feminine traits were produced only by girls. In a Japanese context, results were quite different. In a cultural context where “kami” (the term used in this context as the

best equivalent for “god”) is not so strongly associated with masculine features, almost a third of the figures were feminine (produced by boys and girls), and nearly half of the girls felt free to draw a feminine figure (Brandt et al., 2009). These results are also in line with studies showing that girls, more often than boys, are ready to express cross-gender behaviours or preferences (Bussey & Bandura, 1992; Martin, 1993). Similarly, Dandarova (2013) working in a Buryat (Siberia, Russia) context where Buddhist, Shamanistic, Christian, and atheist influences coexist, observed that girls were more inclined to draw feminine gods (15.4%) than boys (0.9%). These results show that cultural factors interact with the gender of the child when rendering the representation of gods. In an environment with a strong masculine representation of God, the proportion of feminine drawings of gods do not go beyond 7% (Hanisch, 1996; Ladd et al., 1998). We can conclude from these observations that when a specific gender is attributed to god at the cultural level, this attribution exerts such a strong pressure that it no longer leaves room for the choice of gender attribution at the individual level.

Dessart et al.'s (Chap. 5, this volume) analysis of gender-typing using a Swiss sample of drawings brings arguments for rejecting this too hasty conclusion. In a preliminary analysis of a previous state of the Swiss sample ($n = 329$), a binary categorization of god representations yielded the result of only 0.9% of female figures in total, 0.6% by boys, 1.2% by girls. In fact, scoring anthropomorphic drawings following a binary masculine-feminine categorization leads to an overestimation of the proportion of masculine representations. In order to demonstrate this, we must first draw away from a binary categorization of gender, and we must not aggregate the non-feminine into the masculine category. This is what Ladd et al. (1998) have already proposed by introducing neuter option (neither masculine nor feminine) in their categorization. As a result, they identified 57.7% of figures as masculine, 37.5% of figures as neuter, and 6.8% of figures as feminine.

Extending this approach, Dessart (2019) proposed a dimensional method to gender-typing where he asked adult raters to simultaneously assign a femininity score and a masculinity score to each drawing from his Swiss sample. Scores range from 0 to 10. The final scoring for a drawing was obtained by using the average-split method proposed by Riegel and Kaupp (2005). Drawings scoring equal to or above average on the femininity dimension and below average on the masculinity dimension were moved into the feminine category. The same logic was applied to the masculine category. Drawings scoring below average on both dimensions were labelled undifferentiated. The advantage of this scoring method is that it made possible to identify a fourth category, constituted by the drawings that received scores above average on both dimensions. This category was labelled “androgynous”. Arguably, Ladd et al.'s (1998) *neuter gender* category covered both of Dessart's undifferentiated and androgynous figures. This scoring method allows researchers to acknowledge feminine features in drawings where they are mixed with masculine ones. This method shows that, in terms of gender attribution to god figures, gender is not strictly a binary classification. Using this dimensional approach, Dessart (2019) made the following observations. Boys drew 50% of figures as masculine, 24.2 of figures as feminine, 19% of figures as undifferentiated, and 6.8% of figures

as androgynous. Girls drew and 39% of figures as masculine, 41% of figures as feminine, 9.5% of figures as undifferentiated, and 10.5% of figures as androgynous figures. These results show that the labelling of a representation as masculine or feminine strongly depends on the method used to score the drawings. They also show that a binary categorical approach has the effect of disguising female aspects under the overall label of the masculine. The use of a dimensional approach brings out these masked aspects and reveals that gender attribution to representations of divine figures is more complex than a simple masculine-feminine dichotomy.

Then, if we add the developmental dimension, we find that, with age, the attribution of the masculine gender to god becomes more and more dominant, in girls as in boys. This certainly demonstrates the influence of the cultural stereotype on children, which increases as they grow older. This effect is more marked in boys, presumably reflecting the effect of same-gender preference. As gender typing an androcentric cultural figure is more complex for girls than for boys, it is understandable that undifferentiated and androgynous categories have larger proportions in girls than in boys. This suggests that girls are expected to be more flexible than boys relative to gender attribution, and that the obligation to consider cultural references becomes more pronounced for children, as they grow older.

Gender-typing god may thus reflect the deeply intricate combination of several factors. As we have just seen, same-gender preference appears to be at work. Dessart (2019) has suggested that the broad cultural androcentrism generally associated with god in the West might explain two additional partly distinct factors. One of them pertains to an exposure effect of over-represented masculine figures within a religious tradition (Whitehead, 2012). A second one deals with hegemonic masculinity (Connell & Messerschmidt, 2005), characteristic of a more general and more pervasive cultural androcentrism which is not limited to the religious domain.

This brings us to the role of culture, which is the theme of the next section. Keep in mind, however, that the main results from this section on gender demonstrate that even within the Western world dominated by male representations of God, the question of the gender of god is contemplated by children and is reflected in the strategies that they use to differentiate between God and a mere human being. This can result in an undifferentiated or androgynous figure—the latter of which may reflect the use of ambivalence.

Influence of Cultural Representations in Children's Drawings of Gods

When we began this chapter with the topic of anthropomorphism in the representations of god from a cognitive and developmental perspective, we proceeded as if the child had to invent everything. However, as we have seen with the dimension of gender, the cultural environment in which the child is immersed conveys pictorial representations of supernatural agents, and these representations have an impact on what children draw. These representations are, of course, provided by the religious traditions, through artefacts and emblematic images (paintings, sculptures,

educational material, etc.); but that is not all. They can also be found in iconographic productions that are not directly related to religious institutions: in illustrated books, cartoons, comics, films, advertisements, etc., that feature fairy tales, biblical, religious, mythological, or science fiction stories (Brandt et al., 2019). As Harris (2015) demonstrates, children build their representations of religious concepts in the same way that they build scientific concepts: through testimonies produced by adults. This information suggests that the same applies to the concept of god.

Testimonies about iconographic representations of the divine are present in the cultural environment. When children try to represent a supernatural agent graphically, they are not the first in the history of humanity to do so. Solutions used in the past and still present in the cultural environment can be sources of inspiration for the task.

We can compare solutions proposed by artists in the past with representations of god drawn by children. Some children choose one of the representations available in their cultural context and try to reproduce it. In doing so, they do not necessarily produce a representation of the god they, themselves, visualize. In the drawing protocol of the *Children's Drawings of Gods* project,² children were also not explicitly asked to draw the god representation to whom they relate personally. Thus, children from Buryatia drew gods of the Ancient Greece, namely Zeus, Poseidon, Ares, and Athena (Brandt et al., 2019; Dandarova, 2013). These children had received instruction on this topic in history classes a few weeks prior to the study, and they took the iconographic material that had been presented to them as a model for their god representations. Similarly, children who self-identify as not believing in god (saying that there is no god) have produced drawings of god that, in some cases, appears to be a reproduction of a religious representation such as a seated Buddha or Jesus on the cross. In fact, the task to draw god simply asks children to draw god, it does not say, "draw *your* god". Some children even emphasize the fact that they drew god of others. Therefore, a possible answer to the task may be limited to reproducing one god representation from among those available in the cultural context. Other children make more use of personal creativity and produce a more individual, sometimes unique image of god (Dandarova-Robert et al., *in press*). Any child can demonstrate a creative independent mind. As Reich (2009) notes from his observations on Nina: "to some considerable extent [she] constructs her religious world view from her own observations, analogies, imaginations, and reflections." (p. 287). The decisions that introduce variations into the drawings can be made at different levels: the choice of figures and motifs, the composition, the colour palette, the emotional valence. Additionally, whether the children experienced the location of their participation (a school, a church, a mental hospital an asylum) as secure or insecure also influenced their choices. All of these choices connect to features associated with the concept of god.

²The international project, *Drawings of Gods: A Multicultural and Interdisciplinary Approach to Children's Representations of Supernatural Agents*, is also known in French as *Dessins de dieux* (DDD), and referred to in this volume simply as *Children's Drawings of Gods*.

However, the variability observed across the different cultural contexts shows the influence of these contexts: the probability that a child produces a given representation in a specific context is influenced by the greater or lesser diversity of representations available in that context, and by the frequency with which the available representations occur (i.e., which is most commonly found). In Iran, for example, anthropomorphic representations of god take often the form of the Prophet or of Imam Hossein, with a shining disk instead of a head. Many children respond to the task of drawing god by representing the blessings of God: a landscape representing the creation, their family, etc. (Khodayarifard et al.; Astaneh, Chaps. 12 and 15, this volume). Iran is also the country where the proportion of children who turn in blank sheets of paper is highest, even if, overall, this proportion remains very low (5%, in Iran, 177 out of 3000 drawings, compared to 2% in Switzerland, 7 out of 532 drawings). Children who respond in this way often state “it is not possible to draw God” or “it is forbidden to draw God”. Iranian children find various other strategies to answer the task of drawing god. To draw the Prophet, an imam, the blessings of God, or to give back a blank sheet, are different strategies expressing the way in which the Iranian children deal with the theological implications of this representational issue (the permission or prohibition to produce images of God and, more broadly, sentient beings) as it is discussed in the (Shi’ite) Muslim context (Astaneh, Chap. 15 this volume). Swiss children appear to consider similar theological imperatives. Aside from the theological aspect, however, children have difficulties creating a graphic representation of something, in this case god, that they can hardly comprehend or imagine. The strategies, such as those described above, that children use to overcome these difficulties can also be observed in other countries where drawings of gods have been collected.

Comparisons between countries lead to the observation of the major impact of the cultural environment on the types of drawings produced by children. Even inside the same country, different religious or cultural backgrounds have various impacts on the diversity of drawings that can be observed when subsamples are compared. That is the case inside Iran, in the six cities where drawings were collected (Khodayarifard et al. Chap. 12, this volume). This is also the case in Russia, when the drawings collected in Buryatia are compared with those collected in Saint Petersburg. Buryat children frequently drew Buddha and other personages or themes in relation to this religious tradition (Dandarova, 2013) while Russian-Slavic children, especially participants from the Orthodox parishes (Saint Petersburg) drew pictures inspired by Christianity (Dandarova-Robert et al., *in press*). Generally speaking, the degree of homogeneity of the cultural background has an impact on the diversity of drawings. Pluralistic cultural contexts such as Switzerland or Russia provide a greater variety in the representations of gods than non-pluralistic cultural contexts, as we see from the sample collected in Iran. For that reason, the probability of finding drawings that combine features drawn from more than one religious tradition is greater in the pluralistic contexts.

To summarize this section, it is important to keep in mind that, when asked to “draw god”, children can simply respond the task by reproducing models available in their cultural and religious environment. However, by doing so, they reveal that

they have identified, in this environment, the cultural codes associated with the representations of the divine. It means that, cognitively speaking, the child asked to draw god is considering not only a concept, but also cultural representations (religious images, representations of characters in films, books, artefacts, etc.) that are available in his or her environment. That is to say, the study of children's drawings of gods informs us not only of their understanding of the concept of god, but also of their ability to interpret a symbolic and iconographic language. It informs us of their ability to deal with universal features associated with the concept of god as well as with features specific to each cultural background. The characteristics of being an intentional agent who is omniscient and has superhuman powers seems to be common to all gods, but other features are not universal. Gender attributed to the god figure is one feature that makes possible to differentiate some cultural representations of gods from others. Age attributed to the god figure could be another differentiating feature that has not yet been thoroughly explored. Another consideration is the possibility of having a personal relationship with a protective god. Indeed, some religious traditions depict god (or gods) as figures who protect those who have a relationship with them. Would attachment theory explain some aspects of children's drawings of gods? This is the theme of next section.

Children's Drawings of Gods from the Point of View of Attachment Theory

We have mentioned before that when children draw god, that does not necessarily mean that they, themselves, have experienced a personal relationship to a god. Some of them, however, have built such a relationship, and when this is the case, it can make a difference in the way that they draw god. Also, when god objects are commonly known as relational objects in a specific cultural context, one could expect relational aspects in the drawings. Attachment theory can provide a helpful perspective from which to study these relational components.

There are several studies of children's God representations in relation to attachment (Cassibba et al., 2013; De Roos et al., 2001, 2004; Granqvist et al., 2007). However, none of these studies used drawings as a method to investigate aspects of children's representation of the divine (God). Moreover, existing studies that focused on children's drawing of god(s) did not include attachment factors in the analyses. Further exploration in this research area could help us to better understand how a child's relationship to god influences the manner in which the child draws god. Hence, the study conducted by Muthert and Schaap-Jonker in the Netherlands (Chap. 11, this volume) aims to contribute to the study of attachment and religion and of children's religiousness and spirituality, and also to the study of children's drawings of God. In their study, these scholars have not directly assessed the religious attachment of a child, but have assessed his or her attachment to parents, which can be described as secure or insecure. The attachment style results first from experiences with significant primary caregivers; it is later transferred to new relationships. This would potentially include relationships with spiritual figures.

However, as previously noted, building a relationship with a spiritual figure is not necessary; thus, not every child can be described as having built an attachment bond to god.

In their study, Muthert and Schaap-Jonker did not compare children with and without an attachment relationship to god. They favoured another approach. They assessed the attachment style and using qualitative methods, sought to determine if the attachment style influenced child's openness to religious symbols. In this way, Muthert and Schaap-Jonker combined emotional and environmental factors in their design. As a result of their comparison of 12 securely and 12 insecurely attached children, they learned that securely attached children used more god representation related symbols. They interpret this result to be a consequence of a greater openness towards the (religious) environment, because securely attached children would be more willing to trust the social environment. Insecurely attached children would be more fearful and avoidant, and consequently less open to the various contents available in their environment. This can be interpreted as one aspect (among others) of the emotional dimension present in the drawing of god. When we rate the infill of the paper we do see that the securely attached group uses more infill in comparison with the insecurely attached sub group. This outcome concretely supports our finding that the securely attached group uses more symbols.

Additionally Muthert and Schaap-Jonker found that the insecure group drew fewer anthropomorphic images. When it comes to the localization of God (extra-terrestrial, in heaven, between heaven and earth, on earth or no references to localization), the secure group used more localizations than the insecure group. When children from the insecure group did localize God in heaven, the insecure group drew heaven on the lower part of the paper while the secure group used the upper part.

In sum, Muthert and Schaap-Jonker's qualitative exploration suggests that attachment styles indeed could be reflected in the drawings of God. They were only able to include a small amount of drawings, which is a limitation, but the analysis of these particular drawings finally suggested that the assumptions behind the theory of attachment need to be adjusted when dealing with more diverse cultural contexts. An important question that has arisen in light of these drawings and their accompanying narratives involves the values behind the so-called insecure and secure relational patterns in the major attachment models. Operationalizing along the dimensions of anxiety and avoidance highlights the individual autonomy in a way that does not seem to be universally applicable.

Emotionality in Children's Drawings of Gods

An attachment approach to god representations implies a focus on the emotional and relational aspects of god representations. A child's early experiences in close relationships (usually with the parents or other attachment figures) are generalized and represented in internal working models of self and others, which function as a template for future interactions on an implicit level of awareness. Hence, these

representational models guide and integrate children's embodied, emotional experiences in relationship with the divine, and affect their religious or spiritual functioning at an emotional and relational (largely nonverbal) level (Granqvist & Kirkpatrick, 2016; Hall & Fujikawa, 2013). By implication, feelings of either closeness and trust, or anxiety and avoidance (or combinations of these feelings) resonate in children's drawings of their god representations.

The attachment style is certainly influencing the emotional dimension of a drawing, but there are other ways to approach it. Whatever the attachment style, children show a growing ability, with age, to express emotions in drawings (Jolley et al., 2016). Another aspect of this perspective concerns the emotional valence of the representation: Does the drawing express positive (joy, happiness) or negative (sadness, fear, anger) emotions? The representation of the divine can also be connoted in various ways: If the god is represented as a judge, he may be drawn exhibiting a state of anger or the drawing will express coldness; a benevolent god will be drawn manifesting warm mercy or happy contentment. These emotional attributions may result from the manner in which a divine figure is culturally conceived and/or from the personal experience of the author of the drawing. In fact, to remain at a distance from a divine figure and to fear it, or on the contrary, to seek its protection may result from a culturally transmitted teaching, but it also may result independently from the individual relationship that the author of the drawing experiences with this divine figure.

Although research on the emotional dimension of the representation of god is not lacking, there is, unfortunately, almost nothing that has been done in the area that includes drawings of god (Dessart, 2019; Jolley & Dessart, Chap. 10, this volume). Jolley and Dessart are pioneers in this field.

Dessart (2019) have asked two female expert artists to score the intensity and valence of emotionality expressed in the same Swiss sample of drawings that Dessart and Brandt (Chap. 4, this volume) had analysed for anthropomorphism and gender. In contrast to the general scientific literature on children's expressive drawings, no age-dependency for emotional intensity was observed. Dessart proposes two different explanations. The first one suggests that an increasing ability to express emotions in drawings would be counterbalanced by a decreasing intention to draw expressively when asked to draw god. This would be consistent with the tendency to draw god in a less anthropomorphic manner in the sense that emotions are anthropomorphic features. A second explanation is that the task of drawing god, when approached with an emotional lens, may reflect one's personal commitment in relation to god. In that sense, the result would appear to depend mainly on socio-cultural factors that are fairly fixed, rather than occurring as the result of changes in life course. For that reason, the scores of emotional intensity remained average at each age. Being a girl or receiving religious schooling increased the likelihood of producing an emotionally intense drawing of god. Concerning gender, this is consistent with previous research that shows female individuals to possess better expressive drawing abilities (Brechet & Jolley, 2014). This is also in line with previous studies that suggest female individuals are generally more religious (Francis 1997) or that girls (aged 4–10 years) perceive god to be closer than boys do. Concerning

schooling, this finding suggests that emotional intensity is associated with religious socialisation. One possibility might be that the more familiar with the god figure the child is, the more she/he can engage in an emotional relationship with this figure. However, it could also happen that where socialisation is recognized on an explicit level, the personal affective relationship could still be coloured by an insecure attachment style (Hall & Fujikawa, 2013). Another, non-exclusive, possibility would suggest that the more children are exposed to emotionally intense depictions about a given category (i.e., the divine)—which is likely the case in the religious schooling contexts concerned—the more prone they are to reproduce strong emotionality, as per the exposure effect. This is in line with results regarding emotional valence.

The results concerning the emotional valence can be interpreted in the same way. The more familiar children are with the concept of god, the more they attribute a positive emotional valence to it. This supposes that, in the Swiss context where these results were obtained, the concept of God is rather positively connoted. Greater familiarization leads to a friendlier relationship, because what is unknown can lead to mistrust. The gender effect, a higher positive emotional valence for girls than for boys, may be only the consequence of a greater emotional commitment already highlighted when measuring emotional intensity.

Impact of Religious Education and Religious Socialization on Children's Drawings of Gods

As we have just seen, religious education has an effect on the representation of god in terms of greater familiarity with this concept, and therefore a greater tendency to conceive god in a positive way. Hanisch (1996) highlighted another aspect of the impact of religious education: a greater decrease of anthropomorphism in God representations for children with religious education compared to those without such education.

Hanisch collected more than a thousand drawings of God among children aged 6–16, in Heidenheim, West Germany, and more than a thousand drawings in Leipzig, in former East Germany, just after the fall of the wall in 1989. In Heidenheim, the school program for children between 6 and 16 included 1 h of weekly religious education. In the communist regime of former East Germany, there was no religious education in the school curriculum at Leipzig. In his study, Hanisch observed a decrease of anthropomorphism in the drawings with age. This decrease was more pronounced and began earlier in Heidenheim. It was only at the age of 14 that the proportion of anthropomorphic representations fell to less than 80% in Leipzig, when it was already below this threshold at the age of 10 in Heidenheim. In Heidenheim, the percentages ranged from 70% at age 10 to 21% at age 16, while in Leipzig, 79% of drawings were still anthropomorphic at age 14 and the percentage did not fall below 76% at age of 16. These results show that religious education has an influence on anthropomorphism in children drawings of God. This can be

explained by the fact that thinking about a concept makes it possible to move away from spontaneous representations. That is to say, there is a tendency to anthropomorphize the representation of any figure understood as an intentional agent. Brandt et al. (2009) obtained similar results in Japan: from the age of 12, the proportion of anthropomorphic drawings decreases among children attending Buddhist schools but not among those attending state schools.

Similarly, Dessart and Brandt (Chap. 4, this volume) have found an effect of schooling on the use of anthropomorphism, similar to that reported by Hanisch. However, the overall percentage of anthropomorphic figures in their Swiss sample was 87.6%. This closely corresponds to the percentage found by Hanisch in Leipzig (87.5%) and is far above the proportion found in Heidenheim (57.8%). Such a disparity might reflect even more clearly the important role played by religious education. It can be assumed that the group of children from Heidenheim received more frequent and sustained religious education compared to children from the Swiss sample. In the latter, only a minority of children from one particular geographical area (canton of Fribourg) were attending religious classes weekly. It is also noteworthy that Dessart and Brandt have processed non-figurative representations separately from non-anthropomorphic ones. Hanisch did not do this, and as a result, his data might have led him to overestimate the proportion of non-anthropomorphic figures in his study. In their study, Dessart and Brandt have constructed a rather elaborate visual representation of drawings from their Swiss sample in the form of a tree. The reader can see an early division between two main types of drawings: those that show a direct God representation and those that do not. The latter group includes representations such as a blank sheet (e.g., nothing has been drawn or the artist has left a few words explaining why she/he could not draw God), God's manifestation (e.g., the Creation), invisible God (e.g., meta-graphic signs indicating that God lies in some place in the drawing composition where nothing has been actually drawn). It is therefore worthwhile that—contrary to Hanisch—drawings displaying God's hand would be categorized in the former group made up of direct representations. There is a major difference between the authors' approaches to coding. Hanisch focusses mainly on the symbolic status of representations even when they are somewhat anthropomorphic, as in the case of a hand coming into the composition through the sky, for example. Dessart and Brandt instead began by considering that all anthropomorphic God figures could potentially be deemed symbolic. This was confirmed through individual semi-structured interviews conducted by Dessart (unpublished) where some interviewees, who had previously taken part in the Swiss quantitative study, explained their use of anthropomorphism. They argued that they were aware that God "is not a human being" but found that it was often most convenient to depict God in that way. Their approach, therefore, relied on an early distinction between direct (or figurative) and not direct (or non-figurative) representations. Their categorical system is similar to Dandarova (2013) in that regard.

In Hanisch's (1996) study, representations of a hand were categorized as symbolic—and non-anthropomorphic—and this type of drawing was very frequent in Western Germany (25% of all symbolic images).

Given that this type of drawing (by content) is found so frequently across Hanish's Western sub-sample, it can be somewhat misleading to code a quarter of "symbolic" God figures accordingly and thus conclude that his sample from Western Germany, because of religious socialization or education, was more inclined than his sample from Eastern Germany to represent God through symbolic means.

Religious schooling also has an effect on emotional expression in children's drawings of god and can be interpreted as a form of what Harris (2015) calls *testimonies*. Dessart (2019) in their analysis of emotional intensity and emotional valence, found religious schooling to be a consistent contributor: Children from the religious schooling group drew with more intensity and their drawings displayed a more positive valence overall.

Ambivalence: Attributing Contradictory Properties Simultaneously to Signify a Being Beyond Any Categorization

Before concluding this chapter, we would like to highlight one characteristic of the representation of god that winds through many of its dimensions: ambivalence. Vergote and Tamayo (1980) had already pointed out the incidence of ambivalence that they found in their studies comparing the representation of parental figures with that of God. They showed that the representation of God combines maternal and paternal traits. To postulate the ambivalence of god representations on the basis of this unique result could elicit the criticism that this characterization is merely the by-product of the method used to measure the paternal or maternal character of the figure of God. In fact, the combination of paternal and maternal traits also characterizes the representations of both the figure of the father and the figure of the mother. However, it is more marked for the figure of God. Thus, even if the method might reinforce the hybrid aspect of the representations studied, the comparison between the representations of the parental figures and the figure of God makes it possible to show that ambivalence characterizes the figure of God in particular.

We obtain the same conclusion from the dimensional study of God's gender conducted by Dessart (2019). Drawing an androgynous figure is a strategy chosen by some children to differentiate the representation of God from a simple human being. In the Swiss sample where both feminine and masculine dimensions were scored on the same drawings, androgynous representations were produced by 6.8% of the boys and 10.5% of the girls. This percentage increases with age among girls, moving from 6.9% for the youngest girls to 16.4% for the older girls, while it decreases slightly for boys, moving from 9 to 5%.

Ambivalence, to some degree, can also be observed on the emotional level. Drawings judged "of equal balance" in that regard accounted for 10.47% of the drawings from the Swiss sample that received an emotional valence score. To enter the "of equal balance" category, drawings had to be equally negative and positive, with at least some emotional intensity. That is to say, they could not be emotionally

bland. There does not seem to be a clear developmental pattern in this small portion of drawings, although most of them are found at the ages of 8, 12 and 13 years. Some differences can be identified, however, for gender and schooling: boys had drawn 76%, of these drawings and 68% had been drawn during regular (non-religious) schooling. While this category includes various types of drawings, two main types seemed to emerge. First, some drawings simply failed to lend themselves more strictly to one of two valence directions (positive or negative). Second, other drawings appeared to refer intentionally to opposites that are emotionally connoted, such as depictions of heaven and hell.

The study of humanness and non-humanness (Dessart; Dessart & Brandt, Chaps. 3 and 4, this volume) has also shown how children made use of different semantic categories, combining some of their subcategories to convey ideas about god. In a strict sense, this may not reflect ambivalence. Nonetheless, if we consider humanness and non-humanness as opposites, then one can see how children may play on these irreconcilable subcategories to depict god. This may be done either by retaining fidelity with existing forms provided by their cultural background or by taking a relative degree of freedom. Instances of such endeavours can be found in the figure of god itself with features that are added (e.g., wings), replaced (e.g., light in place of the head), associated with it (e.g., nimbus), or in the background of a composition (e.g., celestial background). More than ambivalence in and of itself, this could reflect a general underlying tendency to bring together binaries when god representations are called. In the case of humanness and non-humanness, there was a trend, with increased age, towards a more frequent semantic combination, which did not depend on either schooling or gender.

Attributing opposite properties to the representation of gods seems to be a way of indicating that to be divine means to be beyond categorization. It is a way of showing that god cannot be captured by dichotomous categories. This is what people have tried to express through language in the forging this concept. If a figure has limited powers or is subject to any limitation, then the figure does not correspond to what is characteristic of divine figures. A god is called "god" because he or she crosses borders and can be simultaneously on both sides. That is why the concept of god cannot be manipulated in the same way as the concepts of the human being or the earthly living being. It is also remarkable that the ambivalence attributed to the concept of god can be expressed at different conceptual levels (gender, emotional valence, semantic and attachment categories, etc.). For instance, as children combined both secure and insecure attachment aspects in their drawings of God, they demonstrate openness to ambivalence and more complex configurations of God representations. This can be interpreted as a sign of healthy development, reflecting the acquirement of psychological capacities such as the ability to tolerate ambiguity and frustration.

Synthesis

In the introduction to this chapter, we asked the question: How is it possible to draw something or somebody that I have never seen? Faced with the task of drawing god, children of school ages provide us with some answers. Even if they have never seen gods, most of them have seen representations of divine beings or of supernatural agents, either in religious settings or in the media. They can fulfil the task in reproducing one of these images to the extent of their abilities.

They can also, without thinking too much, rely on the fact that the concept of god includes intentional agency, and can thus draw god by drawing the prototype of the intentional agent—a human being. The older the child, the more likely that these strategies will be the object of critical cognitive treatment. The child, as she/he grows up, will tend to question the meaning of the concept of god and the adequacy of the iconographic material to which she/he has access, rather than sticking to a spontaneous answer or simply reproducing the iconographic models available in the cultural environment. At least, this is true for specific dimensions. In these studies, the most striking case is found in de-anthropomorphization: we observe that in each successive age bracket (the older the child), more children would draw away from typical human representations. For other aspects, such as gender-typing, emotionality (valence), and spatiality (position), increasing age seems progressively to bring children to conform to religious representations accessible in their cultural environment.

This tendency to apply reflective activity to pictorial representations of god may also be favoured by solicitations from one's social environment. In this sense, religious education appeared to play a role in broadening the child's own repertoire of possible representations of the divine. This could be observed in the preference for non-anthropomorphic representations (vs anthropomorphic) among children receiving religious education. Conversely, when emotional expression is considered, representations of god tend to conform to traditional religious images if children receive religious education. This bears similarity to observations made about the influence of age. Such reflections depend, as noted above, on the specific dimension at stake, emphasising the importance of acknowledging the composite nature of god representations.

We will now break down such critical, reflective, activity into four specific ways that this can be expressed in children's drawings of god. First, as children grow older, they become more and more sensitive to the ambiguity of representing the divine without giving any clue in the drawing to indicate that it is not a mere representation of a human being. Certainly, such a representation can take a metaphorical value. In the same way that Michelangelo consciously painted a very human-looking God on the ceiling of the Sistine Chapel, children are generally aware that their drawings, even if very similar to a human being, are not realistic portraits of God. To emphasize this, they will use de-anthropomorphization strategies. Michelangelo chose to represent a floating God in a celestial environment. This is an example of a de-anthropomorphization strategy: floating in the air is not a property of a human

being. Dessart and Brandt (Chap. 4, this volume) describe a whole series of de-anthropomorphization strategies used by children. Even though their god drawings contain anthropomorphic traits that pictorially signify that they conceptualize god as an intentional agent, the representation of the divine figure and the choice of the context in which it is represented serve to differentiate the representation of god from that of a mere human being. Now, one may yet argue that such strategies follow some sort of implicit rules found in traditional religious images. For example, combining ontological categories can also be found in depictions of angels, with the insertion of wings or of a nimbus. Nevertheless, only age influences the use of such strategies, not gender or religious education. Therefore, even if the representations resemble traditional religious images, they testify to a level of complexity that requires cognitive development.

Second, along with the use of de-anthropomorphization strategies, children can use an additional form of criticism in relation to spontaneous representations of god: the criticism based on representations considered valid (legitimate) within the framework of a given religious tradition. Conformity or non-conformity with these models—which themselves are often also the result of de-anthropomorphization strategies—can be used to question representations that may seem too human. However, this criticism can also simply refer to the prohibition of leaving certain iconographic frameworks.

Hence, the third direction can appear; the representations can be considered as cultural or religious models. There are traces of this in the ambivalence of the gender of god, specifically among girls.

A fourth direction concerns the emotional dimension of god representations and emotional capacities that are a prerequisite for drawing god representations. In all cases, the emotional dimension affects the representations. It is integrated at the cognitive level. Cognitive work is done by children concerning valence. Nevertheless, there is also an emotional impact of the relationship to god and the accompanying relational models. These are highly affect-laden and part of children's implicit memory systems, influencing the expressions of their god representations (the chapter on attachment is a beginning in the field of studies on the affective dimension of the relationship to god and its impact on drawings).

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Part II
Focus on the Main Figure:
Anthropomorphic and Gender Features

Chapter 3

Children's God Representations: Are Anthropomorphic God Figures *Only* Human?



Grégory Dessart 

Abstract In many religious traditions, anthropomorphism plays a central role in visual representations of the divine. As suggested by the notion of *minimally counterintuitive* properties (e.g., Boyer, Mapping the mind: Domain specificity in cognition and culture, New York, pp. 391–411, 1994), some peculiar ontological arrangements (e.g., ontological violations) tend to characterize religious representations. In the case of human-like God figures, such ontological peculiarities may consist of either: a combination of humanness and non-humanness (e.g., a human figure with wings), or a lack of central characteristics presenting qualities that are central to the human category (e.g., a face). The former corresponds to Guthrie's (Faces in the clouds: A new theory of religion, New York, 1993) observation of the recurrent *sameness-otherness* combination with the human being to depict the divine. Such conceptual arrangements may change across a child's development. However, research on children's God representations has systematically considered anthropomorphic figures as distinct from non-anthropomorphic ones. The current work proposes a revised developmental model that accounts for domain-specific properties used by children to signify the special position of God as compared to human beings. That model is particularly appropriate to consider God representations as depicted in children's drawings.

Keywords Anthropomorphism · Cognitive science · Religion · God concepts · Children · Drawings · Development

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Anthropomorphism is present in most interpretations of the world that humans may provide. Are pine trees not standing fierce and tall against wind and snow? Is the moon not smiling at us? As Vosniadou (1989) has proposed: “They thus provide psychological explanations of the sun’s movement (e.g., the sun hides behind the mountain, the sun went home to sleep, the sun plays with the moon, etc.), and attribute to the sun (and moon) certain human-like qualities related to the ability to move independently (i.e., intentionality, playfulness, fatigue, etc.)” (p. 13). Although this has to be taken with a grain of salt given that it can also reflect analogical thinking, it still underlines the central role of the human being to explain phenomena involving inanimate entities.

This applies to rather important aspects of life, including religion. In that regard, the following observation is striking: “Because no clear line separates models of humans and models of other things and events, we are able to find, with no sense of incongruity, all manner of humanity in the nonhuman world.” (Guthrie, 1993, p. 194). As emphasized by Guthrie, gods in many religious traditions have exhibited combined sameness-otherness with the human being. Sameness concerns anthropomorphic traits; otherness deals with qualities that are not human. We propose revised developmental perspective based on the notion of *de-anthropomorphization*. It supposes that a human-based God¹ representation can be made less human, either by (also) implying nonhumanness (which equates to Guthrie’s *otherness*), or by omitting central human characteristics.

It would be valuable to examine whether or not children utilize such an ontological mixture when they are asked to describe God, and if so, how. A child might de-anthropomorphize his/her representations of God to varying degrees across his/her development. Scientific insight on this phenomenon may lead to a better understanding of psychological underpinnings of God representations observed at different points in childhood. In addition, this could help explain such representations found in adulthood. Religious education could play a role as well. The current chapter will address anthropomorphism in God representations and draw upon cognitive approaches to concept development.

Children may find it difficult to communicate verbally their understanding of God, therefore, opting for a visual or graphic method, such as drawing, appears to be particularly appropriate. Moreover, the open-ended question is less limiting and allows children to ponder how they imagine God, without forcefully bringing their attention to matters of sameness-otherness. This approach helps to maintain both spontaneity in the process and richness in the answers.

¹Why the term *god* begins sometimes with an uppercase letter G, sometimes with a lowercase letter g, and why it appears sometimes in the singular and sometimes in the plural, is explained in the introductory chapter of this book (Chap. 1, this volume).

Anthropomorphism in Religion

One may ask why anthropomorphism is so prevalent in our daily lives, why it appears in all religious systems, to some extent, and why it seems to persist both in individual and socially shared forms of religious entities. Guthrie (1993) gives some direction on this topic when he states that humanlike models are adopted and remain, mainly because they demonstrate what is most important to human beings in their world, that is, manifestations of humanness (p. 201). Anthropomorphism goes beyond religious or secular thinking. It encompasses the human's tendency to interpret and perceive any aspect of the world by applying human models. An operational definition of anthropomorphism could be: "systematic application of humanlike models to nonhuman in addition to human phenomena" (Guthrie et al., 1980, p. 181). The main reason we, as humans, over-anthropomorphize events around us is to maximize our chances for survival, by recognizing human presence in our environment (Gombrich, 1956). This sometimes results in false positives, especially when information is somewhat ambiguous (Guthrie, 1993, p. 90). Formerly, research advanced that children comprehend the world based on the understanding they have of their own parents, and conceive of God with a similar anthropomorphic understanding (Bovet, 1951; Piaget, 1929). This all ties into what has been called the *human agency hypothesis* or the *anthropomorphism hypothesis* (Barrett & Richert, 2003; Barrett et al., 2001), which posits that intentional agents (e.g., animals, supernatural agents), are generally explained preferentially in reference to human beings.

Additionally, individuals are also likely to attribute not only intellectual qualities but also emotional states to God (Gray & Wegner, 2010; Haslam et al., 2008). The incentive to do so, at a cognitive level, may be due to the existence of a *Hypersensitive Agency Detection Device* (HADD) that produces an inclination to perceive agency in most natural events, even those involving non-animate objects (Barrett, 2000, 2004). Anthropomorphism would be entailed by a preference for human agency, given that the human being is the "most outstanding exemplar" of the category sentient beings (Barrett & Keil, 1996). The HADD may help the formation of religious concepts and it may also serve to maintain them (Barrett, 2004). A similar, though slightly broader perspective is the one of Bering's (2002) Existential Theory of Mind, which is understood as a "biologically based, generic explanatory system that allows individuals to perceive meaning in certain life events" (p. 4). Close to the notion of agency, the detection of purpose in events is usually called teleological reasoning (Kelemen, 2004).

In addition to the possible cognitive mechanisms involved, the meaning endorsed by anthropomorphism in one's understanding of God is also relatively important. According to Guthrie (1993), God is often depicted with both theological *otherness from*, and *continuity with* the human being. While our general understanding of continuity appears to be rather spontaneous, our understanding of otherness is cultivated through education and intellectual reflections.

We now turn from this overview on anthropomorphism, involving constructs such as agency detection, in order to address theories in connection with the means by which individuals process various ontologies, in the sense of categories of being.

Cognitive Approaches to Religion

The cognitive science of religion has offered thought-provoking accounts of individual perceptions regarding the ontological status of the divine. Those that are of interest to this project relate to the *preparedness hypothesis* and to *ontological violations*. We will address them successively, and then discuss the socio-cultural status of religious representations and the function of analogical thinking in that regard.

The Preparedness Hypothesis

Research in the cognitive science of religion has suggested that children are cognitively equipped from birth to process information about God in terms of correct theistic assumptions—their knowledge about human beings, however, has to be learned (Barrett et al., 2001; Kelemen, 2004). This has subsequently been called the *preparedness hypothesis* (Barrett & Richert, 2003). The evidence provided relies strongly on the Theory of Mind (using false belief tasks) and concerns children in their very early stages of development. Barrett et al. (2001), for example, have shown that 3-year-olds would fail to recognize the knowledge and perceptual fallibility of a person (often the child's mother) vs. God, unlike slightly older children (4- to 6-year-olds). Other agents were included in that research (e.g., an ant, a bear, a tree) and, in the absence of extraneous information, children tended to perceive them as similar to human beings, but God seemed to receive special treatment as a quite different agent. However, these findings are limited, first, because performing well on a false belief task for God at age three does not necessarily equate with a good performance years later, and second, the child's justification may differ from then. This could be interpreted as a poor performance for the human being at 3 years old. It could also be interpreted as an early failure to attribute limits to any sort of agent. The failure to attribute limits seems more likely than a predisposition to understand God. Research in this area is, nevertheless, insightful with respect to the fact that there is, from early on, differentiation between God and the human being; they are processed as dissimilar agents to some extent.

These observations introduce fine nuances of anthropomorphism in religions, without contradicting Guthrie's thesis. Indeed, it has been proved that when individuals are put under cognitive constraints they tend to automatically explain events involving God with more anthropomorphic terms than they would usually use (Barrett & Keil, 1996). As acknowledged by Barrett and Richert (2003), not all divine attributes are likely to endorse *preparedness* because they are "conceptually burdensome" (e.g., non-temporality, omnipresence). A possible implication for developmental differences in the representation of God might be that older children may be more able to apprehend non-anthropomorphic properties of God due to more advanced cognitive functioning. In particular, they have better working memory skills. This breadth of research is, nonetheless, very specific to the perception of intentional agency, and this may only tap into one very specific aspect of God representations.

Ontological Categories of the Divine in Childhood

It has been suggested that what makes the social transmission of religious concepts successful is that they endorse attention-grabbing *ontological violations* (Boyer, 1994; Boyer & Walker, 2000). Such violations take place through the inclusion of *minimally counterintuitive* properties (Boyer, 1994; Norenzayan et al., 2006; Sperber, 1996; Upal, 2011) as the backdrop to a main ontological category. Such a category may be the human being, for example, which fits a Western Christian environment. As initially observed by Boyer (1994), religious entities are often represented as non-physical entities that resemble human agents psychologically, but are not bound to biological constraints.

From a developmental perspective, the notion of *ontological violation* as typical of religious entities is not self-evident because it requires the perception of a reasonable degree of counter-intuitiveness, which cannot be guaranteed at early stages of development. Focusing on a series of studies on preschool children we see a number of things. First, Harris et al. (Harris et al., 1991) have shown that it is not always clear for children whether an imagined creature may or may not become real. Second, plausible causality may be subject to various levels of credulity among young children (Johnson & Harris, 1994). Third, even though children's understanding of the distinction between living entities and inanimate objects may be somewhat elaborate at times, often, it remains uncertain (Carey, 1985; Wellman & Gelman, 1992; Wright et al., 2015). It is therefore unlikely that religious beliefs are socially transmitted because counter-intuitiveness has created salience. Rather than positing a voluntary attention-grabbing effect of religious entities through ontological peculiarities, the current paper will focus on conceptual changes taking place across the child's development. It will, nevertheless, draw upon this previous body of research showing that God, as a religious entity, may encompass several ontological categories, and the human category holds a particularly important place.

The Semi-Propositional Nature of Cultural Representations

Cultural representations are not necessarily understood literally. In fact, they might be *semi-propositional* for they are evocative and in-context notions that do not ineluctably have a tangible existence in the natural world (Sperber, 1975, 1996). If they are semi-propositional, cultural representations still ignite genuine emotions, for example in the course of religious rituals. Atran (2004) suggests that religious propositions are evocative and leave the sphere of "normal" meaning. He bases these ideas on his understanding of culture as a shared cognitive structure, with various intertwined ideas and conducts. Such a cognitive approach, in addition to addressing specialized information processing systems and explicit representations, puts a special emphasis on the social and the cultural (Clément, 2003). Shared (religious) representations are explicit, but part of their structure might remain implicit, because they are based on a cognitive structure that is not systematically accessible to one's consciousness.

In addition to cultural representations being counterintuitive or semi-propositional, there is a possibility for them to be taken for granted. This claim has been made in relation to *cultural analogies*. Cultural analogies may have a binding effect between domains of knowledge by highlighting their commonalities, drawing conceptual connections between human and non-human being, for example (Descola, 2005). Kaufmann and Clément (2007) have proposed a social naturalism thesis that emphasizes two major aspects. First, analogy-making is a basic operation that acts as a binder for relational networks typical of human culture. Second, *quasi-perceptual* systems of inference are at work in order to recognize forms that are socially relevant within a given society. By emphasizing the intuitive quality of *cultural analogies*, Kaufmann and Clément (2007) have suggested that these are based on mainly unconscious mental foundations. These shared foundations offer a limited range of possible patterns of meaning, which makes cultural representations commonsense and rather intuitive through the continuity of analogical mapping. As they put it: "... natives 'see' the analogical mappings that make sense of their society as a whole without being able to justify them" (p. 245). Analogies, therefore, enable the folk apprehension of even highly complex or hardly graspable notions—such as the concept of God. It is important to note that the metaphoricity of analogies can be forgotten if they become socially conventionalized (Johnson, 1981; Miller, 1979). A lack of access to their historicity and their progressive construction, may lead to conceiving of various cultural forms as "natural" truths.

At a cognitive level, this view competes (in part) against a more standard ontological understanding of minimally counter-intuitive qualities of religious entities. The latter focuses mainly on domain-specific information processing, positing that subjects necessarily use a causal, sequential thinking that divides representations into different parts according to the domains they cover. The current explanation, however, suggests that analogical reasoning is mostly at work in the context of collective representations that involve a holistic form of reasoning, hence the rather intuitive nature of religious entities within a community.

In this section of the chapter, we have presented notions that are central to the conception of religious ontologies. We have reviewed theoretical aspects that draw significantly on analogical thinking and metaphoricity. We now turn to more general concept development: the formation of categories and the acquisition of domain-specific knowledge in childhood.

Concept Development: Children's Cognition and Socio-Cultural Background

Categories and Domain-Specific Information

A child's intuitive physics and intuitive psychology are so elementary that they may guide his/her basic early categorization of the world into a category of physical objects and a category of sentient beings (Carey & Spelke, 1994). Thus, if God is perceived as an intentional agent (Barrett et al., 2001), then as a consequence of

categorization process, God would likely fit the psychology/sentient beings category. In addition, having “humans as the most outstanding exemplar of this category it would be expected that God would share many properties in common with humans” (Barrett & Keil, 1996, p. 243). Indeed, children do identify persons as persons based on their action-related agency (Wellman & Woolley, 1990), which may be perceived as similar to God's.

Basic conceptual domains, such as physical objects, biology or psychology, undergo major conceptual changes throughout childhood. For example, *differentiation* occurs for concepts of dead and inanimate, and *coalescence* takes place for the concepts of animal and plant, which are both included in a new *living thing* concept (Carey, 1985, 1988). Carey and Spelke (1994) define conceptual change as follows: “Conceptual change involves change in the core principles that define the entities in a domain and govern reasoning about those entities. It brings the emergence of new principles, incommensurable with the old, which carve the world at different joints” (p. 179). Accordingly, conceptual change consists in the creation of new ontological categories through conceptual differentiation (p. 179).

Wellman and Gelman (1992) have proposed that *foundational frameworks* are constructed as children's concepts coherently fuse into theory-like systems of understanding. In that context, they stress the importance of *coherence* and *consistency*, which concern, respectively: the reliance of one concept on another, and the contradictions between concepts. One could then hypothesize that the God concept is *coherent* with the one of the human being, but not fully *consistent* with it. The degree of non-consistency could represent the extent to which god is perceived as different from a “standard” human being. Following this line of thought, it appears that maintaining such coherence alongside partial consistency is intuitive (rather than not), and therefore it leads to the maintenance of the conceptual bonds between God and the human being.

Children, nevertheless, do face conceptual challenges when confronted with overlapping properties or transgressions in core principles of some categories. For example, sand does abide by the continuity principles of physical objects but does not obey cohesion, and therefore it fits the *matter* category better. Likewise, the Christian God may display love and benevolence, which are qualities typically attributed to the concept *person*, which is also part of *living things*. At the same time, God may be understood as more than a living thing, but does not necessarily fit the category of *physical object*, and so on. Conceptual reorganization may occur in children based on their own experiences and education, which goes beyond simple conceptual enrichment (Carey & Spelke, 1994). Education is a particularly relevant potential source of influence on developing a concept of God, given that unlike many other concepts there is no real-life referent for this category. Carey and Spelke's *mappings across knowledge domains* (1994) may apply to the notion of God, and modifications of the core principles of the domains concerned would then lead to consequent alterations of God concepts.

In a similar fashion, children may use *analogical reasoning*, which is defined as the “identification and transfer of an explanatory structure from a known system (the source) to a new and relatively unknown system (the target)” (Vosniadou,

1989). Such reasoning can take place between two systems, across domains on the basis of similar salient properties. It can evoke structural resemblance, and can facilitate knowledge acquisition for new conceptual systems in situations where current knowledge fails (e.g., in the absence of a real-life tangible referent, such as in the case of God). The more richly structured a representation system is, the more potential it has for drawing relational analogies with others. Analogies between God and a person may be based on either surface properties (e.g., physical human-like resemblance) or structural properties (e.g., intentions, thought, deliberate action), and, referring back to earlier claims, one is not more abstract than the other, but rather, situated at a different level of analogy. Theories may change through the use of (other) analogies when an existing theory is deemed no longer adequate. This is how religious education or frequent reflection on the topic of God may lead to a wider variety of analogies (in addition to the most frequently used analogy, the human being). Furthermore, multiple analogies may support the understanding and acquisition of complex concepts (Spiro, 1988). This corresponds even more closely to the way God is understood in a Western Christian environment: complex and of a manifold nature (Gibson, 2008). Progressive de-anthropomorphization of God representations and ontological hybridism may therefore partly be explained by resorting to analogies.

The Importance of Testimony in Children's Development of Various Concepts

Children may have spontaneous ideas about certain notions, and, for example be called "intuitive theists" (Kelemen, 2004) when it concerns their initial understanding of the religious domain. However, they do not grow up in a vacuum. They may rely much on claims that are made by other people around them. In particular, Harris et al. (2006) have investigated the ways that a child's development of certain concepts might depend on what they hear, or see, from adults, that is to say, on the testimonial evidence provided to them. Harris and Koenig (2006) have shown that children's acceptance of other individuals' testimony does not only apply to the empirical domain but also to domains for which they cannot receive first-hand observations, such as religion and spirituality. It is important that they do not only repeat what they are told, but they rework that information into coherent conceptualizations of the domains concerned. Indeed, testimonial knowledge might at times be incomplete, and in such a case the children would need to fill the knowledge gap. Testimonies may also not only complete a child's current understanding of a notion, but they may be conflicting with his/her own views (e.g., the fact that the earth is shaped as a globe). A child's intuitions do not seem to block later acceptance of testimonial claims.

Harris et al. (2006) have explored children's (between 4 and 8 years of age) judgement about different sorts of entities: real entities (e.g., cats), scientific entities (e.g., germs), endorsed beings (e.g., Tooth fairy, God), equivocal beings (e.g.,

monsters), and impossible entities (e.g., flying pigs). The goal was to examine children's intuition about the ontological status of such entities. It is important to note that, apart from real entities, children have never had access to firsthand observations for the other kinds of entities under scrutiny. On that basis, their own beliefs, their perception of others' beliefs, their degree of certainty and the types of justification they use likely reflect the surrounding discourse about the entities concerned. Similar patterns were observed between beliefs about the scientific ontological category and the endorsed beings category. However, children were more confident that scientific entities exist, arguably reflecting the relative degree of consensus about them in the discourse they are exposed to. The types of justifications they gave also differed. It is interesting that, while they gave more generalization arguments to justify the existence of the former they were also less sure about their appearance, this was not the case for the latter (endorsed beings, such as God).

This new set of evidence departs slightly both from assumptions made by theorists that children progress towards more objectivity, and from a strictly Piagetian framework, given that they rely on second-hand observations. The importance of children's background, from early on, can be shown also through a careful re-reading of a study by Harris and Koenig (2006) of Evans's, 2001 work. Evans (2001) compared 6-, 9-, and 11-year-olds belonging to two different groups, fundamentalist or non-fundamentalist, with regard to their understanding of creation and evolution. Findings indicate that children from the fundamentalist group, at all ages, support creation explanations more strongly than those in the non-fundamentalist group do, even among 6-year-olds.

Trust is an essential aspect of testimony reliance. Children prove to be sensitive to their informants' accuracy to predict future behaviors, they judge the informants as sources of information, and adjust their own attitude to specific informants accordingly (Clément et al., 2004; Koenig et al., 2004).

In the case of religious beings, children are influenced by claims that they hear about religious beings. Moreover, the *minimally counterintuitive qualities* (MCI, Boyer, 2001) attributed to the religious beings add to the number of reasons why children should remember and recall them in a certain way.

Complexity of God Figures: A View of Multiplicity

Un-Dichotomizing a Binary-Based Change and Calling into Question Non-Anthropomorphic-Abstract/Symbolic Connections

It seems necessary to propose a somewhat more nuanced outlook on children's drawings of God with regard to the issue of anthropomorphic-concrete and non-anthropomorphic-abstract/symbolic connections that have been made in past research. Such assumptions have strongly relied on a Piagetian framework of cognitive development to explain how growing out of the concrete operational stage (by 11–12 years old) may coincide with greater ability to deal with abstract concepts.

This translates into more abstract or symbolic God representations, that is, representations that are non-anthropomorphic. Positing that non-anthropomorphic figures are more abstract or symbolic appears to be a mistaken assumption because a human figure, a bird, a cloud, or a light are no more or less abstract than one another. In fact, either a light or a human being (or both together) may be used as metaphors for protection and guidance, and their drawn form does not change their level of abstraction.

Nevertheless, the notion of *centration-decentration* (also borrowed from the Piagetian framework) might be more useful to interpret such a shift in children's God representations. Centration is characteristic of the preoperational stage and consists in looking at only certain *egocentric* aspects of a situation (Piaget & Inhelder, 1969). In the present context, it may lead young children to focus particularly—and almost exclusively—on anthropomorphic properties, but as their cognitive abilities develop, children may simultaneously take into account other, non-anthropomorphic, aspects of the God figure as they conceive of it. In this way, they move from a position of centration toward a position characterized by a stronger sense of decentration. Although this notion seems to apprehend the occurrence of non-anthropomorphic features better than the notion of abstraction abilities, it still does not fully explain the reason that such features appear, given that they are not naturally entailed by decentration. Indeed, unlike a problem-solving situation, expressing a representation of God may not consist in looking at a relatively wide range of options that are readily available, choosing elements from among these options, and incorporating them into a representation (cut and paste). Instead, expressing the concept of God may require that a child tap into a potentially complex conceptual network of ontological categories that overlap when activating the concept of God.

Types of God Representations and Their Multiplicity

God representations might be particularly composite and complex, and such complexity may be modeled in different ways. The generic term *god representations* (Davis et al., 2013) may comprise two distinct kinds of representations (Lawrence, 1997; Rizzuto, 1979). On one hand there is the *God concept*, being explicit, intellectual, and conscious; on the other hand there is the *God image*, being implicit, emotional, and mostly unconscious. The former may be called the “head” God and the latter the “heart” God (Davis et al., 2013). Another distinction has been made by Barrett and Keil (1996), who have posited that people hold at least two parallel god concepts. One is anthropomorphic and readily accessible in daily life, particularly when cognitive resources are limited, and the other is theological, deeply reflected upon, and mostly non-anthropomorphic. According to these authors, the task itself could not drive people to anthropomorphize a God concept that is exclusively non-anthropomorphic. An alternative view may be that the God concept is doubly anthropomorphic. It is rooted in anthropomorphism from early conceptual

development, drawing on the human being as an exemplar of the psychological category, and it is also likely explained in very anthropomorphic ways when cognitive resources are limited due to our general inclination to anthropomorphize the world around us. Therefore, more theologically elaborate characteristics of the God concept may reflect only more cognitively advanced accounts of God, without changing its anthropomorphic core. This interpretation is scientifically more economical, given that it does not assume the existence of several God concepts, but instead posits different aspects of one concept that are evoked differently, depending on the situation. In addition, without corresponding exactly to descriptions of the God concept or the God image, this interpretation lines up with notions of implicit and explicit expressions of that concept.

Consistent with this idea, several God schemas may be derived from a God concept in which they are embedded (Gibson, 2008). A schema can be defined as: “a cognitive structure that represents knowledge about a concept or type of stimulus, including its attributes and the relations among those attributes” (Fiske & Taylor, 1991). Schemas are stable and accommodate new information and experiences into their structure (Neisser, 1976). God schemas can be distinctly triggered, and even occasionally overlap at different points in time (Hill & Hall, 2002). This feature according to Gibson (2008) lends itself to the notion of a *working God concept*, temporarily accessible to one's consciousness (cf. working self-concept). For example, based on one's recent experiences, one's concept of God may be more readily accessible as loving or judgmental. Those qualities, loving or judgmental, would refer to different schemas, rather than to two distinct concepts.

Conceptual Hybridism: A Case for God Representations?

Looking at this issue through an ontological lens, we may suppose that God representations are conceptually hybrid, drawing on various categories, most frequently the human being, in order to form as a concept. This paves the way for the current claim that the God concept may be hybrid. Vicente and Martínez Manrique (2016) have argued in favor of the existence of conceptual hybridism. Nevertheless, before delving into more advanced theoretical consideration, I review two central notions of concepts borrowed from the cognitive sciences: *prototypes* and *exemplars*. Prototype theories posit that a prototype is an average representation of a concept, thus it is liable to change and depends on input properties of exposure to new entities that belong to that category (Lin & Murphy, 1997). Exemplars are prominent examples of a given category and their prominence is representative of the frequency of encounter with them (Reisberg, 2015). Exemplars may be retrieved from memory more quickly and with more ease due to their high accessibility (Rohrer, 2002).

Now, in their defense of conceptual hybridism, Vicente and Martínez Manrique (2016) have suggested that two theoretical perspectives are particularly relevant. The first of these, the Varying Abstraction Framework (Verbeemen et al., 2007),

posits that several exemplars, or pseudo-exemplars, can be available for a single category and that these might even be merged together into one representation. Pseudo-exemplars are derived from both prototype-like and exemplar-like properties. Varying levels of abstraction may be reached, from total abstraction involving one prominent single exemplar to lesser degrees of abstraction, indicating that several exemplars are competing because they are simultaneously accessible in memory. The second one, the Conceptual Structure Approach (Moss et al., 2007) proposes that concepts, as they are activated in memory, depend on special features, on the distinctiveness of those features, and on how likely they are to occur together. Their distinctiveness is based on their prototypicality, and the way a concept is activated will depend on the relations among several key features characterizing its internal structure. Even if a particular feature is not selected, it may still influence the process of accessing the working memory and therefore be explicit.

Both hybrid perspectives are potentially insightful when considering God representations. In the context of drawing God, children might be calling forth a conceptually hybrid representation. This might be due to either the co-activation of several pseudo-exemplars, or to the co-occurrence of key features characterizing the concept. Moreover, both perspectives are able to account for slight differences occurring between instances of recalling a concept (e.g., leading to varying god representations) while at the same time, one central criterion for hybrid concepts is maintained, that is, *functional stable coactivation* (Vicente & Martínez Manrique, 2016). On the whole, a hybridist view of the God concept stands as a good candidate to explain why drawn God figures tend to combine several semantic categories (e.g., human being, bird and other animal sub-categories, light, fire and other inanimate categories, vegetal, and so on).

Ontological categories have classically been explained as combinations of predicates and terms depending on predictability relations that concern basic categories of existence (Sommers, 1959). There are two central yet distinct aspects of concept development. New categories can emerge (implying conceptual insight), or they can be developed through refinement—not necessarily ontologically based—between two close categories (Keil, 1983).

If the expression of ontological categories associated with God changes (either in nature or in prominence) across an individual's development, then there must be a reasonable explanation as to why the change has occurred. Previous research has consistently shown that the human being is an early and very important category for developing a concept of God. One plausible explanation for change in the expression of ontological categories may be that a progressive conceptual differentiation from the human being occurs as cognitive abilities develop. Following this reasoning, human features may be dropped and/or some extraneous, non-human elements may be included in the conscious formation of the God representation. Alternatively—and not necessarily in contradiction—there may be variations across development regarding the relative prominence (or selection) of exemplars or features within the conceptual network. In addition to these process-oriented considerations, it is likely that the forces that drive such conceptual refinement pertain both to the general formation and evolution of categories occurring throughout a child's

development, and also to specific education on one particular topic. For example, it is naturally expected that anthropologists hold a different view on the social world than non-anthropologists, one which does not claim essential truth but only serves as a way of understanding: as a theory. In a like manner, religious schooling might lead to a more developed concept of God.

With all these notions in mind, I now consider past research on children's drawings of God, works that accept the binary view on anthropomorphism. After scrutinizing these works, I will suggest a revised developmental perspective on God representations that will lend itself well to empirical testing on visual data, such as children's drawings.

Anthropomorphic vs. Non-Anthropomorphic God Figures in Children's Drawings of God

A classical view on God concepts is that they are initially "crudely" anthropomorphic (Gorsuch, 1988) but they grow into more symbolic or abstract forms of representations, following the child's general cognitive development. Different theoretical frameworks have been used to explain such a change overtime. While a Freudian perspective would posit that the God concept presents itself as the projection of one's father (Freud, 1927); under a Piagetian framework God is assumed to be understood after one's own parents, and can only be appreciated with more distance as one reaches higher stages of cognitive development (Piaget, 1929). Such a shift could be revealed in experimental tasks (Goldman, 1964) and interviews (Nye & Carlson, 1984), but mostly it has been demonstrated in children's drawings.

When asked to draw God, younger children usually compose very anthropomorphic representations, unlike older children who tend to compose non-anthropomorphic drawings of God. Harms (1944) suggested this in a seminal paper on children's drawings of God. Harms study took place in the United States, but it has been replicated in various Western Judeo-Christian environments (Hanisch, 1996; Kay & Ray, 2004; Ladd et al., 1998; Pitts, 1976; Tamm, 1996), as well as in non-Western and non-Christian environments, such as Japan (Brandt et al., 2009) and Buryatia (Dandarova, 2013). This demonstrates the widespread major role of anthropomorphism that can be shown in the religious domain, which is consistent with Guthrie's thesis of anthropomorphism, and it supports the primary role of cognitive development over culture.

In this body of research, different age ranges have been studied: 3–18 years of age (Ladd et al., 1998); 9–19 years of age (Tamm, 1996); 6–15 years of age (Dandarova, 2013); 6–10 years of age (Pitts, 1976); 7–14 years of age (Brandt et al., 2009); 7–16 years of age (Hanisch, 1996). For reasons of sampling and methods discrepancies, as well as an occasional lack of available data, it is difficult to detect if the reduction in the use of anthropomorphism is sudden, or if it is a progressive phenomenon, taking place over a period of years. Based on Hanisch (1996), the existence of a sudden shift may be hypothesized. However, as noted in some of the

studies above, drawings of God judged to be non-anthropomorphic can be observed, to some extent, at any age (e.g., Tamm, 1996).

In addition to age, religious education and socialization seem to play a facilitating role in the use of non-anthropomorphic God representations. Hanisch (1996) has reported an earlier shift among children who were formally exposed to religion when compared with children who had had no prior exposure to religion. Anthropomorphic figures dropped from 70.3 to 21.1% between 10 and 16 years of age in the former group, and went down from 91.9 to 76.2% between the same age range in the latter group. A similar effect of religious education was found in Brandt et al. (2009). Concerning potential differences between religious denominations, evidence is inconsistent as to whether the denomination itself is a significant factor (Pitts, 1976), or not (Ladd et al., 1998).

There are a number of issues with the usage of terms describing what is not anthropomorphic across those studies. Ladd et al. (1998) uses the term *symbolic*, Pitts (1976) uses *abstract*, Brandt et al. (2009) and Hanisch (1996) both use the term *non-anthropomorphic*, while Dandarova (2013) uses the term *non-figurative*. In addition to the disparity of terminology, and perhaps meaning, it is not always very clear what is being assessed in the study. Is the focus placed on the God figure in the drawing, or on the entire composition? Furthermore, different forms of epistemic hurdles appear: a binary view of anthropomorphism has often been adopted to describe developmental changes (e.g., Tamm, 1996); categories of being might be somewhat arbitrarily ordered along some level of abstraction (e.g., Brandt et al., 2009). Examples of more adjusted measures can be found in Ladd et al. (1998) and Pitts (1976), who have specifically employed measures of symbolism and anthropomorphism, respectively. However, there is a lack of clarity regarding what the precise object of study is in the former, and the latter has used measurements that may be appropriate for drawings of human beings (see the Goodenough-Harris Draw-A-Person test) but show limited application on drawings of God that do not appear entirely human. Yet what is common to all such research is that there seems to be an overall tendency for children to move away from merely anthropomorphic God representations, as they grow older.

This general literature review of relevant theoretical constructs, on the one hand, and of children's drawings of God, on the other hand, leads to the goal of the current chapter, which is to suggest a revised developmental perspective on anthropomorphism in God representations.

A Revised Developmental Perspective on Anthropomorphic God Representations: Progressive *De-Anthropomorphization*

As it has been shown, anthropomorphism in religion can be understood as the “systematic application of human-like models to nonhuman in addition to human phenomena” (Guthrie et al., 1980). Our perspective departs from such views by looking at this issue from the other end. Anthropomorphic forms of God in individual

representations will be considered a first conceptual anchor. Unlike the HADD postulated by Barrett, our view does not attend to perception under cognitive constraints, but instead on the deep conceptual construction of the divine.

The main issue at stake, therefore, is how such representations lose their humanness, that is, how they are *de-anthropomorphized*. I propose that it is not (only) a matter of shift (i.e., from anthropomorphic to non-anthropomorphic), but (also) a question of balance between ontologies (i.e., between humanness and non-humanness). As a first step, I will define de-anthropomorphization. As a second step, I will hypothesize the developmental course of God representations, on that basis of de-anthropomorphization. More specifically, I will address the following question: If God representations are initially mostly anthropomorphic, how do they become progressively less “human”?

What Is Meant by De-Anthropomorphization?

There are a few theoretical assumptions that are implied by the term *de-anthropomorphization*. First, *un-*doing something supposes that there is an initial representation of that something. In this case, it means that the subject conceptually grasps the idea of a human being in a first stage and then proceeds to some alteration of that idea in a second stage.

Past developmental research indicates that very young children are capable of representing the human being. Children as young as 4 years of age manage to draw a human figure that can be recognized as such, and from age five or six, they are generally able to draw the limbs with increasing detail, including the extremities (Royer, 2011). At a conceptual level, children begin by making broad distinctions between the categories of things and sentient beings (Carey & Spelke, 1994). Ultimately, through conceptual change, they come to make finer distinctions within each category and to recognize more accurately what is human and what is not.

Second, de-anthropomorphization entails that some characteristics drawn in conjunction with a human figure contribute to an alteration of its humanness. In a second stage, after conveying the idea of a human being, there is some alteration made to the human figure, in such a way that it is no longer recognizable as an entity that entirely fits the human category. Such alteration may take place outside the human category or within it. More specifically, elements associated with other categories of being (i.e., ontologies) may be brought into the representation. In a similar manner, typically human elements may, by their presence or absence, alter the human nature of the figure. Examples are provided below in the third point addressing assumptions regarding *de-anthropomorphization*.

Some similarity to this may be found outside the study of God representations. Research in developmental psychology has shown that when asked to draw a representation of an entity that does not exist (e.g., a person, a house, or an animal that does not exist) children as young as 4 years exhibit the ability to do so (Karmiloff-Smith, 1990). The complexity of the drawings increases as age increases, reflecting the corresponding increase in cognitive abilities.

Although Pnevmatikos (2002) contended that the background is not an indicator of “conceptual change” about the God figure, but only a possible sign of “belief revision.” I suggest that the context in which the God figure is depicted (the background of the drawing) could potentially contribute to de-anthropomorphization. Certainly, if the point of interest lies in whether the God figure is ontologically altered as a human being, the background should be relevant. Indeed, one may consider *superhuman* properties such as the ability to self-propel into the sky or to hover over the ground. Either of these abilities do convey non-human properties, and when they supply the context for the figure, they suggest to the viewer that the figure deviates from the human category, as ordinary human beings do not self-propel into the sky, nor do they hover over the ground. Such qualities may not only be superhuman but more broadly *supernatural*, making the ontological nature of the God representation more complex and “not only human.”

Third, such alteration may be communicated through the inclusion of elements taken from categories other than human or may be conveyed within the human category. In that regard, de-anthropomorphization was conceived of as combined sameness-otherness with the human being, following Guthrie (1993). Guthrie did not make any particular distinction between a human or non-human base as a conceptual anchor, but the current study does. I positioned anthropomorphic and non-anthropomorphic God figures on the ends of a continuum. This combines a categorical approach with a dimensional one: anthropomorphic stands for the human category and non-anthropomorphic stands for non-human categories, between which there will be forms that combine some parts of each category in various proportions. Closer to the anthropomorphic end we would find figures that are not only human, but are mostly so (i.e., human-based) therefore they are de-anthropomorphized. For example, an angel will generally be drawn as a human figure with wings and a nimbus. At a representational level, it is mostly human, but the wings and nimbus alter the character of the representation and make it not only human. Near the opposite (non-anthropomorphic) end, non-human figures (i.e., non-human-based) may include some human characteristics, hence be anthropomorphized. With this third point being considered, the reader may now get a better sense of what is meant by de-anthropomorphization in the context of the current study.

Additionally, de-anthropomorphization may be administered to a human figure without any reference to other categories of being, that is, while remaining within the human category. For example, a figure may lack essential features such as a face, or may possess extra human features, such as supplemental pairs of arms. Conceptually, this adds a dimension to de-anthropomorphization, in addition to the anthropomorphic-non-anthropomorphic axis.

As an effect, de-anthropomorphization, will be understood as the addition or removal of any element, such that it conveys a sense of *otherness* from the human being, ontologically. As a process, de-anthropomorphization applies to human-based anthropomorphic figures. More precisely, it requires an initial human model to which ontological alterations are made. This is relevant at a conceptual level and the order in which features are added contributes to the interpretation of the

drawing. In that sense, if a cloud has an eye added to it, it will be interpreted (in the context of this inquiry) as an anthropomorphized cloud, and not as a de-anthropomorphized face. For the latter to be observed, there would have to be a more substantial human base to the figure, such as a human body or body parts that comprise the greatest part of the figure.

As a next step, I propose to link de-anthropomorphization with strategies. Utilizing the term *strategy* might carry the underlying assumption that the approach to de-anthropomorphizing is necessarily fully conscious. However, following Bull and Scerif (2001), I concur that generating a strategy “may be spontaneous or may arise through some kind of problem-solving process” (p. 276). Therefore, the term *strategies* will hereby be understood as applying to a potentially broad variety of levels of consciousness (from fully automatic to highly intentional), proceeding from a series of actions leading to a goal (i.e., combined sameness-otherness with the human being). There is some speculation here: can the drawing task generate a goal of de-anthropomorphization as a means to the desired end, the representation of God? Postulating such initial motivation does seem sound when dealing with human-based figures, because the implicit incentive to distinguish God from an “ordinary” human being will be recognized by most participants.

What Is the Developmental Course for De-Anthropomorphization of Children's Representations of God?

Between the two extremes of a binary conception of anthropomorphism, *de-anthropomorphization* supposes two main possible ontological arrangements. In both cases, the resulting human-like figure exhibits some degree of decreased humanness. First, it may imply a combination of humanness and non-humanness, based on some ontological mixture. Second, by lacking characteristics that are central to the human being (e.g., a face), a human-based figure may also be de-anthropomorphized, without necessarily mixing ontological categories.

The main assumption is that de-anthropomorphizing God representations, following either of the two main ontological scenarios, increases with age. A possible consequence of this would be that de-anthropomorphized God figures lie on a continuum between anthropomorphic and non-anthropomorphic representations of the divine, based on the age of the artist. It is also possible that there is no mandatory course of development, and that de-anthropomorphization may be exacerbated without ever leading to completely non-anthropomorphic God representations.

Nevertheless, why should de-anthropomorphization, in this context, be closely associated with age? As demonstrated in previous research, there are several hypothetical reasons for this. One such reason might be that children are exposed to testimonies that orient them in the direction of combined humanness/non-humanness (see Harris et al., 1991). Stories told to young children about God are often simplified, unlike the complex, theologically focused information that the older ones hear

(or see). Suggesting such an impact of the surrounding discourse leaves open the possibility that some children among the youngest may also produce some forms of de-anthropomorphized God figures, depending on how much exposure they have had to differing descriptions of the divine.

Another possible reason is that children grow to reach progressive mastery of cultural codes regarding religious representations. These representations typically combine humanness and nonhumanness, in the Christian world as well as in many other, if not most, religions. This means that children might comply more and more with the analogical complexity of the representations provided within their cultural background. This supposes that they get to articulate symbols according to cultural analogies (see Kaufmann & Clément, 2007) relating to the divine.

How does this age tendency occur? It occurs due to increased cognitive abilities, further development of concepts and ontologies, as well as analogical thinking. The youngest children, when exposed to de-anthropomorphization in God figures, do not systematically perceive the analogical nuances that build ontological peculiarities. If the children do not detect them, they are not likely to reproduce them. The presumed hybrid nature of God as a concept (for conceptual hybridism, see Vicente & Martínez Manrique, 2016) is likely to lead children to represent human-like God figures with elements belonging to other ontological categories due to co-activation of conceptual networks that are more or less salient in the working memory. Additionally, children must have acquired a sufficient *theory of pictures* (see Freeman, 1998) in order for them to realize that their drawing has to be decoded by another individual, using a common visual language that supports the communication of ideas about God.

It is important to acknowledge the role potentially played by children's creativity and divergent thinking abilities in that regard; however, these aspects are not emphasized in this project because the general rationale was to make sense of the "mainstream" ontological peculiarities.

General Scientific Rationale

The main goal is to understand better how God representations develop in view of de-anthropomorphization throughout childhood. There is also an incentive to be able to explain continued development of this phenomenon into adulthood. Knowing more about the progress from the early stages will provide more insight the God representations of adults: what adults' God representations are "made of," what their core is, and what earlier forms might have looked like. A child's form of God representation is likely to bear strong influence on any future iterations of God representations because it will constitute the basis for change. It is worthwhile to note that the term "maturation" is purposefully avoided, as the notion of God cannot be reasonably expected to "grow" or to "bloom" from the perspective of the current concept- and analogy-based approach. Instead, it undergoes change, as a concept or a representation, without the idea of being "better." Greater differentiation from

other concepts, such as the human being, may be visible. Similarities to cultural analogies available in one's background may appear more strongly. Focusing on this type of change is radically different from assuming a "favorable" or "normal" course of development for God representations with regard to anthropomorphism.

While all of this concerns individual development, more specifically ontogenesis, there is an interesting parallel that can be drawn with phylogenesis. By adopting a general evolutionary perspective, cognitive approaches to the study of religion postulate the existence of various cognitive devices, information-processing biases, and so on, endeavoring to explain how those may have developed across the species history. Such historical development would be useful to the survival of the species, and this includes the detection of agency (e.g., Barrett, 2000, 2004) or anthropomorphism (e.g., Guthrie, 1993). I do not posit anthropomorphization of God, among many other intentional agents, to be necessary to survival. This project moves in the opposite direction: focusing on more reflected representations of God (rather than in-the-moment hasty inferences). I view anthropomorphism as a starting point, which may then be altered, either by adding non-anthropomorphic properties, or by removing central human ones. If God, as a concept, is hybrid, it may be hypothesized that it benefits from many exemplars; so many, in fact that individuals may be left feeling somewhat perplexed. Borrowing from different concepts, and primarily from the human being, to explain the divine, might have been a social work in progress that was never finished due to the lack of access to real-life referents (apart from cultural productions) and to its complex hybridism. Through the production of cultural forms, including pictures, generations of social actors have been exposed to such conceptually hybrid representations/suppositions about God. They have learned to reproduce such forms, but also to grasp the conceptual signification of such hybridism: God can be conceptualized as human, yet not exactly human. Therefore, without postulating a survival function (as an evolutionary perspective would do), only a parallel between ontogenesis and phylogenesis is drawn. I base the parallel on two main aspects. First, there is exposure to cultural forms about a concept (in this case, God) and their reproduction. Second, those cultural forms reflect human cognition, and the more developed the cognition (as children grow up), the greater the ability to grasp the nuances of the forms.

Better insight into developmental changes that occur in the way children represent God may in turn shed light on the development of God representations across history. Supposing a primary layer of humanness in God, followed by some de-anthropomorphization, the current perspective would suggest that God was initially conceived of as a form of human. Then, the concept underwent some differentiation through decreased humanness. This might have taken the form of ontologically mixed figures or figures lacking central characteristics displayed by human beings.²

²It is important to clarify that such assumptions are meant to bear explanatory power for the current issue, and by no means are they intended to harm the psychological integrity of real-life individuals who exhibit unusual bodily appearance.

Conclusion

Past research on children's God representations, such as children's drawings of God, has relied on exclusive binaries in order to understand the anthropomorphism in such representations. The current project has addressed anthropomorphism in children's God representations from a theoretical perspective. By employing a mainly cognitive approach, I have scrutinized the central theories in the cognitive science of religion as well as those concerning how children develop concepts and ontologies. This theoretical background provided the impetus to move beyond such binaries, and propose a revised developmental perspective that offers two main inputs:

1. Guthrie's (1993) notions of *sameness* and *otherness* provided the basis for the scenario of the co-occurrence of both humanness and non-humanness in anthropomorphic God figures depicted by children. I identify this as a *cross-category approach*. An additional scenario occurs in the case of the lack of central human characteristics. I identify that as a *within-category approach*. These two scenarios contribute to the development of the notion of *de-anthropomorphization*, as described in this work. It implies that children begin with a conceptual anchor in the human category for conceiving of God. They might then proceed to ontological peculiarities, according to the above, that indicate that God is *not only human*.
2. De-anthropomorphization is likely to change across individual development. In particular, it should become more pronounced as children get older. Various factors were suggested in that regard, such as adult testimony and the progressive mastery of cultural analogies. This understanding draws heavily on socio-cultural points of influence, with the caveat that these only come into play to the degree that children have gained sufficient cognitive abilities.

In the main, this sets the ground for further exploration of the issue of anthropomorphism in children's representations of God by proposing more complexity and acknowledging the possible multidimensionality of this phenomenon.

The next step will consist in testing this theoretically revised developmental perspective empirically. The data sample will be composed of children's drawings of God from French-speaking Switzerland. There will also be an attempt to replicate past findings, identifying a shift from anthropomorphic to non-anthropomorphic God figures and a clarifying the role of religious education in children's representations of God. This will permit the reader to observe how these data compare to the data used in previous studies. If the outcome of the replication attempt is positive, it will give more strength to the testing of *de-anthropomorphization* in that sample of drawings. De-anthropomorphization will be explored through the identification of different strategies possibly used by children. In that sense, the inquiry will be partly data-driven. Finally, besides those strategies, drawings of God will be considered according to the status of the representations they display (e.g., figurative vs. non-figurative).

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Chapter 4

Humanness and Non-Humanness in Children’s Drawings of God: A Case Study from French-Speaking Switzerland



Grégory Dessart  and Pierre-Yves Brandt 

Abstract Past research on children’s concepts of God has suggested a developmental tendency moving from anthropomorphic to non-anthropomorphic representations. Besides replication, we tested a model of *de-anthropomorphization*. *Methods.* We collected drawings of God (N = 532) from 5- to 17-year-old children in French-speaking Switzerland and constructed a model of anthropomorphism and *de-anthropomorphization*. Age, gender, and religiosity (i.e., schooling) were utilized as predictor variables in logistic regression analyses. *Results.* Consistent with past research, both age and religious schooling facilitated the occurrence of non-anthropomorphic God representations. Analyses on de-anthropomorphization revealed that age had a positive effect on most strategies (with one exception), and that schooling did not play a significant role in that regard, neither did gender. *Discussion.* The current findings move beyond binary oppositions concerning anthropomorphic God figures, which appear to be conceptually much more complex than previously anticipated. Theoretical as well as practical implications are discussed.

Keywords Anthropomorphism · Cognitive science · Religion · God concepts · Children · Drawings · Development · Content analysis · Individual differences

In the previous chapter “Children’s God representations: Are Anthropomorphic God Figures *Only* Human?” (Chap. 3, this volume) we reviewed relevant scientific literature in order to formulate a revised model of anthropomorphism in children’s representations of God.¹ We found that in children’s drawing of God, composite

¹ Why the term *god* begins sometimes with an uppercase letter G, sometimes with a lowercase letter g, and why it appears sometimes in the singular and sometimes in the plural, is explained in the

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God figures predominate. More specifically, children generally represent God as both human and non-human—at the same time. This finding supports the idea that such representations can be multiple, as Gibson (2008) described in his notion of *god-schemas*. In the present case, the conceptual mixture takes place within a single drawing instance (which corresponds, in that sense, to a specific god-schema). While echoing the idea of minimal counter-intuitiveness found in religious entities (e.g., Boyer, 1994), this finding also moves the debate forward as it allows us to hypothesize that this composite quality of God concepts undergoes change with regard to its occurrence and its degree of complexity, as a function of age and (religious) education.

In this project we test our revised model on empirical data, specifically, children's drawings of God collected in French-speaking Switzerland. We describe the general rationale of this research, based on the model developed in the previous chapter. Then, we present two studies; the first replicates past findings on anthropomorphism in children's drawings of God (Brandt et al., 2009; Hanisch, 1996). The second study addresses the mixture of humanness and non-humanness of God found in such drawings. For both studies, we provide a conceptual visualization (in the form of a tree). The general discussion section will conclude this empirical research and will serve as a follow-up to the underlying theoretical work (see Chap. 3, this volume), summarizing the findings and suggested directions for future study.

Current Research

In order to examine the anthropomorphism of God-representations, and particularly how it develops over time, the current study assessed children's drawings of God. Drawings are relevant for such an inquiry for two reasons. First, trying to explore anthropomorphic and non-anthropomorphic representations verbally could be very difficult, especially with younger children. Drawings allow children to express their visualization of God without the limitation of words, and thus it allows researchers to make comparisons across a wide range of ages. Second, drawings can be used in a free-response format and may benefit from a wider breadth of answers than strict experimental tasks would. For this project, we collected drawings of God from a predominantly Christian sample of children in French-speaking Switzerland. The sample is representative of the local religious and cultural context, participants were mostly Catholic or Protestantism (Reformed).²

introductory chapter of this book (Chap. 1, this volume).

²Switzerland, in fact, is geographically organized by cantons that are officially defined by either one or the other of these two religious denominations.

General Rationale

The first aspect that motivated this project was the need to move beyond the exclusive binaries found in past research on children's drawings of God. These binaries include oppositions such as figurative vs. non-figurative (Dandarova, 2013), symbolic vs. non-symbolic (Pitts, 1976), or—of more importance to this research—anthropomorphic vs. non-anthropomorphic (Hanisch, 1996). More generally, in the psychology of religion, anthropomorphic God representations have been opposed to abstract ones (Barrett & Richert, 2003; Gorsuch, 1988). Such a crude distinction seems to miss the great diversity to be found in children's (e.g., pictorial) representations of God. Methods based on an open-answer format, such as drawing, are useful in that respect because they help researchers to move past their own preconceived ideas and allow them start from the data. Thus, constructing a model of conceptualized God representations through the lens of anthropomorphism would be especially useful, because it would help us to identify terminological discrepancies in past research and allow us to move forward, comparing like with like.

We note that anthropomorphic God figures are not “purely” anthropomorphic; rather, they also incorporate characteristics that indicate non-humanness. It is fundamental to acknowledge this. Previous studies have emphasized the emergence of non-anthropomorphic figures, as presumably more evolved than anthropomorphic ones. It is important that researchers explore further into the anthropomorphic figures, seeking for nuances that indicate a conceptual differentiation from the human category in what appear to be otherwise human God figures. This process of conceptual differentiation, changing a human figure in various ways to indicate divinity rather than mere humanness, qualifies as *de-anthropomorphization*. This term is defined in more detail below (see Study 2). In fact, anthropomorphic God figures comprise the majority of children's drawings of God in several studies that have reported this aspect (Brandt et al., 2009; Hanisch, 1996) as well as in the current data. Additionally, researchers need to consider the drawings as multi-dimensional and thus acknowledge that children may use more than one means to deify figures; multiple strategies can co-occur. Our approach recognizes the deep richness of children's drawings of God, rather than simply placing them in “boxes”. Further, if researchers adopt a developmental perspective in studying such instances of co-occurrence, a more nuanced, strategy-specific account with greater degrees of complexity may, in fact, be more readily apprehended. It is important for the reader to notice that the term *strategy* is used in this chapter in a sense that implies a potentially wide range of levels of consciousness. This view follows Bull and Scerif's (2001) understanding of strategies that: “may be spontaneous or may arise through some kind of problem-solving process” (p. 276).

A second aspect motivating this research was to verify whether or not ontological complexity in God-representations depends on schooling or gender, and particularly whether it increases as a function of age. The main idea behind this was to export Boyer's notion of *ontological violation* in religious entities (Boyer, 1994) to the Christian tradition and to adopt a developmental viewpoint, assessing

child-participants in order to trace the progression of possible patterns. While Boyer's theory relies on the assumption that the subject perceives some minimal *counter-intuitiveness* in religious entities, one may doubt that children acknowledge such adult perceptions. In fact, it could be argued that either young children fail to recognize any oddity of counter-intuitive properties of a religious entity or they find the characteristics of the entity to be intuitive. We can suggest a human-looking God with wings, flying in the sky, as an example of the latter. An adult will likely appraise this as somewhat odd, but a child, having heard that God is a man who lives in the sky, might find this image intuitive; it would be quite normal to have wings if you lived in the sky. Nevertheless, counter-intuitive or not, some characteristics may be perceived as extraordinary. In that sense, living in the sky and having wings is quite unusual for a human-looking individual, and it is that unusual quality that demarcates the figure as a representation of God—not just an ordinary human. Now, the main question is whether or not there is empirical evidence to indicate that children do perceive the extraordinary in events or characters.

There are developmental differences in the types of causal explanations children might put forth when facing a variety of phenomena. It has been shown that 4-year-olds tend to provide “magical” explanations more often than “physical” ones, unlike 5-year-olds, who are more inclined to the latter (Rosengren & Hickling, 1994). Harris et al. (1991) have noted that while 4- to 6-year-olds are capable of distinguishing between fantasy and reality when presented different types of items, it is not systematically clear to them whether an imagined creature could become real or not. Similarly, children aged 3, 5, and 7 years consistently distinguish between reality and fantasy (“magic”) without necessarily discarding the possibility that fantasy could become reality (Johnson & Harris, 1994). On that basis, it has been suggested that children may not limit their classification of events to real or not real. Instead, they might judge events as unexpected, impossible, or magical (Harris, 1994).

From the above, it can be gathered that although there are fine nuances in the way children interpret unusual events, even preschool children do perceive the extraordinary aspects of certain entities or situations. Therefore, from a developmental viewpoint, it is sufficient to assume that the participants from the current study present such ability. Further, the essence of the current inquiry deals, not with the interpretation of an event, but with the active expression of an idea, the graphic representation of which might draw upon extraordinary qualities. To illustrate this point, when investigating the ways that children de-anthropomorphize figures in their drawings of God, our interest does not lie in whether or not they believe that the figure they have drawn actually exists in reality, exactly as they have drawn it, but rather we are interested in how unusual it is. The unusualness is exactly what may mark a central difference between representations of God and representations of ordinary human beings. Because young children are able to make distinctions among a variety of sub-categories within the sentient beings category (Carey & Spelke, 1994), expressing some form of non-humanness in co-occurrence with humanness in the God figure is all but trivial. Drawings that indicate a knowledge of different categories, including that of the human being, are likely to reveal some of the conceptual underpinnings of God figures, as children understand them.

The current research therefore aimed to test this. The main hypothesis formulated for Study 2 posits that non-humanness would become more acute (as a matter of frequency and complexity) with age due to conceptual refinement, rather than diminish as a result of a more accurate perception. We anticipate that this will be seen in the de-anthropomorphization of human God figures, which can conveniently be tested by analysing children's drawings, based on the strategies reported in the theoretical model ensuing from Study 1.

Going beyond the idea of ontological violations (Boyer, 1994), current research can draw upon conceptual change that occurs when categories undergo major refinements (Carey & Spelke, 1994) as well as the possibility that the concept of God may be a hybrid one (Vicente & Martínez Manrique, 2016). Based on the latter, one would assume that mixing humanness with non-humanness in a single God figure would reflect an underlying mix of conceptual networks. The assumption that such a mix might be age-incremental borrows from Piaget's notion of *distantiation* (Piaget, 1929, 1951), which states that one progressively understands the world from a less egocentric (including anthropomorphic) perspective.

Finally, along with providing a much more nuanced account of anthropomorphism in children's God figures, current research should, for the sake of credibility, attempt to reproduce previous findings relying on anthropomorphic vs. non-anthropomorphic representations, that is, Hanisch (1996) and, up to some point, Brandt et al. (2009).

Purpose of This Research

The purpose of the current research was to draw upon past research on anthropomorphism in children's drawings of God and to move the inquiry further. We conducted two studies. The first study is a replication of past findings, showing a shift from anthropomorphic to non-anthropomorphic God-figures. We also intended to bring more clarity to the hierarchical system underlying such types of drawings. We designed the second study to move beyond exclusive binaries, and specifically to explore the de-anthropomorphization strategies exhibited by human-based God figures. This is a way of acknowledging the co-occurrence of humanness and non-humanness in God figures drawn by children.

General Method

In this section, we present the data collection process and measures utilized for the current inquiry. We used the same data for both studies, so the data collection process outlined below pertains to both studies. We detail specific analyses and results for each study in their respective sections, below.

Data Collection

Participants

A total of 532 participants, 5–17 years old (*Min* = 5.64 years, *Max* = 17.24 years, *Mean* = 11.05 years, *SD* = 2.46 years, 51.3% girls), provided a drawing of God that was included in analyses for the current project. Researchers in French-speaking Switzerland met with participants either in the context of regular state (secular) instruction (43.2%) or in the context of religious instruction. The latter was divided into either a religion class at school (as in the canton of Fribourg) or an after-school activity. The primary content of religious study consisted in either Protestant or Catholic catechism, roughly equally divided in the group of participants that researchers met in the context of religious instruction.

Consent was obtained through opt-out for approximately half of the sample, and through opt-in (involving written parental consent) for the other half.

Materials

Participants received the same materials in order to respond to the drawing task: an A4 sheet of white drawing paper, an HB pencil, a ten-color set of wax pastels (yellow, orange, red, pink, purple, blue, green, brown, black, white) and an eraser. After finishing the drawing task, participants also completed a questionnaire that gauged religiosity measures.

Procedure

Researchers met with small groups of participants (about ten children at a time, together in one room) and in the presence of their teacher. All were seated in such a way intended to discourage copying from one another, and ideally, each participant had a table to him/herself. In order to preserve spontaneity, participants were not given advance notice of the task. The task was fourfold and involved: a drawing task (i.e., a drawing of God), a written recall (restatement) of the task, a written description of the participant's own drawing, and a questionnaire. Participants completed the entire task in one session of 30–50 min, although they were told that they could take as much time as they needed.

For the drawing task, we asked the children if they had ever heard the word “God” and suggested that they close their eyes to imagine what God looks like. We then asked the participants to draw God as they had just imagined. We avoided all reference to gender articles, in order not to influence the type of representation (e.g., feminine or masculine, anthropomorphic or not). More details about specific wording can be found in Dandarova-Robert et al. (2016). This task qualifies as a free-drawing task in the sense that participants were not required to perform according

to predetermined criteria, but were instead asked to provide a graphic response to an open-ended question.

Participants worked through the task quietly and individually. After we had given the drawing instructions to the group as a whole, they provided all subsequent instructions, whispered, in one-on-one interactions. Participants would raise their hand to call a member of the research team over at each step of the process, (or if they had any questions at any time). We provided directions for the next step of the task, only when the individual participants had completed the previous step. In this way, the participants were not given knowledge of the tasks in advance. This was particularly important in order to attain a complete answer in the drawing step of the task (e.g., children would thus not be tempted to spread their ideas about God throughout the different segments of the task).

We implemented the written recall of the task to ensure that the participants had a good understanding of what they were being asked to do.

We included the request that participants write a description of their drawing in order to alleviate possible ambiguities in the drawing and facilitate the identification of all elements. Some of the younger participants (5–9 years old) needed assistance with the writing process. In this situation, one of the members of the research team would transcribe the participant's explanation.

We used these explanations in the current study only to the extent that the text related to what the can actually be seen in the drawing; additional verbal elaborations were not be taken into account. We used only the portion of the explanation that related to the drawing itself, and even that portion we only used when necessary to alleviate ambiguity.

The last step in the task involved taking a measure of religiosity. Participants answered a few written questions about their own religiosity and religious socialization.

Finally, at the conclusion of a session, researchers thanked the participants and congratulated them on their drawings.

Religiosity Measures

The main religiosity measure of interest was *religious schooling*, which is described above. Researchers used the context in which the data were collected (religious or secular school setting) to determine this measure.

The questionnaire used to measure religiosity provided us with information about a participant's *religious affiliation* and *prayer practice at home*. We found that the sample was predominantly religious in the sense that 69.4% identified themselves according to at least one religious denomination, versus "does not know" (16.7%), "no religion" (2.3%), or both (0.2%). The majority of participants self-identified according to a denomination from the Christian tradition (64.7%), in descending order: Catholic (38.9%), Protestant (24.2%), Orthodox (0.4%), Evangelical (0.4%), or unspecified (0.8%). Other religious traditions represented included: Islam (3%), Buddhism (0.9%), and Judaism (0.6%). It is important to note

that some overlap occurs between religious traditions: Catholic-Muslim (0.2%). A small number of participants (1.7%) reported both being religiously affiliated and “does not know”/“no religion” (missing data = 9.8%).

Concerning prayer practice, 51.9% of this sample reported praying at home, versus not (missing data = 10.1%).

With regard to possible between-group differences, we observed that: 76.2% of the participants in the religious school group reported being religiously affiliated in contrast to 64.8% of the secular school group. Similarly, concerning prayer practice, 54% of the religious school group reported that they prayed at home as did 49.1% of the secular group. Despite the fact that the religious school group more often reported religious affiliation, both groups may be considered relatively religious.

Religious affiliation and prayer practice helped us to get a better grasp of some religiosity aspects of this sample. However, religious schooling is the only religiosity measure that we retained for the core of the current inquiry. We made this decision because, based on previous research, there is no particular incentive to consider affiliation or prayer practice when examining anthropomorphism. Additionally, we determined that, due to missing data on those measures and the nature of the statistical analyses we anticipated using, the inclusion of those two measures as independent variables would have a detrimental effect on the sample size (which would already be made smaller after narrowing down through the anthropomorphism model, as presented below).

Predictor Variables

We used three predictor variables for our statistical analyses: age, gender, and schooling. Measures are reported for the total $N = 532$ sample. First, we recorded age as a continuous variable (using the child’s exact date of birth and the date of testing): $Min = 5.64$ years, $Max = 17.24$ years, $Mean = 11.05$ years, $SD = 2.46$ years. More details about the age distribution are provided in Table 4.1.

Second, we recorded gender, whether the participant was female (273, 51.3%) or male (259, 48.7%).

Third, we recorded schooling context as secular (230, 43.2%) or religious (302, 56.8%).

Religious Affiliation and Prayer Practice

The participants answered questions regarding their own religious affiliation and whether or not they prayed at home. Among the initial $N = 532$ sample 379 (71.2%) children identified as religiously affiliated, 101 (19.0%) did not do so, or did not know, and for 52 (9.8%) this piece of information was missing. Regarding prayer practice, 276 (51.9%) reported praying at home, 202 (38.0%) reported not doing so, and for 54 (10.2%) this piece of information was missing. We observe that, overall, participants from this sample were rather religious, and predominately Christian:

Table 4.1 Age distribution

Age (years)	Frequency	Percent
5	1	.2
6	14	2.6
7	43	8.1
8	84	15.8
9	57	10.7
10	62	11.7
11	53	10.0
12	72	13.5
13	71	13.3
14	62	11.7
15	10	1.9
16	2	.4
17	1	.2
Total	532	100.0

Catholic Christian (38.9%), Protestant/Reformed (24.2%), Does not know (16.7%), Muslim (3.0%), Atheist (2.3%), Affiliation and Atheist/does not know, (1.7%) Buddhist (.9%), Christian/not specified (.8%), Jewish (.6%), Orthodox Christian (.4%), Evangelical Christian (.4%), Several affiliations (.2%), Atheist and does not know (.2%).³

As mentioned above, we decided that religious affiliation and prayer practice would not be used as predictor variables for a series of reasons. First, there was a relatively high proportion of missing data in that respect (60 cases, 11.3%), and this could become problematic when we take into consideration that sub-samples would progressively be used while reaching down to more specific strategies on the theoretical model tree. Second, we conducted a logistic regression analysis on anthropomorphic vs. non-anthropomorphic figures (outcome variable) for explorative reasons (which corresponds to the crudest anthropomorphism-related distinction in the current inquiry). The statistical model included age, gender, schooling, religious affiliation, and prayer practice as predictor variables (we filtered out missing cases). While schooling had a statistically significant effect ($p = .025$), neither religious affiliation ($p = .100$), nor prayer practice ($p = .566$) achieved statistical significance. As a result of the potential loss of participants for missing cases and the poor

³It is important to note that the proportion of children identifying as Muslims or Jewish was low (3.6% altogether), therefore the larger proportion of non-figurative representations of God found in the current sample could not strictly be attributed to religious denominations that discourage representations of the divine. Moreover, only one child identifying as Muslim was found to produce such an indirect representation of God (others were Christians or uncertain about their religious affiliation).

contribution of those two variables, we chose not to include them in further logistic regression analyses.

Statistical Analyses

This section of analysis concerns both Study 1 and Study 2. Given the binary nature of the outcome variables examined we decided to systematically conduct binomial regression analyses with the following predictor variables: age (continuous), gender (female coded as 0, male coded as 1) and schooling (secular coded as 0, religious coded as 1). Alpha was set at 0.05. Based on statistical analyses from both studies, and in order to balance risk for type I and type II errors, we computed and adjusted the p value with Benjamini-Hochberg's (Benjamini & Hochberg, 1995) false discovery rate method for multiple testing.

Study 1: Anthropomorphic vs. Non-Anthropomorphic God Figures: A Replication Study

Study 1: Aim, Objective, and Research Question

The aim of Study 1 was to replicate past findings on anthropomorphic vs. non-anthropomorphic God figures in children's drawings of God.

The objective was twofold. First, we had an interest in tracing roots of anthropomorphic and non-anthropomorphic God figures in relation to the whole data set. This first step would bring more clarity to anthropomorphism in relation to children's drawings of God. This clarity would be particularly useful for resolving discrepancies in the earlier literature. Second, we intended to replicate past findings on this issue using a sample from French-speaking Switzerland.

The research question was also twofold. First, could we organize the data according to a hierarchical system that relates to anthropomorphism? Second, could we replicate past findings using an anthropomorphic vs. non-anthropomorphic opposition with this sample of drawings?

Hypotheses

Based mainly on Hanisch (1996), and Brandt et al. (2009), we hypothesized that both age and religious schooling would have a positive effect on the occurrence of non-anthropomorphic God figures, but that gender would have no effect.

Construction of a Model of Anthropomorphism in God Representations

We proposed a basic model to capture and discriminate between anthropomorphic vs. non-anthropomorphic God representations. Below we provide general considerations about the construction of that model, followed by the ensuing classification system employed to categorize the data.

Classification Procedure

The first author, who was particularly familiar with the data, examined them thoroughly. The classification system that ensued is based on both expectations (top-down) and observations in the data (bottom-up). Indeed, we realized that an anthropomorphic vs. non-anthropomorphic distinction within the data was only reasonable if carried out with caution. For that reason, conceptual differentiations were made prior to reaching this anthropomorphic vs. non-anthropomorphic distinction. This will be presented below.

The drawings of God, themselves, served as the object of study. Raters did have access to a participant's written description of their own drawing, but the raters only used this material to clarify their understanding of ambiguous aspects. We established the condition stating that raters should only assess what is visible in a drawing, so if the text added extra information that was not in the drawing then that extra information was not considered in the classification process. We made this choice in order to limit over-interpretation. Similarly, despite their obvious religious connotation, raters evaluated drawings for the time point of the drawing (e.g., a scene would be considered for itself, independently of anterior or posterior events known in the religious tradition concerned). Thus, we minimized the impact of the rater's theological knowledge in order to avoid potential biases due to speculations about the participant's own knowledge or intentions.

Classification System in the Model

We achieved a data-driven classification of drawings by placing our main focus on anthropomorphic representations of God. A model of this system appears below (Fig. 4.1). It starts with the $N = 532$ sample of children's drawings of God from the French-speaking Swiss sample. We arrived at this number after we removed ten drawings from consideration because they were not useable for research; they did not respond to the task (i.e., they were unrelated to the topic) or they lacked interpretability.

Working with the usable sample, we first categorized the drawings based on whether the representations of God were direct (figurative) or indirect (non-figurative). We deemed it important to consider this aspect at the very start of the model given that the anthropomorphic qualities of a God figure could only be appreciated if such a figure had been depicted. For example, some participants turned in

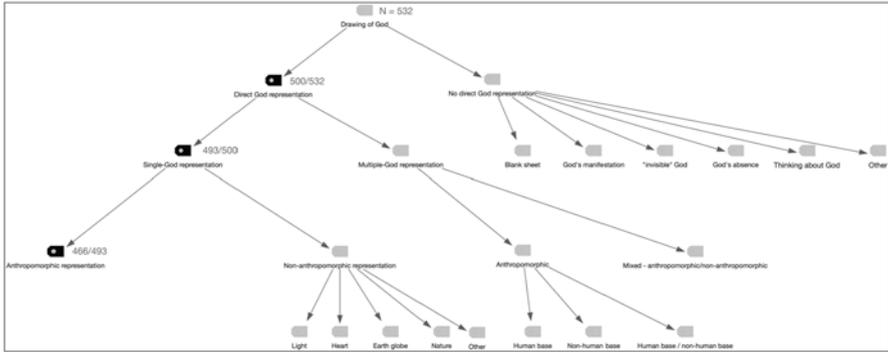


Fig. 4.1 A data-driven model of anthropomorphic God representations tracing hierarchical ramifications

blank sheets of paper (submitted as an actual, intentional response to the task), or depictions of nature highlighting God’s creation. These did not qualify as direct representations of God, but qualify instead as indirect God representations. Dandarova (2013) made a similar differentiation, using the same labels and Brandt et al. (2009) used the terms *relation/narration*. This step, distinguishing between direct and indirect representations of God, immediately brought clarity to the classification systems used in past research, and it helps to situate figures in relation to anthropomorphism. That is to say, the direct/indirect distinction serves as a greater hierarchical differentiation when classifying drawings of God.

Another major classification lay in whether the representation of God held a single figure or multiple figures. We deemed it important, for both conceptual and methodological reasons, to distinguish between drawings in which one figure represents God and drawings in which several figures represent God. We made this distinction because in the case of representations that include multiple figures, anthropomorphic and non-anthropomorphic figures may be mixed together. Moreover, anthropomorphic figures may be de-anthropomorphized to various extents; and this can complicate attempts to compare drawings systematically on the basis of one particular dimension (as we show in Study 2, below). One may argue that such decisions create bias in favour of a monotheistic understanding of God representations. Only seven such (multiple figure) drawings were found in this sample. This aspect (i.e., single vs. multiple) has not been addressed in past research, although familiarity with data from Brandt et al. (2009) and Dandarova (2013) allows us to affirm the presence of multiple-figure representations in other samples, including those drawn from an environment that is not predominantly Christian.

Within the category of single-figure God drawings, we made a final distinction between “Anthropomorphic representation” and “Non-anthropomorphic representation.” This differentiation is the one that we used as an outcome variable for empirical testing in this study. In order to qualify as non-anthropomorphic, a figure could not exhibit any human feature (e.g., eyes in the sky) or even recall the spatial

organization of human characteristics (e.g., three clouds organized as though the form a pair of eyes and a mouth).

At this stage, even before conducting our statistical analyses, we noticed that non-anthropomorphic representations could not account for much of the data, and it became clear that it was necessary to examine further the predominant (anthropomorphic) type of God figures (see Study 2, below).

Results

Alpha was set at 0.02 (Benjamini–Hochberg correction).

The outcome variable was binary and was based on the distinction between anthropomorphic and non-anthropomorphic (single) God figures. The $N = 493$ sample was split into these two groups: non-anthropomorphic God representations (27 occurrences, 5.5%) and anthropomorphic God representations (466 occurrences, 94.5%). The logistic regression model was statistically significant, $\chi^2(3) = 17.129$, $p = .001$. The model explained 9.9% (Nagelkerke R^2) of the variance in anthropomorphism of representation and correctly classified 94.6% of cases. Only schooling remained a statistically significant predictor ($p = .012$, respectively) after alpha correction. Nonetheless, age reached near-significance and was a statistically significant predictor before alpha correction ($p = .027$). Religious schooling and increased age were both associated with an increased likelihood to produce a non-anthropomorphic God representation.

Anthropomorphic vs. non-anthropomorphic God representations overall as well as based on schooling are presented in Figs. 4.2, 4.3, and 4.4. For each figure, percentages are reported by age in order to present a visual representation of the actual proportion of anthropomorphic and non-anthropomorphic God figures. Figure 4.2 indicates such a proportion on the overall ($N = 493$) sample. From the initial $N = 532$, 39 cases had already been removed either as unusable or as indirect representations. Figures 4.3 and 4.4 show such a proportion in the following groups, respectively: the secular school group ($N = 221$, with 9 cases removed), and the religious school group ($N = 272$, with 30 cases removed). The separate reports for the two groups based on schooling (religious or secular) are provided because schooling is a significant predictor variable and because a similar approach has been taken in previous studies, such as Hanisch (1996) or Brandt et al. (2009).

We can make some observations about developmental patterns. There is a progressive increase across age years for the emergence of non-anthropomorphic God figures overall. There is no sudden “bump” to indicate an actual shift. Instead, we see evidence of a progression that begins at age seven, and becomes more marked after age ten. In the secular schooling group, the use of non-anthropomorphic figures to represent God begins later, at age ten. Although the developmental tendency, with increased age, appears to move toward the uses of more non-anthropomorphic figures, it is not straightforward, and there are a few leaps around 10, 13, 15 and 16 years. However, this last observation might be misleading; we must recall that in

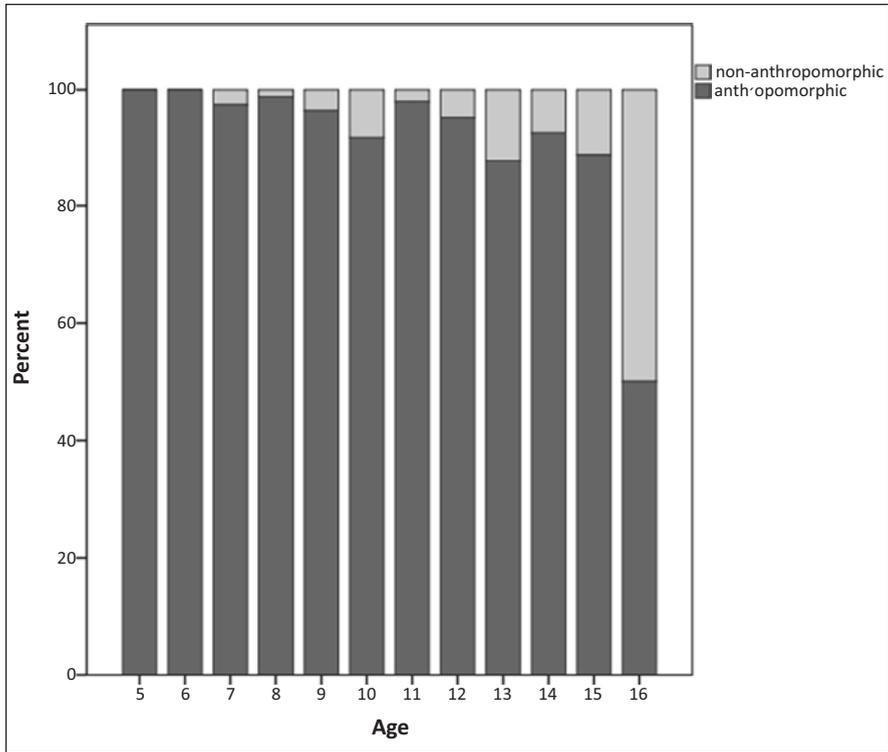


Fig. 4.2 Anthropomorphic vs. non-anthropomorphic God representations overall

this sample, the only participants appearing in that age bracket are drawn from the religious school group.

In order to further the analyses of developmental patterns, we conducted inferential statistics between five age groups: 5–6, 7–8, 9–11, 12–14, and 15–16 years. The use of age groups helped avoid multiplying analyses, and the consequential alpha correction was maintained at an acceptable level of severity. We also split the sample into two groups based on the type of schooling, i.e., religious or secular. We compared age groups by pairs, in an incremental fashion. More specifically, we only compared age groups that were adjacent to one another. No significant difference was found. It is worthwhile to note that the comparison between the 5–6 years and 7–8 years age groups could not be computed in the secular school group due to an absence of non-anthropomorphic figures. Similarly, we could not compute the comparison between the 12–14 years and 15–16 years age groups in the secular school group due to the lack of drawings in the last age range for that group. The general absence of statistical significance may result from the fact that age was a significant contributor overall only. However, it was no longer significant after alpha correction. Therefore, observations about developmental patterns must be made with much caution as they might represent trends rather than actual differences. It is worthwhile to note that for most crosstab comparisons, analyses relied on fewer

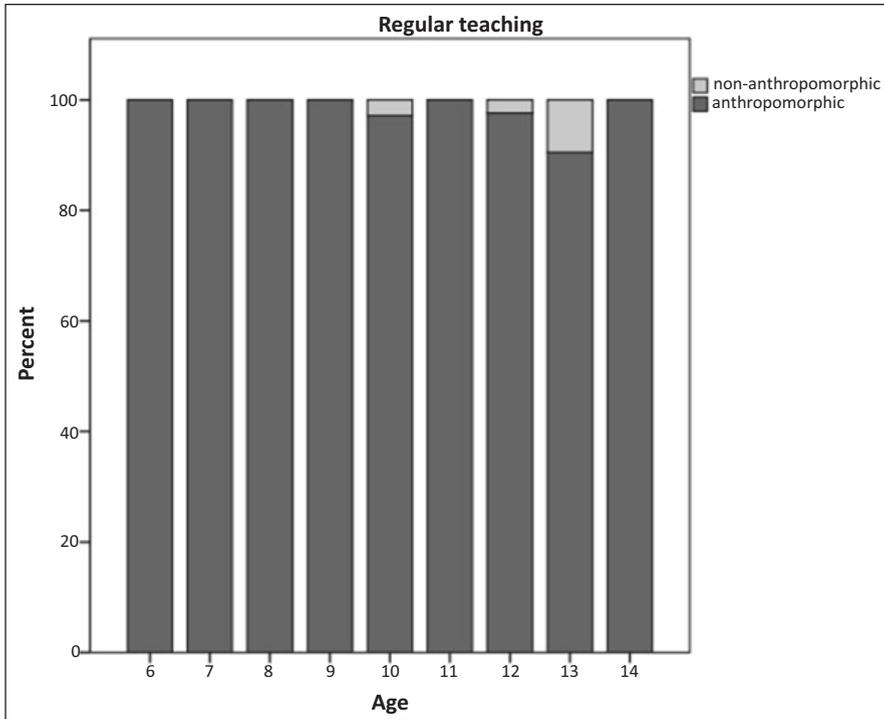


Fig. 4.3 Anthropomorphic vs. non-anthropomorphic God representations in regular teaching

than five cases in about 50% of scenarios, which is due to the lower amount of non-anthropomorphic God figures.

Discussion

In this study, we aimed to replicate past findings on anthropomorphic vs. non-anthropomorphic God figures in children’s drawings of God (Brandt et al., 2009; Hanisch, 1996) in a French-speaking, Swiss sample. This replication was supported to some degree: older participants who were receiving religious schooling were more likely to draw a non-anthropomorphic God figure. However, age was not significant after alpha correction for multiple testing. It must be considered that the model proposed in this study departs from Hanisch (1996) by not considering indirect representations of God to be among non-anthropomorphic God figures. We anticipate that non-figurative depictions of God, lying higher in the tree of the model, would be more likely to be produced by older participants, as observed in Dandarova (2013). Grouping them together with direct representations of God that we identified as non-anthropomorphic in the current research may have led to a

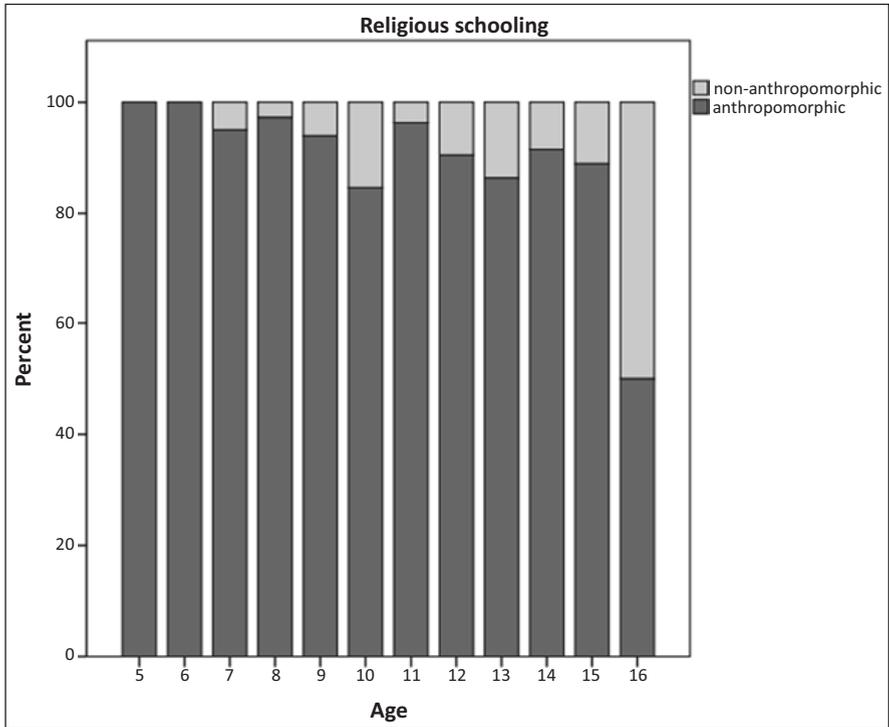


Fig. 4.4 Anthropomorphic vs. non-anthropomorphic God representations in religious schooling

stronger effect of age. Overall, taking into account developmental patterns on the basis of religious or secular schooling, our findings are similar to the trends found in Hanisch (1996) and Brandt et al. (2009), that is, non-anthropomorphic God figures occur earlier among children receiving religious schooling and progress in a more sustained manner as age increases. We will discuss this replication in two steps: first, by age and cognitive development, and second, by schooling. However, before we address this concern about the “behaviour” of the data in relation to independent variables, we will take a quick look at the representativity of anthropomorphic God figures in previous central studies (Brandt et al., 2009; Hanisch, 1996).

The proportion of non-anthropomorphic God figures in this sample is quite small: 5.5%. Of course, as the classification system starts prior to the anthropomorphic vs. non-anthropomorphic distinction, this number might be misleading. Anthropomorphic God figures represent in total 87.6% of the $N = 532$ sample. This equates almost perfectly with the proportion (87.5%) reported by Hanisch (1996) in his non-religious group. However, this percentage is much greater than the proportion of anthropomorphic God figures in his religiously socialized group: 57.8%. When examining the different types identified by Brandt et al. (2009) in a Japanese sample, about 86.62% of the drawings could be judged to be anthropomorphic. They have not used a dichotomous distinction, so for this estimation we considered

the following types non-anthropomorphic: *non-anthropomorphic entity, relation/narration, light*. Once again, this gets close to the percentage found in the non-religious group by Hanisch (1996). This points to two types of considerations. First, there are historical differences between his study and others that are more recent. In an increasingly secularized society, the religious group from the current study somehow behaves like the non-religious group in Hanisch's study. It is also possible that children from his religious group (Heidenheim, West Germany) were receiving a more intensive teaching. Second, it might, be necessary to consider his results in the religious group with caution; he calculates a particularly low proportion of anthropomorphic God figures. When considering both his groups together (i.e., religious and non-religious), anthropomorphic God figures compose 74.14% of the entire sample (N = 1889). It is worthwhile to note that age ranges were roughly similar: 5–17 years in the current study, 7–16 years in Hanisch (1996) and 8–14 years in Brandt et al. (2009). We now move on to general considerations about the role of the independent variables.

Generally, cognitive development may enable children to grasp the potentially complex notion of God through non-anthropomorphic forms as the result of increased ability to *distantiate* oneself from an anthropomorphic understanding of the world (Piaget, 1929, 1951). This understanding differs from an explanation that has recurrently been put forth in several studies, in which anthropomorphic God representations in children are placed in opposition to “abstract” representations (Barrett et al., 2001; Pitts, 1976) or “symbolic” representations (Ladd et al., 1998; Pitts, 1976) as though they (the abstract or symbolic representations) were more mature. Within a Piagetian framework, a graphic representation of God cannot be considered formal but only concrete because it does not deal with an abstract language. Therefore, non-anthropomorphic figures should not be counted as abstract, but should be considered more distant from oneself, instead. Following this line of thought, the representations should exhibit a decreasing *egocentrism* (Piaget, 1951). As for so-called symbolic God representations, it appears misleading to label (only) that which is *not anthropomorphic* as *symbolic*. Indeed, a human figure can also stand for particular qualities perceived in God. For example, we found, through reading the participants' written descriptions, that the presence of sense organs can sometimes highlight or symbolize extrasensory perception. Additionally, one participant acknowledged (during an exploratory qualitative interview belonging to another part of the current project) that she had drawn God as a male individual although she did not limit her own understanding of God to male; it was simply easier to mark God's presence that way. Thus, characterizing representations of God as *symbolic* pertains more to the use of metaphorical thinking than to indicating the opposite of anthropomorphism. Unfortunately, with regard to the drawings, it is difficult to make such a distinction without having access to the participant's intentions.

It is interesting that Hanisch's (1996) study was conducted in Germany, and exposure to religion was predominantly Christian, while Brandt et al.'s (2009) study was carried out in Japan and a portion of his participants received religious instruction in the context of Buddhist traditions. Taken together, the findings from those two studies may provide a more nearly universal explanation of the production of

non-anthropomorphic God figures. More specifically, if we assume that religious schooling has a similar effect as age and facilitates the emergence of such types of representations, it should influence those representations in a way that makes them more “mature” (i.e., aligned with a developmental shift observed to move from anthropomorphic figures to non-anthropomorphic ones). In that sense, the effect produced would be that religious schooling would lead to a more developed God concept, presumably by means of intensive and repeated thinking about that concept. Nevertheless, this broad anthropomorphic vs. non-anthropomorphic distinction may be somewhat basic and lack precision. For that reason, we examined finer de-anthropomorphization strategies. After considering those strategies, we will again take up the thread of the presumed role of religious schooling and provide another interpretation.

We also intended, through this study, to situate anthropomorphic and non-anthropomorphic God figures among the sample. Our initial idea was that sorting drawings of God into those two camps was not so straightforward, and that it might be more effective to employ another level of classification (i.e., direct-indirect) prior to the anthropomorphic/non-anthropomorphic distinction. The construction of a hierarchical system of classification has brought to light the ramifications of using anthropomorphic/non-anthropomorphic as the central distinction in grouping drawings of God. Through tracing the categorization process, we were able to apprehend some of the discrepancies found in past research and to situate them in the model. For example, Dandarova (2013) uses the distinction of figurative vs. non-figurative, rather than anthropomorphic vs. non-anthropomorphic. We now see that those categorizations were in fact compatible, and that Dandarova addressed an issue that lies higher in a hierarchical system of classification. The same cannot be said, however, of the anthropomorphic vs. symbolic or the anthropomorphic vs. abstract dichotomous constructions. The use of the terms (*symbolic*, *abstract*) in past research on drawings of God (Ladd et al., 1998; Pitts, 1976) was applied not only to the God figure, but also to any elements in the drawings. This may have led to some methodological incompatibility between those studies and studies, like this one, that focus primarily on the God figure. Study 2 will show that this nuance is more complex than just a point of focus, as the background and other elements in the drawings will also be taken into consideration, *but only insofar as it brings information about the God figure*. It is this point that makes the difference between the different methodological approaches and their related rationales. Ladd et al. and Pitts have shown a broader interest in addressing the development of a certain type of “language” in drawings of God. Their use of the terms *symbolic* or *abstract* appear to pertain to an acute use of metaphorical language overall, even prior to the process of classifying God representations.

Overall, we find that the anthropomorphic vs. non-anthropomorphic distinction can be useful up to a certain point, after which more nuance is required in order to move beyond the sole use of dichotomous categorization. One possibility is to step away from further pursuit of exclusive categories, and instead, to identify various graphic scenarios that exhibit a combination of humanness and non-humanness in their representation of God. We will address this in Study 2.

Study 2: Beyond Binaries: Empirically Testing Children's Utilization of De-Anthropomorphization Strategies

Aim, Objective and Research Question

This study relates directly to Study 1 as it follow-up on anthropomorphic God figures in children's drawings of God.

Our main aim was to explore how human-based God figures may exhibit characteristics that make them not merely human, that is, how some *otherness* may be indicated—in addition to *sameness*—with regard to the human being. We investigate the anthropomorphic issue in children's drawings of God much more thoroughly, by moving beyond an exclusive dichotomous anthropomorphic vs. non-anthropomorphic opposition. Consider this simple example: an angel is not *only* anthropomorphic, due to its wings, as well as to the celestial background upon which it is typically shown. This illustrates how a God figure that is predominantly human (i.e., human-based) may exhibit de-anthropomorphization through various graphic aspects. The results of de-anthropomorphization suggest a degree of *otherness* (through one or more supra-human qualities); through de-anthropomorphization, a child can convey the idea that God is “not only human.” Arguably, despite such great ontological nuances (i.e., combined sameness-otherness with the human being) human-based God figures may have all been sorted into the anthropomorphic category in past research.

Our objective was twofold. First, we intended to move beyond exclusive binaries and propose a model of strategies that make human God figures “not only human.” The underlying idea was that such strategies could potentially co-occur in drawings, and we needed to find a model that would accommodate this, unlike the previous strict categorical system (see Study 1). Second, we would place a special focus on de-anthropomorphization strategies, which would be tested empirically.

The research question was also twofold. First, what specific strategies might children apply to human-based God figures to convey a sense of otherness from the human being? Second, what are the respective contributions of age, gender and religious schooling to the utilization of de-anthropomorphizing strategies?

Hypotheses

Concerning the second part of the research question, in the light of previous research, we hypothesized that de-anthropomorphization strategies should be positively associated with age (see Brandt et al., 2009; Ladd et al., 1998; Pitts, 1976) and religious schooling (see Brandt et al., 2009), but not with gender. Similarly, the complexity of utilization (understood as co-occurrence of strategies) would depend on age and religious schooling.

Method

Assessment and Analyses

We used the inventory resulting from Study 1 in order to conduct group comparisons based either on types of God representations or on de-anthropomorphizing strategies. Drawing upon the notion of de-anthropomorphization, defined in the previous chapter (Chap. 3, this volume), we defined different forms of de-anthropomorphizing strategies that we could test empirically, using our dataset (see General Method, above).

Familiarization with the Data, Inventorying and Sampling Down

In order to conduct this study, it was necessary for the researchers to become deeply familiar with the data so that they could start identifying different case scenarios revolving around anthropomorphism. Because it was our aim to move beyond binaries, we chose to look at all God figures that could qualify as anthropomorphic, that is, all that had any human features in them. However, before moving forward, we also made an important decision with regard to drawings that showed several gods (e.g., several anthropomorphic God figures, or a mix of anthropomorphic and non-anthropomorphic God figures). Because the drawings with several gods were rare cases, we decided to consider only the single-God drawings in our quantitative approach.

Among the single-God drawings, some depicted a God figure that was anthropomorphic and others showed a God figure that was not anthropomorphic at all (e.g., a light, a cloud). Scrutinizing those anthropomorphic figures, it we observed that the majority of them were based on the representation of an ordinary human being (we use the term *human-based*) whereas a few drawings were based on a figure that was non-anthropomorphic (e.g., a cloud) but that also exhibited some human features (e.g., eyes and mouth). At this stage, we faced another important decision: Should both types of figures be analysed together, or should they be distinguished from one another? In order to compare like and like when identifying de-anthropomorphizing strategies, and given that de-anthropomorphizing should rely on an initial human model, we chose to examine only the human-based figures for this study.

It is essential to understand the essence of these choices. They focus the scope of this study, allowing us to consider and compare similar data for a specific type of strategy that moves beyond binary distinctions. By no means do our choices for analysis at this level deny the richness and complexity of other types of drawings that were not examined for this particular study.

Looking at the anthropomorphic human-based God figures, we immediately noticed that a striking majority of them had something that made them look different from an ordinary human. The first author started to explore the sample and to seek for possible variations in the way those God figures displayed otherness (appeared as not-only-human).

Our inventory of strategies began with a broader perspective and a more ambitious goal. We targeted recurring scenarios involving anthropomorphism in general. In order to focus on the strategies used in the process of de-anthropomorphization, we did not analyse strategies that moved in the opposite direction. We did not focus on how non-human elements (e.g., a cloud) were anthropomorphized, or how inanimate elements usually associated with the human being (e.g., clothes) were depicted in the absence of a human figure. We also considered analysing the level of complexity of the human God figures; however, we later judged the element of complexity to be a function of a participant's graphic skills rather than a reflection of the perceived characteristics of divinity, *per se*. For the sake of feasibility, we restricted the focus of this study to de-anthropomorphization. The strategies that we retained for analysis, we now be present in detail.

De-Anthropomorphizing Strategies

Following this phase of familiarization, characterized by exploring the data and making decisions regarding scope and analysis, we settled on a limited set of central strategies with which to move ahead. These strategies are representative of the current sample and can be conceptualized in a way that is relevant beyond the strict format of drawings. Future research may pick up this thread and examine these strategies with regard to the use of other formats or media.

As explained earlier in this article, researchers found evidence that participants achieved de-anthropomorphization either through the God figures themselves, or through the background. We describe each relevant strategy below (for additional relevant illustrations, see Appendix Figs. 4.11, 4.12, 4.13, 4.14, 4.15, 4.16, 4.17, 4.18, 4.19, 4.20, 4.21, 4.22, 4.23, 4.24, and 4.25).

First, with respect to de-anthropomorphization of the God figure through that figure, three main types of strategy emerged: cross category, within the human category, and scission.

Cross-Category

Structural In this strategy non-human features are affixed directly to the God figure's human body (e.g., a pair of wings, or a tail replacing the legs), in a way that conveys the idea that they compose that figure. It may also happen that non-human element(s) occur as though they are inextricable from the human ones. For example, the color yellow, when used to fill in the body, may be intended to indicate that the body is "made of light."

Associated In this strategy, non-human features are associated with the God figure but are not strictly part of body, itself. Examples of this strategy include a halo, an aura, or coloured rays emanating from the God figure. We observed in the data that rays of color drawn near the figure or touching it may indicate power.

The main difference between the structural strategy and the associated strategy lies in whether or not the non-human features are attached (i.e., structural) to the figure or are more loosely related to it (i.e., associated). The latter characterizes the figure from without, unlike the former, which serves to compose it.

Within-the-Human-Figure Category: Features

Incomplete (Head or Face) The God figure may appear ordinarily human in all other aspects, yet have its face or head missing (i.e., incomplete). Because our focus was on God representations and not on artistic skill, we only considered a figure incomplete if the face or head was missing. Incomplete hands or missing fingers, for example, could be misleading as they are likely to be missing in children's drawings in general—unlike a head or a face. One scenario (found in the current data) shows the God figure missing half of its head and face (i.e., with only the bottom of the head and a nose). This strategy may tap into an aspect similar to that which was measured by Pitts (1976) through the use of an A-score, accounting for the anthropomorphic completeness of figures on the basis of human features being present or not. The current measure allowed us to be more cautious about graphic skills, only accounting for the obvious. We avoided using an assessment that would lead unintended deletions to be considered as contributing to de-anthropomorphization. For example, it would be typical of young children to draw a human being with missing fingers or ears, but this would not tell us anything about actual de-anthropomorphization.

Surcomplete In this strategy, the God figure is human-based, but the participant has added extra human features, such as two additional pairs of arms, to those typically found on a human being. We did not inventory instances of this strategy, due to their very low occurrence in the data set. Nevertheless, we report it here for its conceptual pertinence and to leave it as a potentially relevant option for other types of samples (e.g., among Buddhist or Hinduist children).

Scission-Combination

Duality By duality of the God figure, we mean that the figure is conceptually divided into two separate beings. Most typically, such a figure consists of two distinct halves that represent two different human beings. Often, gender will be evoked, and the figure represent half a man and half a woman. We did not test this strategy in Study 2 for two reasons. As a de-anthropomorphizing strategy, it is arguably less straightforward than other strategies having recourse to cross-category. Moreover, it strongly relates to gender-typing issues and would be more suitably addressed in that context.

Second, with respect to de-anthropomorphization of the God figure through the background, we found two strategies used: non-terrestrial setting and God figure relative to other human figures.

Through the Background

Non-Terrestrial In this strategy, the human-based God figure is placed in relation to something that is uncommon for an ontologically typical human being (e.g., on a cloud, in the sky, in outer space). This may also concern finer spatial arrangements (e.g., floating).

Relative to Other Human Figures The presence of other human figures in the background can communicate aspects of the nature of God figure that is not strictly human. For instance, the God figure might appear abnormally large in relation to the other figures in the drawing.

These strategies ensue from part of the sample that falls under the label “De-anthropomorphized.” That branch stems from “*Human base*” and the reader may notice the following parallel branch “*Not de-anthropomorphized human figure*” that breaks into two sub-branches: “*Ordinary human figure*” and “*Non-ordinary human figure*.” Although we do not address these sub-branches in the current study, it seems important to supply the reader with some clarification about this area of the model. The former (i.e., ordinary human figure) consists in God figures that could not be differentiated from regular human figures. That is, nothing in the drawing permits the viewer to distinguish the God figure from an ordinary human figure. The God figure may be a drawn figure that does not simply display generic characteristics of a human being that would normally appear in children’s drawings of a person. Instead, there is something, either on the figure, or in the background, that endows the figure with special characteristics. Those characteristics may pertain to identity and social status (e.g., priest, king, surrounded by other figures), which does not depend on the presence of de-anthropomorphizing features. This particular aspect bears similarity to the de-anthropomorphization strategy “abnormally bigger” for they may both convey an idea of power over other human characters. This is a shared metaphorical meaning. Nevertheless, combining such meaning with a more literal perception of what was depicted in the drawing, abnormally bigger may be regarded as relaying some particularity that is more ontologically significant and could not be found as such in real life; while children in their social environment daily witness power-attributes. We will reflect on this in the Discussion section; it did not receive more attention in the current study because it deals with a finer and arguably less basic approach to characterizing the otherness of a human God figure, when compared to some of the other de-anthropomorphization strategies.

Overall, it is worth noticing that for each branch of the tree in the model, the label “Other” has been added in order to leave space for further refinements of the model, as well as for a possible generalization to other samples of drawings of God.

Constructing a Model of De-Anthropomorphization

The model that we are using to report and articulate de-anthropomorphization strategies takes directly after the model constructed in Study 1 (see Fig. 4.1), and continues on as a second part of it. It follows the logic of the preliminary sorting of drawings from the sample into exclusive categories (Fig. 4.1) and begins here with the “Anthropomorphic representation” node (Fig. 4.5). It does not, however, propose exclusive categories, but uses dimensions instead, apart from human based and non-human based. Those dimensions can theoretically occur simultaneously in a same drawing.

When inventorying de-anthropomorphization strategies, we started at the last subdivision between human based and non-human based. When defining *de-anthropomorphization*, below, we explain our reasons for making such a distinction. For now, we supply an illustration of this point in a drawing from the current sample, which depicts God as a rabbit “behaving” as though it were human (in a form similar to that of comic strips). Considering this type of drawing (a rabbit-based figure rather than a human-based figure) for the degree of de-anthropomorphization of God would be problematic. This adds a practical explanation for our methodological choice. It is worthwhile to note that altogether, those two categories (i.e., human based and non-human based) equate to 399 drawings, although there are 466 anthropomorphic representations. The difference lies in the drawings that we utilized to train the two raters, within the framework of inter-rater reliability.

Therefore, the most important part of this model stems from the human base node. Here we report a series of possible strategies used to de-anthropomorphize the God figure. Several strategies may, in theory, overlap. This conceptual difference within the model is indicated by the presence of an axis on the right side showing where one part begins or ends. Each strategy of interest (strategies tested in Study 2) has been described above. Nevertheless, the model provides a richer breadth of strategies; it includes several in addition to the ones that we tested in Study 2. The construction of the model has been an ongoing process throughout the assessment

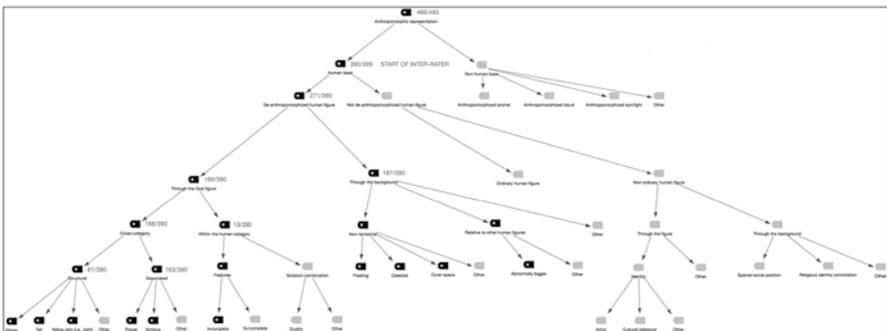


Fig. 4.5 Model of human-based God representations exhibiting otherness from the human being, with a particular focus on de-anthropomorphization strategies

of the drawings, based on the specific strategies that they exhibit; hence, some components of the model emerged during the process of analysis and were added afterward rather than before. A conceptually substantial addition pertains to God figures that could not exactly be judged as de-anthropomorphized at an ontological level, but which still endorse characteristics that make the (single, anthropomorphic, human-based) God figure somewhat extra-ordinary, such as when it is shown with clerical clothing. Although we did not include this in the inventory for this study, we expect that a substantial proportion of the figures display such characteristics.

Figure 4.5 shows the different categories of drawings, as well as the de-anthropomorphization strategies. Components from this model that were tested in this study are presented in bold typeface and their respective frequencies are reported to the side.

Samples

Different parts of the initial sample of drawings (N = 532) were used for statistical analyses depending on the specific purpose, guided by which branches of the theoretical model tree were concerned. The theoretical model under consideration is presented in the next subsection. Starting with the initial sample, there were different types of drawings/God representations: direct God representation (N = 500), single-God representation (N = 493), anthropomorphic representation (N = 466). The anthropomorphic representation drawings were independently assessed by two raters, leading to a decrease of sample size (N = 399) due to inter-rater training-testing differences. The most essential part of the current study, dealing with de-anthropomorphization, used the portion of the sample (N = 390) that qualified as human-based God representations. The complexity of de-anthropomorphization was measured on a sub-sample of those drawings. The drawings in the sub-sample (N = 271) display at least one de-anthropomorphizing strategy mentioned above. The sub-divisions are based on the outcome from Study 1 and sub-samples are shown in the model on Fig. 4.1.

Scoring Procedure

Two raters (the first author and a graduate student in psychology) scored the drawings independently. The student rater was blind to the hypotheses of this research. We assessed the following strategies: human based, cross-category structural, cross-category associated, within the human category—features—incomplete, and through the background. Drawings that were considered from the initial N = 532 sample were all drawings connected to the node anthropomorphic (N = 466) from the model tree shown in Study 1. We used a randomly selected sample of 67 drawings for the purpose of training the raters in order to ascertain that the scoring procedure was clear and that they could correctly identify particular strategies. As in Study 1, we focused on the drawings as the object of study, and resorted to the

accompanying written descriptions only when necessary to resolve ambiguities about what was actually depicted in drawings.

Following the training phase, the raters independently assessed a testing sample of $N = 399$ drawings, seeking instances of the strategies previously identified for analysis in this study. This same sample was then used in the related statistical analyses. Inter-rater reliability was estimated by using Cohen's kappa coefficients for each of those strategies. The average kappa was 0.78 (the lowest was .70 for human based, and the highest was .88 for cross-category associated), and reliability ranged from substantial agreement to almost perfect agreement (Hallgren, 2012). Disagreements were resolved through discussion. We chose to assess the de-anthropomorphization strategies through inter-rater examination (unlike categories in Study 1) because they are more prone to ambiguity. This is due to the conceptual precision of de-anthropomorphization strategies (compared to the exclusive classification system used in Study 1, where the categories are more mixed).

Sample Characteristics

Due to the sub-sampling used in order to analyse de-anthropomorphization strategies, we deemed it necessary to verify that the participants' age, schooling, and gender were similar between the $N = 390$ sub-sample and the larger $N = 532$ sample in order to rule out the presence of biases when interpreting the results. In this sub-sample, participants' ages ranged from 5.65 to 16.07 years (mean 10.83 years, $SD = 2.35$ years, for additional details see Table 4.2). Female participants made up 52.3% of the sample, which is equivalent the larger sample (51.3%). Participants seen during religious schooling composed 52.6% of this sub-sample, next to 56.8% in the larger sample.

Table 4.2 Age distribution

Age (years)	Frequency	Percent
5	1	.3
6	9	2.3
7	31	7.9
8	69	17.7
9	47	12.1
10	51	13.1
11	41	10.5
12	49	12.6
13	50	12.8
14	36	9.2
15	5	1.3
16	1	.3
Total	390	100.0

Overall, there is no reason to suspect any differences regarding age, schooling or gender between those two samples. Consequently, no selection bias should be expected from sampling down from $N = 532$ to $N = 390$, and the latter may be considered representative of the larger sample.

Results

Hypotheses Testing

As in Study 1, alpha was set at 0.02 (Benjamini–Hochberg correction). We organized the results according to each hypothesis.

Testing Hypothesis 1

A series of de-anthropomorphization strategies were used as binary outcome variables and a logistic regression analysis was carried out for each, testing for the possible effects of age, gender, and religious schooling. The sample assessed was composed of $N = 390$ drawings. As previously mentioned, the de-anthropomorphization strategies consist in scenarios that may co-occur in a drawing to various degrees, and they do not serve to categorize a drawing in a single “box”. In order to test this hypothesis, we first addressed de-anthropomorphization overall, then turned to specific strategies.

De-Anthropomorphization

A first outcome variable consisted in addressing whether there was any de-anthropomorphization displayed by the (human-based) God figure. It included all possible strategies identified in the model presented in this study. The $N = 390$ sample was split into two categories: no de-anthropomorphization 119 cases (30.5%); de-anthropomorphization 271 cases (69.5%). The logistic regression model was statistically significant, $\chi^2(3) = 27.178$, $p < .001$. The model explained 9.5% (Nagelkerke R^2) of the variance in anthropomorphism of representation and correctly classified 69.5% of cases. Only age was a statistically significant predictor ($p < .001$). Increased age was associated with an increased likelihood to draw a de-anthropomorphized (human-based) God figure.

Structural

After we analysed the sample by means of this broad approach, we carried out a more specific analysis of de-anthropomorphizing strategies. As a first step, we examined a series of de-anthropomorphizing strategies operating “Through the God figure.” A second outcome variable measured whether the God figure was

de-anthropomorphized using a structural strategy (stemming from the cross-category strategies). The N = 390 sample was split into two groups: no structural de-anthropomorphization (329 cases, 84.4%), structural de-anthropomorphization (61 cases, 15.6%). The logistic regression model was not statistically significant and no predictor variable was found to have a statistically significant effect.

Cross-Category

A third outcome variable was used to measure whether the God figure was de-anthropomorphized using an associated strategy (stemming from the cross-category strategies). The N = 390 sample was again split into two groups: no associated de-anthropomorphization (227 cases, 58.2%), associated de-anthropomorphization (163 cases, 41.8%). The logistic regression model was statistically significant, $\chi^2(3) = 43.845$, $p < .001$. The model explained 14.3% (Nagelkerke R²) of the variance in anthropomorphism of representation and correctly classified 65.9% of cases. Only age was a statistically significant predictor ($p < .001$). Increased age was associated with an increased likelihood to draw a human-based God representation with associated characteristics that de-anthropomorphize it.

Within-the-Human-Figure Category: Incomplete (Head or Face)

A fourth outcome variable addressed whether the God figure was de-anthropomorphized using an incomplete strategy, stemming from the features group which branches out from the within-the-human category. As noted above, we only used the designation of incomplete to identify figures lacking a head or a face. The N = 399 sample was split into two groups: complete face and/or head (377 cases, 96.7%); incomplete face and/or head (13 cases, 3.3%). The logistic regression model was statistically significant, $\chi^2(3) = 19.716$, $p < .001$. The model explained 19.5% (Nagelkerke R²) of the variance in anthropomorphism of representation and correctly classified 96.7% of cases. Only age was a statistically significant predictor ($p = .007$). Gender of participants reached near significance (.057). Increased age was associated with an increased likelihood to draw a human-based God representation without a head and/or a face; females were also more likely to draw an incomplete God figure.

Through the Background

As a second step, de-anthropomorphizing strategies operating through the background in the drawing were examined altogether. We did not distinguish between these, but instead tested them as a whole because the differentiation process was conceptualized after the inter-rater scoring process. Consequently, the best level of precision for analysis in this study lies at the level of whether or not the God figure is de-anthropomorphized through the background. The N = 390 sample was split into two groups: no de-anthropomorphization through the background (203 cases, 52.1%), de-anthropomorphization through the background (187 cases, 47.9%). The

logistic regression model was statistically significant, $\chi^2(3) = 12.078$, $p = .007$. The model explained 4.1% (Nagelkerke R^2) of the variance in anthropomorphism of representation and correctly classified 56.9% of cases. Only age was a statistically significant predictor ($p = .001$). Increased age was associated with an increased likelihood to draw a background that had a de-anthropomorphizing effect on the human-based God figure. This strategy also produces an effect leading to an extraordinary human figure, but it is not as straightforward with respect to the process of de-anthropomorphizing.

Testing Hypothesis 2

We created an additional outcome variable in order to assess the degree of complexity in the utilization of de-anthropomorphizing strategies, as in the instance of co-occurring strategies. Two types of strategies were retained: (1) through the God figure and (2) through the background. We identified the outcome variable criteria as simple (only one type of strategy) or combined (both being used simultaneously), accounting for a low vs. high degree of complexity, respectively.

The sub-sample used for comparisons was drawn from the $N = 390$ sample. It was composed of $N = 271$ drawings, all exhibiting some de-anthropomorphization. The logistic regression model was statistically significant before alpha correction: $\chi^2(3) = 7.837$, $p = .049$. The model explained 3.9% (Nagelkerke R^2) of the variance in anthropomorphism of representation and correctly classified 62.4% of cases. Only age was a statistically significant predictor ($p = .007$). Increased age was associated with an increased likelihood to use greater complexity (i.e., figure and background) to de-anthropomorphize the God figure.

Hypothesis 1 was supported for most de-anthropomorphizing strategies—with the exception of structural—but only for age, not for schooling. Hypothesis 2 was also supported only for age, not for schooling. It is important to note that, as predicted, gender was not found to play any significant role in either of the analyses.

Developmental Patterns

Figures 4.6, 4.7, 4.8, 4.9, and 4.10 provide a visualization of de-anthropomorphization strategies based on age in years. Percentages refer to proportion within a same year. (We did not report the structural strategy here because age did not have a statistically significant effect, even before alpha correction.) Below we provide a few observations based on the figures:

Figure 4.6 shows the developmental pattern for the utilization of any de-anthropomorphization strategy on the $N = 390$ sample. Figure 4.7 shows the developmental pattern for the utilization of the associated de-anthropomorphization strategy on the $N = 390$ sample. Figure 4.8 shows the developmental pattern for the utilization of the within-the-human category—incomplete (through the head or face of the God figure) de-anthropomorphization strategy on the $N = 390$ sample.

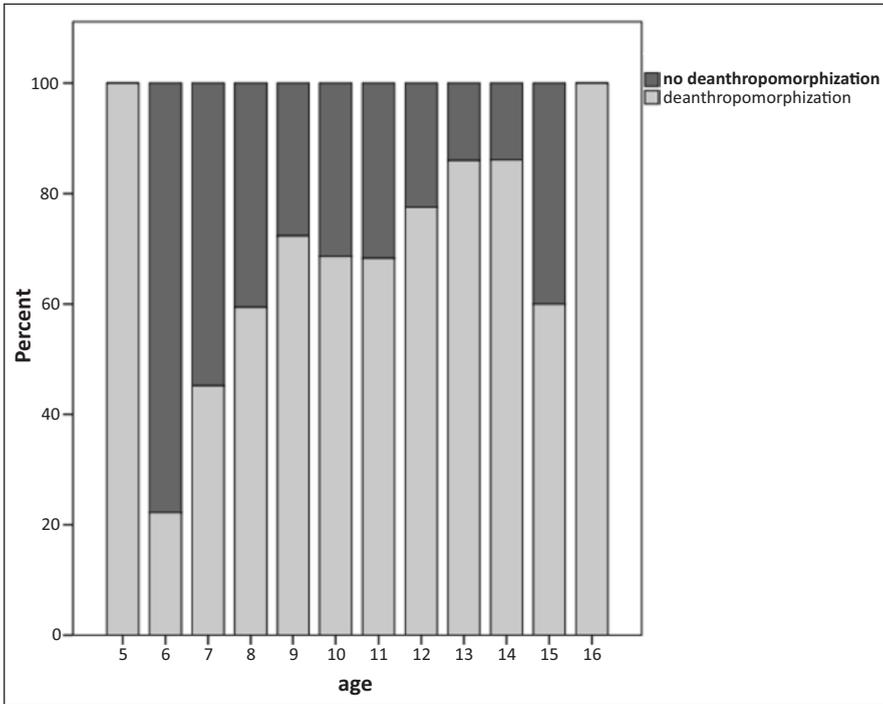


Fig. 4.6 De-anthropomorphization

Figure 4.9 shows the developmental pattern for the utilization of no background deanthropomorphization strategy on the N = 390 sample. Figure 4.10 shows the developmental pattern for the degree of complexity as assessed through the utilization of through-the-God-figure or/and through-the-background de-anthropomorphization strategies (N = 271). In this analysis the term *simple* deals with the use of only one type of such strategy, and the term *combined* concerns the simultaneous use of both.

De-anthropomorphization, in general, increases with age. It goes up until the age of 9 years to reach a plateau that continues until 11 years. It increases again between 12–13 years, then freezes, drops at 15 years and rises again at 16 years. We see two plateau phases in development: the first at age 9–11 and the second at age 13–14.

Concerning specific de-anthropomorphization strategies, the associated strategy approaches an age-incremental pattern, and starts from as early as age five, the youngest group in this sample. The incomplete features strategy tends to be used rarely, although there is some evident climb in usage between 12 and 15 years. The through-the-background strategy appear to undergo three major peaks: at 9 years, at 12–14 years, then again at 16 years.

As for complexity, utilizing de-anthropomorphization strategies to a higher degree (combined) almost follows an age-incremental pattern, although there seems to be a frank increase between age 7 and 9, then again from age 13 up to 16. Overall, de-anthropomorphizing a human-based God figure occurs early in development

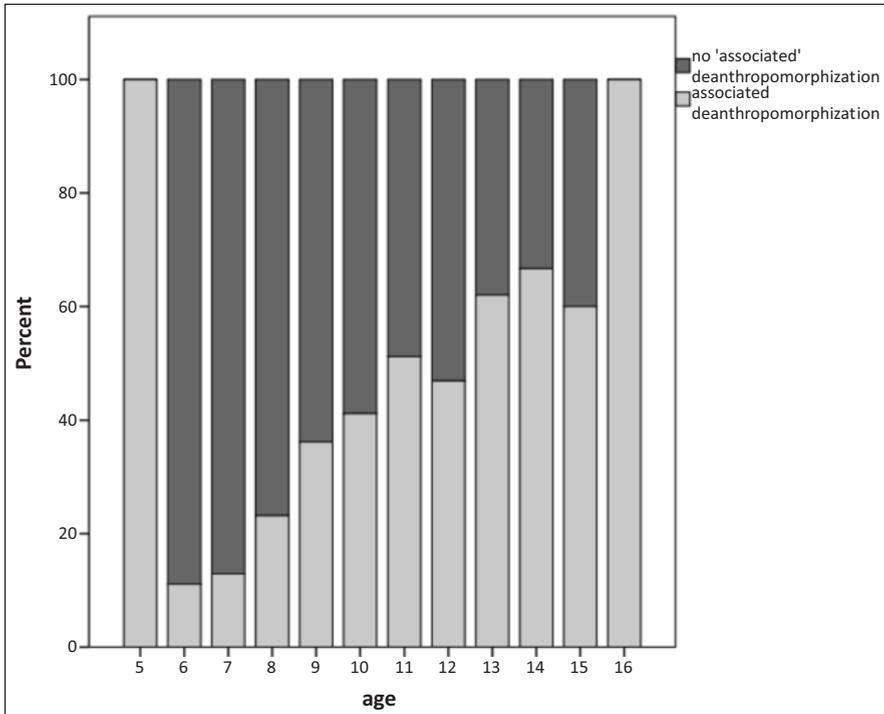


Fig. 4.7 Associated de-anthropomorphization strategy

(between 5 and 8 years of age). Age tendencies differ depending on the specific strategy, but there seems to be key developmental points around ages 9 and 13 respectively.

We conducted inferential statistics to further the analyses of developmental patterns and figure out whether significant differences existed between age groups. Similar to Study 1, five age groups: 5–6, 7–8, 9–11, 12–14, 15–16 years. Groups were compared when they were adjacent, that is, in an incremental fashion, from the youngest to the oldest. In order to avoid an alpha correction that is too severe, comparisons were only carried out on the presence or absence of de-anthropomorphization. Two group differences were significant: 7–8 vs. 9–11: significant ($\chi^2(1) = 5.491, p = .019,$), 9–11 vs. 12–14: significant ($\chi^2(1) = 6.573, p = .10$).

Additional Considerations: Fundamental Graphic Techniques

While constructing the model, we took an interest in the fundamental graphic techniques that children resort to in order to communicate non-anthropomorphic properties to a human figure. We focused mainly on the content of the compositions, and

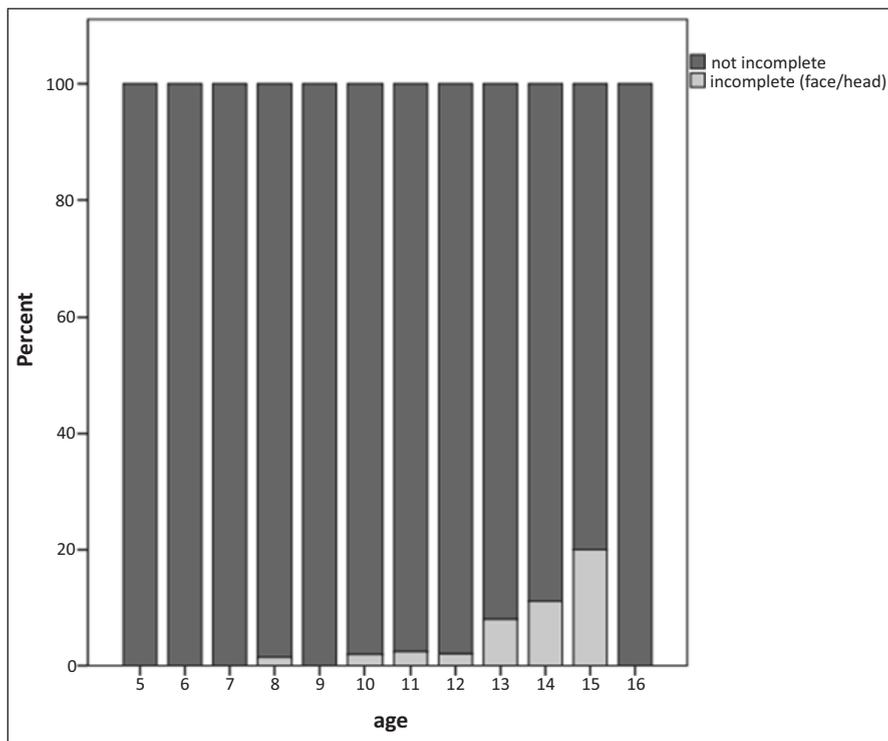


Fig. 4.8 Within-the-human category—incomplete de-anthropomorphization strategy

found that children seem to rely primarily on two central techniques that may be called, respectively: *addition* and *removal*. The former consists in adding elements that are extraneous to the human category, either on the figure itself as part of its structure (e.g., wings), or as directly associated with it (e.g., nimbus), or in the background (e.g., clouds, planets, relatively tiny human figures). The latter consists in removing elements that constitute an ordinary human figure, such as drawing a headless or faceless figure.

In addition to these basic graphic techniques, we identified two additional techniques: *replacing* and *fusing*. Replacing means that a human body feature has been replaced by a non-human one (e.g., a tail instead of a pair of legs). Fusing implies that a human body feature has been combined with a non-human one in a way that they are inextricable, as though completely overlapping (e.g., a round and plain yellow light in place of the head). The main difference between the former and the latter pertains to the latter allowing for two different labels to apply to the same graphic object.

Although such graphic aspects were not directly assessed in this study, it was important to provide a list of them in order to provide a better insight into the main graphic foundations of drawings of God, based on the content of composition in the

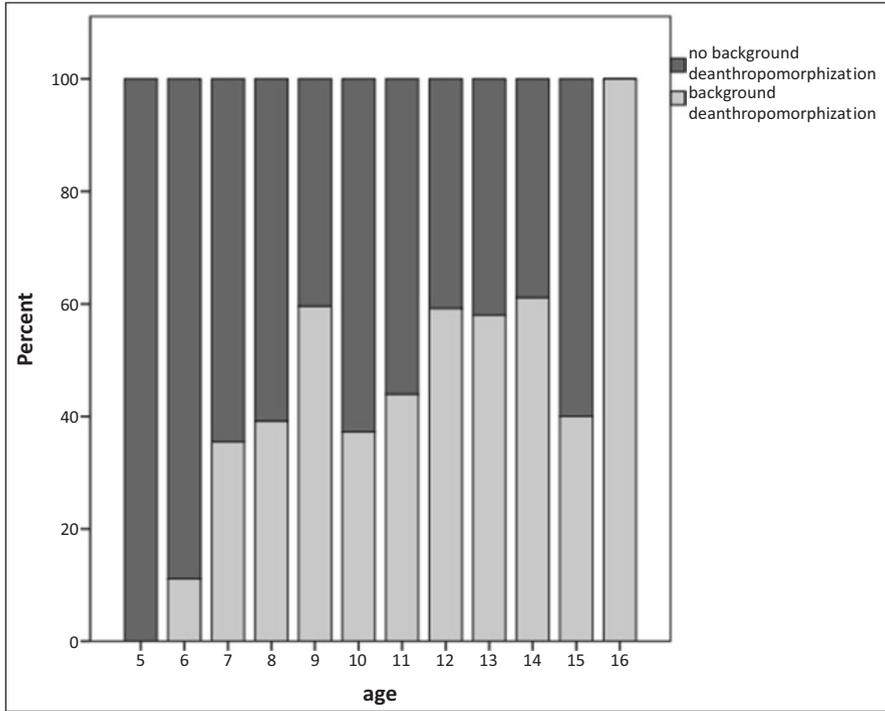


Fig. 4.9 Through-the-background de-anthropomorphization strategy

current sample of data. Nevertheless, we make such observations with the caveat that they translate some assumed corresponding mental procedures.

Discussion

Study 2 drew information from Study 1, but it moved beyond an exclusive categorical system based on binaries (i.e., anthropomorphic vs. non-anthropomorphic). We focused primarily on human-based God figures and the way such figures may display non-humanness alongside their humanness. We constructed a model from the data in order to conceptualize strategies that might have been used by the participants. The advantage of this new model over previous models based on more basic, binary differentiations is twofold. First, it offers much more diversity and incorporates those previous systems (e.g., figure vs. no figure, anthropomorphic vs. non-anthropomorphic) within a net of inter-relations. Second, and of utmost importance, it conceptualizes *de-anthropomorphizing* strategies that may co-occur in a given drawing. In that sense, this new model has moved not only beyond previous basic

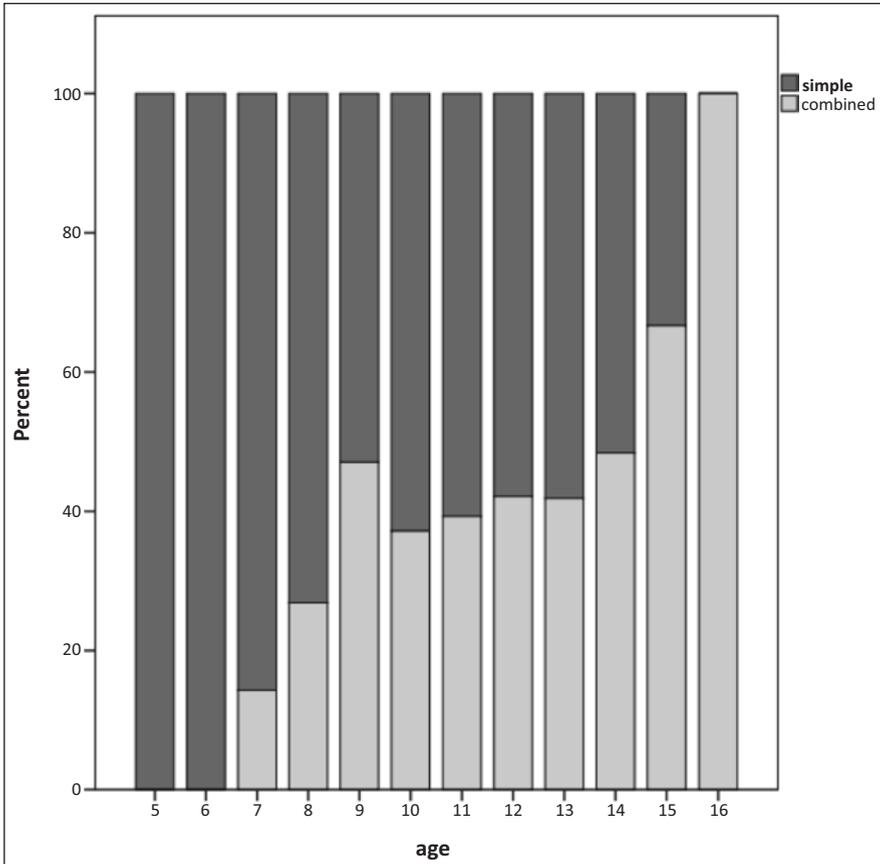


Fig. 4.10 Simple or combined de-anthropomorphization

binaries, but also beyond an entirely exclusive categorical system by taking into account the possibility that more than one strategy may be used simultaneously.

We statistically tested the possible influence of age, religious schooling, and gender, Hypothesis 1, supposing that de-anthropomorphization strategies would be positively associated with age and religious schooling, was mostly supported for age, but not for religious schooling. Hypothesis 2 predicted that the complexity of de-anthropomorphization, as a matter of combination of strategies, would be more likely with increased age and with religious schooling. It was confirmed for age, but not for religious schooling. Hypothesis 3 assumed that gender would not play a significant role in any regard. This was statistically confirmed.

A few scientific implications ensue from those results. First, the expression of combined sameness-otherness (Guthrie, 1993) in human-based God figures appears to be eminently cognitive and those figures may undergo conceptual changes across development mainly following the progression of an individual's cognitive abilities. Study 2 was more convincing than Study 1 in showing that the emphasis placed by

participants on God's non-humanness (in this case, through de-anthropomorphization) is age-bound.

Second, such conceptual blending points to the possibility that God is a hybrid concept, according to the notion discussed by Vicente and Martínez Manrique (2016). It is possible that the human category bears less salience with increasing age, also that other conceptual elements become more dominant. It is likely that for those non-anthropomorphic elements to enter the working memory, sufficient cognitive inhibition (of anthropomorphic figures) and flexibility (helping the selection of alternatives) are required. Both of these develop with age. Similarly, through conceptual change (Carey & Spelke, 1994), the God figure may embrace categories other than that of the human being, and those categories may become more prominent as this concept evolves at an individual level, progressively drawing away from the human being.

Third, from observing developmental patterns for evidence of de-anthropomorphization, there seemed to be key developmental points for conceptual change in human-based God figures around 8–9 years and 11–12, 13 years. Those points in development indicate phases of increased use of de-anthropomorphization. This observation was supported by inferential statistics. The de-anthropomorphizing of God figures emerged, overall, rather early, and did not indicate shifts happening late in development. This sets the ground for future research in this area; researchers can investigate the contribution of specific cognitive abilities in that regard. The second phase of significant change may correspond to reaching the Piagetian formal operational stage. This would be consistent with the more complex use of elements from different ontological categories to represent an entity that children have not seen. By doing so, older children may reach out to a larger set of potential solutions to a complex problem than younger children do. However, the increase observed between 8 and 9 years of age does not lend itself to that stage theory.

Fourth, the absence of the effect of religious schooling does entail that no environmental input should be expected in the way children may represent God in their drawings. Indeed, children do not live in a vacuum. Nevertheless, these findings suppose that it is not through formal teaching that this concept endorses ontological nuances, drawing away from the human being. Characterizing God through both its humanness and its non-humanness would be communicated widely across the cultural environment of children from the current sample. Thus, it is not surprising, in the end, that participants attend to it by means of de-anthropomorphization, regardless of the type of schooling they receive. Additionally, distinguishing participants based on the religious vs. secular teaching they were receiving might, in the case of this sample, not be so clear-cut. Indeed, children receiving religious schooling were not attending boarding school, for example. Therefore, we can reasonably say that they shared a general socio-cultural background with other children from the sample. This contrasts with the observations previously made by Hanisch (1996), whose sample was more clearly divided based on religious education, and which reflected the geographical and social separation between West and East Germany that had been enforced by the Berlin Wall.

Overall, these observations may point to the different roles of cognitive development and religious schooling. The child's decision to choose a non-anthropomorphic God figure instead of an anthropomorphic one may mostly proceed from the ability to reach beyond standard models to alternative options. In that respect, better cognitive abilities (acquired with age) may help switch between representations. Religious schooling may help, instead, with the actual content of those alternatives. For example, a child may often hear that "God is our light," and start integrating this representation into her/his growing repertoire of possible God figures. In summary, this means that while religious schooling might aid in facilitating alternative forms (i.e., non-human ones), only sufficient cognitive abilities seem to permit children to combine humanness-non-humanness. Seemingly, the latter requires that children are aware of separate components composing the mixture they mobilize.

This explanation is particularly appealing when taking into account results in connection with de-anthropomorphizing strategies. Schooling was never close to playing a significant role in the utilization of such strategies in the current research, although it did influence the anthropomorphic vs. non-anthropomorphic opposition. One possible way to make sense of this is to say that looking into combined sameness-otherness with the human being through de-anthropomorphization taps more precisely into the conceptual underpinnings of a God figure and fine changes. Those strategies revolve around what makes a God figure an ordinary and/or an extra-ordinary human rather than focusing on a strict differentiation from the human being. Those strategies require some conceptual complexity because they mix different ontological categories, while non-anthropomorphic figures do not necessarily present such blending. For example, a non-anthropomorphic God, as often observed in the current data, may just be a light, which is not particularly complex at a conceptual level. On the contrary, adding wings or a nimbus to a human figure, or placing it in a non-typically human context is presumably more cognitively demanding. Nevertheless, both non-anthropomorphic God figures and de-anthropomorphization processes were observed to have peaks roughly around 8–9 and 11–13 years of age. This similarity may indicate that major conceptual changes take place in those two particular points in development. Regarding non-anthropomorphic figures, those peaks are more visible among children receiving non-confessional schooling. Developmental patterns observed in Study 1, however, have to be regarded with great caution, given the significance of age group comparisons.

In addition to theoretical considerations about children's representations of God, it might be helpful to relate a few qualitative observations made during the current research with regard to graphic techniques employed by children in other types of tasks. Some participants utilized a feature-based system (i.e., either added, removed, replaced, or fused) as well as more aesthetically determined gestures, such as aspects based on figure-background relationships (e.g., effect of the size of the figure) to convey de-anthropomorphization of God. In this regard, techniques are reminiscent of those found in Karmiloff-Smith's (1990) research. Karmiloff-Smith asked children to draw a known entity (e.g., house, man, animal) in an imagined situation. In that study, she observed that very young children (5-year-olds) were employing a cross-category strategy. It was, thus, easily accessible to children.

Based on her theory of *Representational Redescription* (Karmiloff-Smith, 1990), it would be fruitful for psychological researchers working on concept development to carry out comparisons between topics that children have never perceived directly (e.g., God). For example, structural changes were rare in the current study, and did not depend on age, although they are usual and found to depend on age in the Karmiloff-Smith task. In a similar fashion, the types of analogies used by children could be examined in connection with past scientific literature on different matters. For example, Spiro (1988) has described eight types of analogies, from which the following four appear to be applicable to de-anthropomorphized God figures: supplementation, correction, alteration, and enhancement. Other types, i.e., perspective shift, competition, and sequential collocation, may instead explain incidences of nonhuman figures in children's drawings of God. Identifying the presence of multiple analogies within a same drawing could provide a better understanding of symbolic development in relation to depicting God by visual means. It would also be valuable to tease apart the different possible meanings children attach to similar analogies.

General Discussion

The main objective of the current study was to develop further the issue of anthropomorphism in God representations. The approach was developmental and involved a large age range (5- to 17-year-olds) of young participants ($N = 532$) from French-speaking Switzerland. The objects of study were drawings of God produced by the participants for this project. We conducted two studies. In Study 1, we replicated past findings (Brandt et al., 2009; Hanisch, 1996). Study 2 helped look into children's finer strategies with regard to anthropomorphism. Both studies proposed a visual conception of anthropomorphic and non-anthropomorphic drawings of God. Study 2 explored strategies used to de-anthropomorphize God, strategies that can combine anthropomorphic and non-anthropomorphic aspects, illustrating that in the eye of the participant, God may be both.

This empirical inquiry was based on a revised model, explained in the previous chapter: "Children's God representations: Are Anthropomorphic God Figures Only Human?" (Chap. 3, this volume) We contended that God representations might be based on other domain-specific concepts, such as the human being. While broad categorical delineations (such as sentient being, human being, artefact, animal) may occur at an early age (e.g., Carey & Spelke, 1994); the conceptual specifications of God may undergo a long period of conceptual refinements. Such refinements may involve an increasing distance from the human being, either through the fusion of several categories of beings or by means of decreased human characteristics, as shown in the current study through the participant's use of de-anthropomorphization strategies. Despite the increasing distance from the human, God representations retain strong dependency on other concepts. This is in line with the claim that religious beliefs exploit domain-specific cognitive abilities that are either evolved

adaptations or “painstakingly acquired expertise” (Sperber & Hirschfeld, 1999, p. 117). The dependence on other concepts may be mostly due to the absence of a real-life encounter with that concept, that is, the lack of first-hand observations. This goes against the claim of Barrett et al. that children would be naturally wired to conceive of God (Barrett, 2000; Barrett & Richert, 2003). Instead, it requires sufficient acculturation and sufficient cognitive abilities. Certain early differentiation between God and other concepts has led researchers to call children “intuitive theists” (Kelemen, 2004). Again, the current research speaks of the major role that age plays in creating fine conceptual differentiation from the initially predominant humanness. Those aspects will be discussed as part of the (second and third) main contributions of this research, below.

The current research made three main contributions to the scientific understanding of God representations in children. First, it has helped move beyond the anthropomorphic vs. non-anthropomorphic opposition by exploring within the majority of anthropomorphic God figures. In that regard, the notion of de-anthropomorphization was particularly useful. For the most part, by looking more precisely into figures that past research had labelled as “anthropomorphic” some notable nuances have been unveiled. In light of discrepancies in past research regarding methodologies and terminologies, the current inquiry helps to situate previous studies to facilitate comparison and contrast. By constructing a model emphasizing de-anthropomorphization strategies, we have shown that combined sameness-otherness with the human being is pervasive in human-based (anthropomorphic) God figures drawn by children. This supports the ideas expounded by Guthrie (1993) that such an ontological blend should be found in the God representations of many religious traditions, including Christianity. This research has shown that children do tend to communicate their God representations in the same way—but not only in the same way—and that they do so by employing a broad variety of graphic scenarios (specifically, strategies). Furthermore, and most important to this research, we found that making use of such combinations of sameness and otherness is profoundly developmental and changes as age increases. We constructed a model on both a categorical system accounting broadly for both anthropomorphism (as shown in Study 1), and a dimensional logic covering strategies of combined sameness-otherness (especially de-anthropomorphization). We provide the whole model in the Appendix (Fig. 4.25).

Second, age played a major role in the utilization of de-anthropomorphization strategies although schooling (as well as gender) did not at all. The fact that using such strategies was positively associated with age indicates the eminently developmental foundations of God representations. It further indicates that conceptual change is likely to take place while calling on several ontological categories, including the human being. The absence of the effect of religious schooling likely shows that when it comes to mixing categories together, education cannot lead to more “advanced” God representations. In fact, such representations, presumably, should not be considered more developed, but should simply be considered as evidence of more advanced cognitive abilities and conceptual construction. These findings are even more powerful, given the supposedly more accurate perception of ontological

variations and categorical belonging becoming finer with age. This emphasizes the participant's action of intentional altering God's humanness by ascribing nonhumanness to it as well. Such type of ontological alteration consists in conceptually *un-doing* the human base that had been set. The act of un-doing is tied to an individual's cognitive development, and appears to be more endogenous than based on socialization. Stating this does not discard the possibility that children may resort to culture-specific symbols to achieve de-anthropomorphization, but it does mean that what drives them to make that effort most likely reflects their own cognition.

Third, by digging deeper into specificities related to nonhumanness, and in particular with the concept of de-anthropomorphization, the current research has challenged the universal assumptions that could be brought forth based on the combined observation of Hanisch (1996) and Brandt et al. (2009). If age plays a role in the occurrence of such types of representations, religious schooling is not likely to contribute to them by supplying a more developed concept. Instead, it is more plausible that religious schooling, given its non-significant effect on specific de-anthropomorphization strategies, plays a part as a provider of alternatives to the representation of the human figure. It may operate through exposure to a variety of representations of God that may be more acute as a result of religious schooling. This is essential information for understanding the conceptual underpinnings of God representations and the ways that they may develop across childhood through to adulthood. The idea that non-anthropomorphic God representations are somewhat more "mature" or "advanced," and that this can be proven through similar contributions of religious teaching and cognitive development, must be dropped. This notion only made sense until anthropomorphic figures were scrutinized more carefully through this scientific work. A logical consequence of this research is the understanding that de-anthropomorphization occurring on human-based God figures throughout childhood does not represent a gradual change towards completely non-anthropomorphic figures. The phenomenon is more intricate than that; there are many factors to consider. Both de-anthropomorphization and non-anthropomorphic figures are found more frequently as children get older. On top of this, de-anthropomorphization becomes more complex with age and does not depend on religious schooling. Further, both occur early on (around 7 years of age), and follow a somewhat similar developmental course, which eliminates the possibility that one of them occurs only at a later stage in development. De-anthropomorphization qualifies as an indicator of conceptual complexity, and the absence of anthropomorphism (i.e., using non-anthropomorphic representations) may be better referred to as a measure of divergence or distantiation from the central concept of the human being on which the divine seems to be based.

This contrast between the effect of age and religious education across the two studies carried out for this research deserves additional attention. Although one could argue that children's representations of God may naturally evolve with age—or even that they are naturally equipped in that regard (Barrett & Richert, 2003; Kelemen, 2004), the socio-cultural background surrounding a child must not be neglected. This element may serve more effectually than religious education as a provider of alternatives to traditional representations. The way children come to

conceive of certain notions may be greatly influenced by different testimonies that are claimed around them (Harris & Koenig, 2006; Harris et al., 2006). Past research has shown that such an influence on religious ideas is likely to be visible from as early as 6 years of age (Evans, 2001). For example, during religious class, children are likely to hear claims such as “God is the light,” “God is our guide.” Indeed, children receiving religious schooling were found, in Study 1, to provide non-anthropomorphic forms of God in their drawings. However, such forms did not imply any conceptual mixture. Instead, they necessitated that children choose forms that are alternatives to the more central human reference. Study 2 addressed specifically anthropomorphic God figures that are composite (not only human) or lack basic human characteristics. In these drawings, children combined the human category with other ontological categories. If we can expect that children will be guided by testimonies about a human-like God possessing wings and a halo, living in the sky, and so on, we also suppose that they possess a sufficient level of cognitive ability. More specifically, children need to have developed advanced domain-specific knowledge. One could argue that basic conceptual domains are grasped rather early in development, at an age younger than that of the current sample (Carey & Spelke, 1994). Nevertheless, depicting God in a way that is conceptually composite or that lacks basic properties may require more than having acquired basic domain-specific knowledge. With an exclusive age-dependency, results from Study 2 suggest the ability for children to recognize conceptual mixture (or a lack of basic features) is at stake. The older the child is, the more likely they are to insert such an oddity in their drawings. However, while developmental patterns were generally consistent, they were not strictly incremental by age.

There are theoretical implications to this contrast between the effects of schooling and of age. First, testimonies told by adults to children are very likely to have an influence on forms of the divine that are non-anthropomorphic, and to facilitate endorsement by children in the context of religious schooling at an earlier age (8 years of age in the group receiving religious schooling instead of 10 years of age in the regular schooling group). This underscores the potentially important role of communities and proximal socio-cultural backgrounds. Why the emphasis on proximal? Because we can assume that, apart from religious schooling, children were all acculturated to similar socio-cultural backgrounds in French-speaking Switzerland. Therefore, the more distal background must have certainly played a part in the religious orientation of the data: through predominantly Christian references, common to most of the sample. The acculturation to non-anthropomorphic forms was not exclusive to the religious schooling group; it just occurred later in the other group. This suggests that religious ideas pervade culture and that older children may be somewhat more sensitive to them. Second, cultural representations are ideas that are often taken for granted; their origin can be forgotten at times, to the extent that they are processed as a whole, through analogical thinking (Kaufmann & Clément, 2007). This may be true of individuals having reached adulthood— but it might not be true of children. Indeed, the exclusive effect of age on conceptual mixture or lack of central characteristics point in another direction: children need to be cognitively capable of understanding such an oddity to reproduce it in their drawings. Such

reproduction proved, in Study 2, to be expressed both more often and with more complexity in older children. Without undermining the role played by analogical thinking in the integration and repetition of cultural and religious ideas, the current research suggests that God representations cannot be simply replicated without first being understood from a domain-specific perspective.

The current stance serves to put into perspective God representations as concerned both with domain-specific knowledge, on the one hand, and with analogical thinking, on the other hand. With regard to the former, it has been proposed that religious entities necessarily display minimally counterintuitive properties, which makes them efficient, attention-grabbing, socially transmittable representations (e.g., Boyer, 1994). Such ontological violations (Boyer, 1994; Boyer & Walker, 2000) are mostly meant to be evocative, as they are semi-propositional (Sperber, 1996), being understood in the form of “seeing as” rather than “seeing that” (Kaufmann & Clément, 2007). They imply an analytical, domain-specific understanding. The latter underlies the taken-for-granted and, in fact, intuitive nature of such representations (Kaufmann & Clément, 2007). Both viewpoints might be true. Following the current findings, we suggested that, in the same way that cultural representations have been historically developed and socially transmitted, children must focus on their domain-specific mixture producing that attention-grabbing effect. Concurrently, at the time being, and for older (e.g., adult) individuals, representations of God from one's socio-cultural environment might have become intuitive and are processed by analogy to other concepts.

Eventually, we must ask whether or not the God representations, as children draw them, actually correspond to the children's idea of God. There are several aspects to take into account. First, it could be misleading to consider drawings of God in a literal sense without having access to the *emic* discourses made by their authors about them (Günter-Heimbrock, 1999). Instead, they stand as visual productions reflecting both the symbolic articulation carried by their authors and the surrounding socio-cultural context.

Second, as cultural representations may be semi-propositional (Sperber, 1996); it might be meaningless to claim any direct relation between the child's mind and the graphic composition that formed on the page. Some drawings might have to be taken literally, while others bear metaphorical qualities. Their commonality should be the social significance they have gained within a given background. Their conventionalization having progressively led to the omission of their original analogical meaning, they end up being taken for granted (Johnson, 1981; Miller, 1979). If the nature of the drawing task proposed to the participants does not allow us to determine the exact individual status of a drawn God representation, it seems sufficient to call forth certain symbolic arrangements that have been learned and developed through acculturation. These may testify to some form of *positional belief* (Tuomela, 1995), which reflects a collective belief taken on by the participant, depending on the specific situation. Insofar as drawings resulting from a themed task are meant to communicate to someone an idea about a specific topic, the mobilization of a common language is supposed to be at work. The drawing production process that takes place is likely based on an accurate *theory of picture* (Freeman,

1998). This theory states that the child will take into consideration not only their own intentions, but also (1) the potential beholder, (2) the place of the picture, and (3) the world (or in this case, the socio-cultural background) as interconnected parts of a net of intentions (Freeman & Sanger, 1995).

Third, given their highly complex nature, God representations expressed by an individual at a specific time are likely to correspond to one god-schema called forth in the moment (Gibson, 2008). We can suppose, however, that children's drawings of God still reflect the symbolic abilities of their authors. Having all this in mind, we argue that the current analysis of children's drawings of God is relevant, for it shows a certain level of articulation between children's cognitive abilities, concept development, mastery of culturally learned symbols, and testimonies provided in their socio-cultural environment.

Limitations and Future Research

We recognize a few limitations in the current study. A principal limitation concerns its cross-sectional design, and thus the impossibility to determine causal relationships between variables. Another limitation follows from the very strength the method itself. Although a free-drawing task addressing God representations allows for creativity and is bound to produce very rich data, it also lacks the experimental qualities that other research designs may have. Most participants came from a Christian background, and while this is representative of the Swiss context where the data were collected, there is a need to conduct similar studies on a broader variety of religious denominations. More comprehensive measures of religiosity that also encompass spirituality, could have been used (e.g., Brief Multidimensional Measurement of Religiousness/Spirituality by Holder, Coleman, & Wallace, 2010). However, adding extra measures can easily become costly on quantitative studies.

Future research should certainly address the child's own reflection on the end product (the drawing), which is, in that sense, a sort of phenotype guided by mostly unseen motivations (Günter-Heimbrock, 1999). In-depth qualitative assessments of children's hand-drawn God representations, especially with respect to de-anthropomorphization, is likely to move our current understanding even further. Interviews with the participants may reveal intricate connections between mental representations and drawings. Particularly, it would be beneficial to map how children make meaning of resorting to anthropomorphic traits when drawing God, considering literal and metaphorical levels. Indeed, at this stage, our findings do not permit us to decide whether the ontological variations observed faithfully reflect underlying conceptual alterations, or if they demonstrate increased abilities for using a metaphorical language.

Moreover, other branches of the theoretical model proposed in this study should be examined. One such possibility lies in unpacking anthropomorphism even further. In particular, we need to explore the sub-branch of non-ordinary human figures. Another possible path to follow pertains to examining more closely the

non-anthropomorphic God figures and other types of drawings situated higher in the model constructed in this research.

Eventually, within-subject comparisons should be conducted, investigating possible relationships between drawn God figures and other topics (e.g., superheroes) or other types of tasks (e.g., a Karmiloff-Smith kind of task).

Practical Implications

Religious Education

As suggested by Pitts (1977) educators of religion need to adapt their teaching to the stage of the child's cognitive development and not use language or metaphors they cannot yet grasp. Borrowing more specifically from insightful research on analogical reasoning, confusion could be limited and the learning process improved by working on different types of analogies, in a way similar to applications in medical studies (Spiro, 1988). This is suggested by the substantial references to ontological categories (other than the human being) observed in the current study. Therefore, it might occur spontaneously to a child that while the human being represents a solid support for understanding an intentional agent such a God, conceptual clarification is also increased by symbolic ways of ontological differentiation from it. This perspective goes far beyond depicting God as a light, for example, to evoke guidance in one's life. Instead, it posits that the educator's interest should lie in children's *emic* construal of the divine and should attempt to rebound on the metaphoric language they use themselves, as shown in their drawings of God.

General Teaching

More than providing a mere humanized perception of the world, anthropomorphism may act as a very useful scaffolding to understanding a variety of notions, besides God. Stimulating anthropomorphic explanations of different phenomena may assist the acquisition of new concepts, with the caveat these need to be understood as metaphors only, and that under certain (unfortunate) conditions these may cause difficulties in the novice's mind, in science (Kallery & Psillos, 2004) or programming (Robins et al., 2003). Zohar and Ginossar (1998) have provided evidence that while it might be easier for children to apprehend novel notions in an anthropomorphic language, as a "prop", it does not mean that they will be misled to reason in an anthropomorphic way. Developing this idea further, based on Spiro (1988), we could use anthropomorphism as a base and encourage the addition of other ontological categories when deemed fit to better map the underlying structure of a complex notion to be learned, be it God or another concept. Based on the observation in

the current data that as a child's age increases, he/she will mix ontologies more often and in more complex ways, we could even suggest that conceptual refinements would eventually happen even when a notion is taught by employing anthropomorphic metaphors.

Conclusion

We have proposed a data-driven model attempting to conceptualize various graphic scenarios concerning anthropomorphism in children's drawings of God in French-speaking Switzerland. As previously observed, we were able to replicate a developmental tendency towards non-anthropomorphic God figures and a similar effect of religious schooling. However, we have placed a particular focus on de-anthropomorphization strategies, following an incentive to move past a binary anthropomorphic vs. non-anthropomorphic opposition. A substantial part of the data was found to endorse de-anthropomorphization, and a positive effect of age could be observed almost systematically. Overall, the current findings point to much more complexity in connection to anthropomorphism. Additionally, they support the idea the God concept undergoes fine conceptual changes, progressively drawing away from the human being, rather than following a sudden non-anthropomorphic shift.

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Appendix

Here we present a few drawings to illustrate anthropomorphization strategies as well as the non-anthropomorphic type of drawing in order to provide the viewer with a better sense of what was entailed in the current article. Even though it was not part of the analyses in Study 2, for the sake of clarity, illustrations for "Non-human base" have been provided as well.

Fig. 4.11 Associated
([http://ark.dasch.swiss/
ark:/72163/1/0105/aW3A
7U8xSeGQJ80vWs4nIg5
.20180702T163857453Z](http://ark.dasch.swiss/ark:/72163/1/0105/aW3A7U8xSeGQJ80vWs4nIg5.20180702T163857453Z))





Fig. 4.12 Associated and through-the-background (non-terrestrial) (<http://ark.dasch.swiss/ark:/72163/1/0105/2ZjLocZSRiiIaCu5hc7eWgP.20180702T164130181Z>)

Fig. 4.13 Structural
(<http://ark.dasch.swiss/ark:/72163/1/0105/Tbu8MDzkRzmf5NmXP5CM6Qu.20180702T162538382Z>)

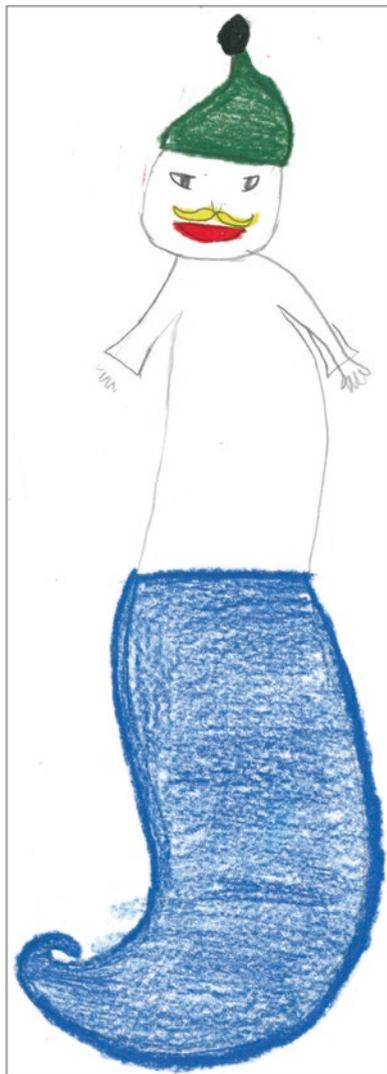


Fig. 4.14 Structural—
incomplete (http://ark.dasch.swiss/ark:/72163/1/0105/KA_Pz9bdSDGSNHPWM CNz2Q8.2018070 2T163708303Z)

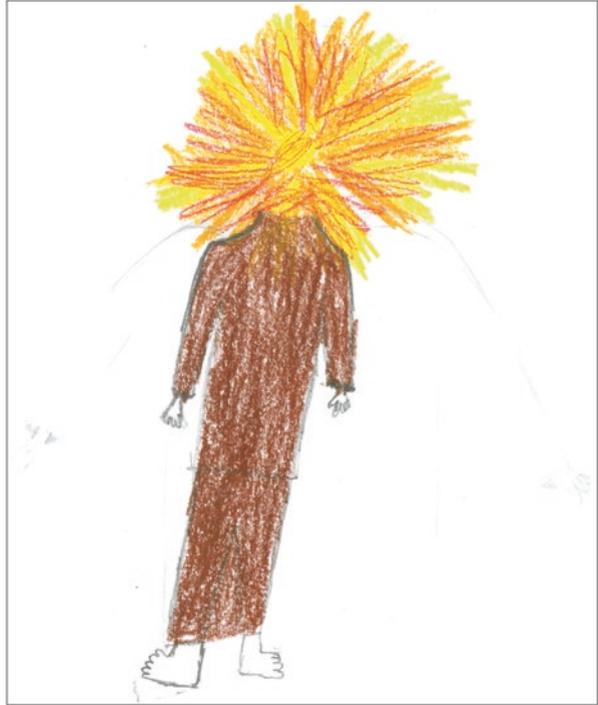


Fig. 4.15 Structural—
incomplete (<http://ark.dasch.swiss/ark:/72163/1/0105/P2YXUrEjT5CGc5UalxkVEQ d.20180702T163005404Z>)

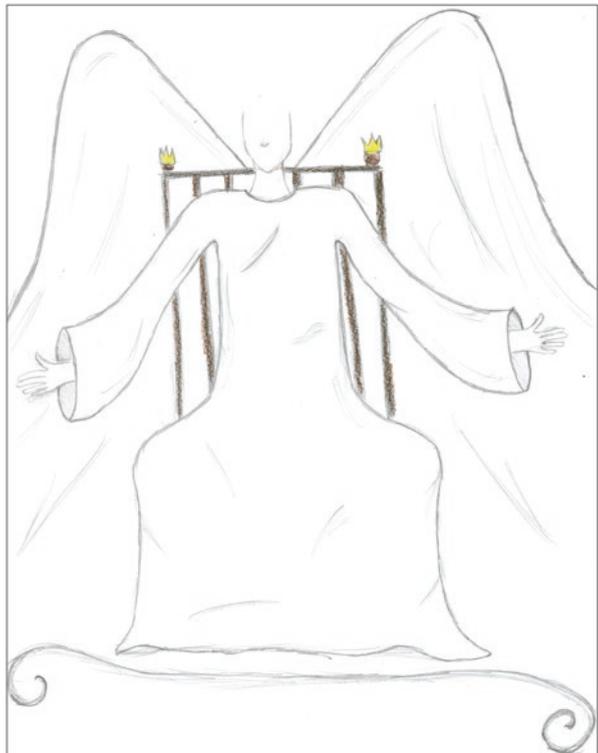




Fig. 4.16 Through the background (terrestrial) (<http://ark.dasch.swiss/ark:/72163/1/0105/mjRyC5XWRnKOJc9qkhipQs.20180702T165310528Z>)

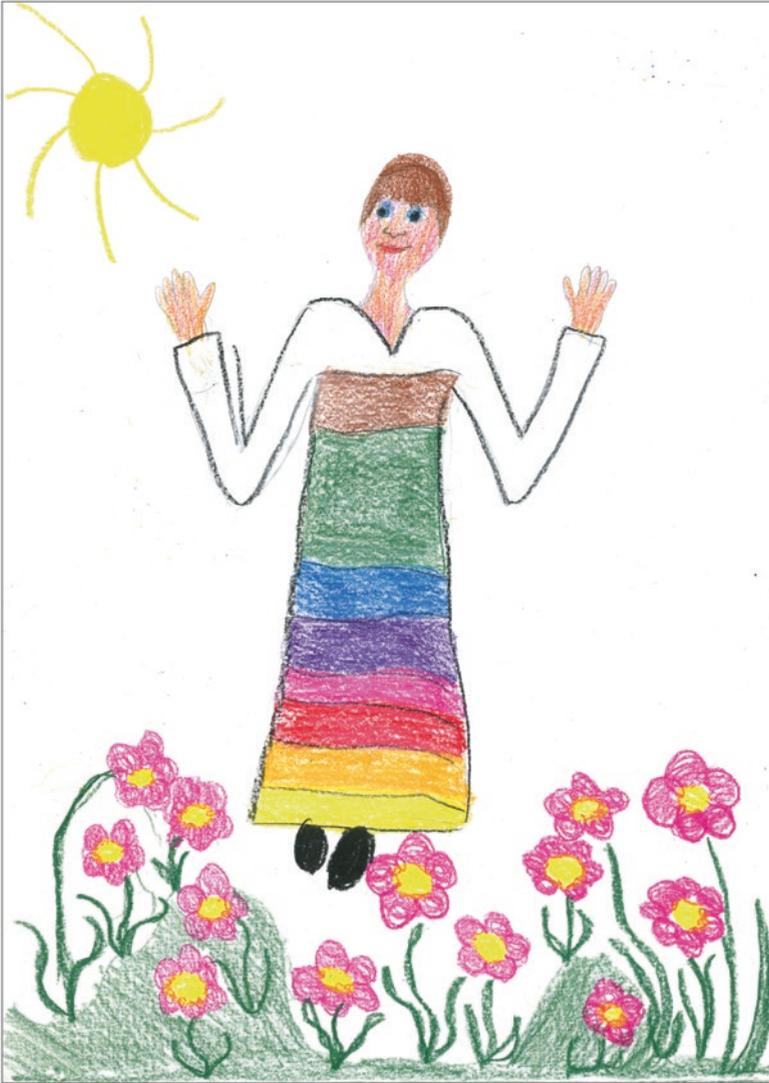


Fig. 4.17 Through the background (non-terrestrial) (http://ark.dasch.swiss/ark:/72163/1/0105/yl4vFkVDQeydVGaZqY_IUgE.20180702T164531789Z)



Fig. 4.18 Through the background (relative to others and non-terrestrial) (<http://ark.dasch.swiss/ark:/72163/1/0105/bV6ThBusTMuoBthIQOE6Dg6.20180702T164858956Z>)



Fig. 4.19 Through the background (relative to others) (<http://ark.dasch.swiss/ark:/72163/1/0105/wZpTOcCdSYSupJBvFlktw0.20180702T162843521Z>)

Fig. 4.20 Non-anthropomorphic (<http://ark.dasch.swiss/ark:/72163/1/0105/F9qgHhf4RXXKoDsySEcALNwy.20180702T16401228Z>)

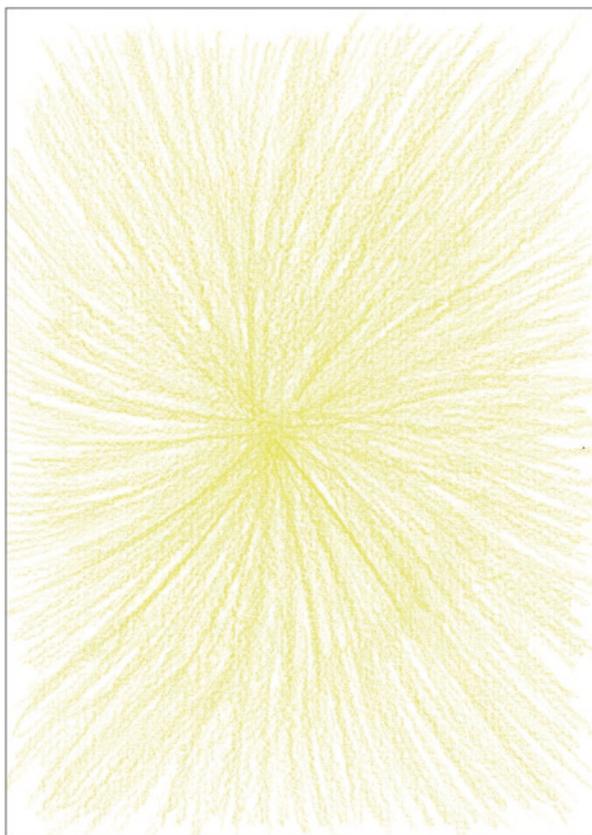


Fig. 4.21 Non-anthropomorphic (<http://ark.dasch.swiss/ark:/72163/1/0105/56YYUxWgRoucMgaJc4CVkwG.20180702T163836298Z>)

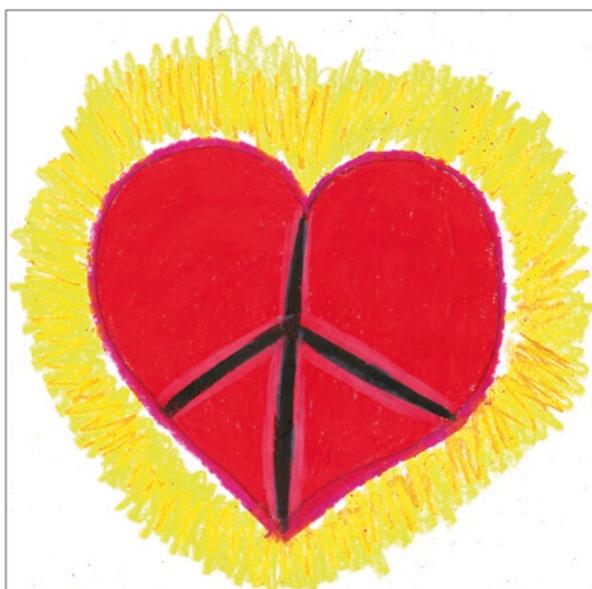
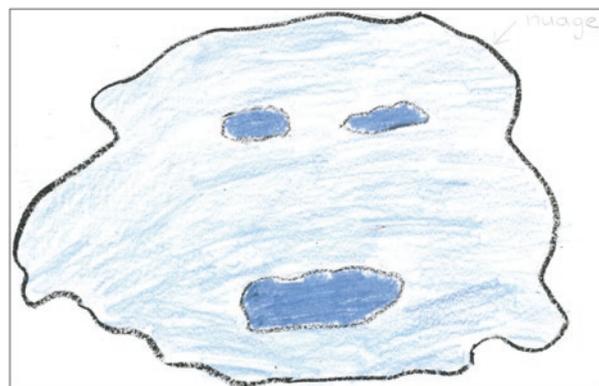


Fig. 4.22 Non-anthropomorphic (<http://ark.dasch.swiss/ark:/72163/1/0105/ttKXrsR7QJeq6vyrvj8JpAf.20180702T160938765Z>)



Fig. 4.23 Non-human base (<http://ark.dasch.swiss/ark:/72163/1/0105/ND3Rh1qOTUqmVd3EIV0LAwd.20201018T10485193395Z>)



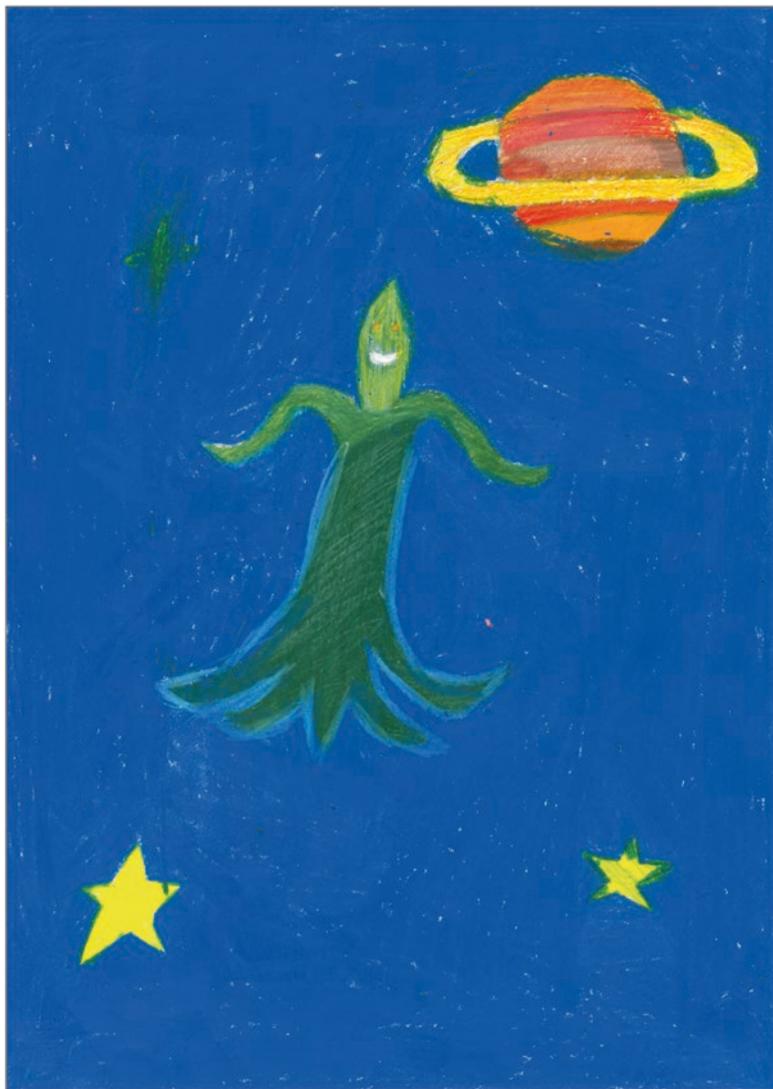


Fig. 4.24 Non-human base (<http://ark.dasch.swiss/ark:/72163/1/0105/UNPf3ZqOT7utcqATFCII TQx.20180702T164152758Z>)

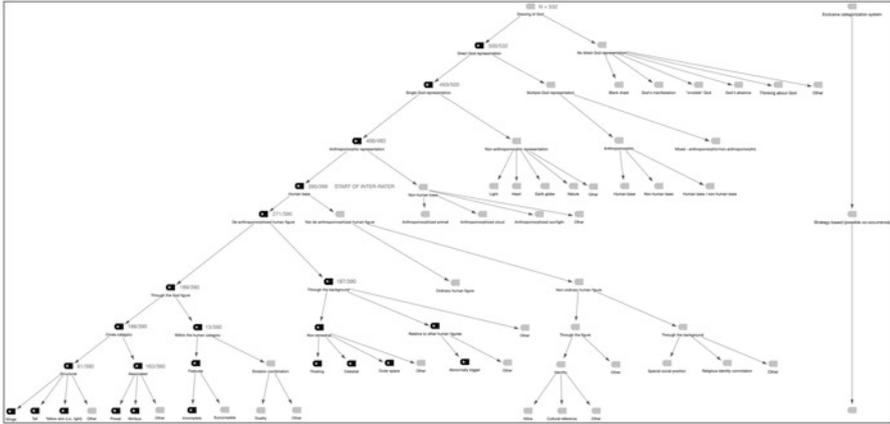


Fig. 4.25 On the basis of Study 1 and Study 2, we generated a comprehensive model. It combines a strictly categorical system (until “Anthropomorphic representation”) with a dimensional one (designed to identify sameness-otherness with the human being on human-based God figures—especially de-anthropomorphization)

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Chapter 5

Construction and Transgression of Gender Categories in Representations of Divine Figures: A Cross-Cultural Study of Children's Drawings



Grégory Dessart , Zhargalma Dandarova-Robert ,
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Abstract This research addresses how gods may be gender-typed in children's drawings. It offers cross-cultural comparisons on four distinct samples of drawings from Japan, Switzerland, Buryatia and Saint Petersburg (Russia). We discuss the challenges that arise when rating gender categories in children's drawings, especially when drawing on a cross-cultural sample. Then we propose two approaches for the empirical analysis of the data: (1) providing a general description of the utilization of gender categories; (2) considering the data from a qualitative perspective, comparing children's strategies and cultural references. In the main, while there seems to be cultural differences (as observed between samples), three main sources of normative pressure might exist: androcentrism, same-gender preference, and masculine hegemony. We discuss the observed phenomena in terms of socio-normative influence, cultural and religious references made available, gender traits, and gender transgression.

Keywords Gender development · Individual differences · Masculinities · Same-gender preference · Religion · God concepts · Children · Drawings · Cross-cultural

The work presented in this chapter represents, in its entirety, the reproduction, in English, of a text published in French: Construction et transgression des catégories de genre dans les représentations de figures divines: comparaison interculturelle de dessins d'enfants et adolescents (Dessart et al., 2020).

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Does the divine evoke masculine or feminine properties, or does it surpass such a dichotomous view of gender? Previous studies on drawings of “god”¹ conducted in the United-States and in Europe found that children most often attribute a masculine gender to god (Hanisch, 1996; Kay & Ray, 2004; Ladd et al., 1998). In the present study, four waves of data collection took place: one each in Japan and Switzerland, two in Russia. The gathered data drew our attention to the fact that this issue of attributed gender is not as simple as had been previously assumed. Outside a cultural background heavily imbued with Christianity, feminine representations do occur much more often. In the end, attributing masculine properties to god may well reflect the influence of religious socialization within cultural environments where gendering god is hardly ambiguous. For example, the Christian god is often depicted as the “Heavenly Father,” as conveyed by the Lord’s Prayer or by the Apostle’s Creed. It, therefore, may be difficult to conceive of god as feminine in that context. But a thorough analysis of how children make use of gender typing when drawing god—including children from areas principally characterized by Christianity—has revealed a series of characteristics that transgress binary models of gender attribution.

When confronted with having to draw god, children are subject to different forms of normative pressure. Indeed, some children do choose to diminish (or de-emphasize) typically feminine or masculine traits while others mix them together. The present study illustrates this particular issue by classifying children’s drawings of god according to a set of gender categories, then analyzing the approaches used by the children in their various socio-cultural contexts to establish—or retain the ambiguity of—the gender of the divine.

Data Collection in Several Socio-Cultural and Religious Environments

Children (girls and boys aged 6–17 years) from Japan, Buryatia (Oriental Siberia, Russia), Saint Petersburg (Russia) and French-speaking Switzerland were asked to draw god freely, according to their imagination.²

The materials provided to the participants were as follows: a blank sheet of paper, a gray pencil, a ten-color set of wax pastels, and colored pencils (the latter

¹Given the intercultural and inter-faith qualities of the present study, we decided that the word *god* would be used throughout this chapter. Why, in this volume, the term *god* begins sometimes with an uppercase letter G, sometimes with a lowercase letter g, and why it appears sometimes in the singular and sometimes in the plural, is explained in the introductory chapter of this book (Chap. 1, this volume).

²We gathered data from a larger interdisciplinary research project based mainly in the human and social sciences at the University of Lausanne (Switzerland), but also involved research teams from other countries. The data sample are accessible on an online database via the following link: <http://ddd.unil.ch>

were only provided to participants in Russia). Researchers collected data in small groups and assigned children to individual places in the room so that they would not attempt to copy from each other. Each child was also invited to provide a written description of their own drawing and to fill out a questionnaire addressing religious socialization (e.g., religious affiliation and religious practices).

Hurdles Faced by the Participants, Hurdles Faced by the Researchers

Drawing god is a complex task. How does one draw: god, God, or gods, and so on? In order to compose their drawings, children have to make decisions at two important levels: (a) the topic (i.e., god) and (b) the medium (i.e., the drawing). The ensuing task—the interpretation of the children’s drawings by the researchers—is a very difficult task as well, as it is based on gender-connoted visual elements.

Attributing gender to drawn figures depends on the interpretation given to a series of markers (or criteria) that one can identify in a drawing: Which features are relevant for determining the gender of a figure? We found it helpful to review scientific literature on children’s drawings of the human form (Arteche et al., 2010; Brechet et al., 2008; Chen & Kantner, 1996; Cox, 1993; Perron & Perron-Borelli, 1996; Royer, 2011). Concerning feminine figures, the most consistent markers seem to be:

- Hair (long, braided, parted, curly or with a knot),
- Clothes (skirt, dress, heels, top),
- Facial features and makeup (eyes being much detailed with lashes, eyebrows and pupils, red or heart-shaped lips),
- Body shape (rounded, chest),
- Accessories (jewels, handbag, feminine hat).

Regarding masculine figures, the most consistent markers were:

- Hair (short or absent),
- Masculine clothes (shorts, trousers, jacket),
- Beard or mustache,
- Body shape (muscular, heavy shoulders),
- Accessories (hat, tie, pipe, cigarette).

Using such markers and combining them together may, however lead to equivocal interpretations of gender because these markers strongly reflect a Western—and binary—view of gender.

Children, in dealing with issues of topic and medium (i.e., What is my concept of god? How do I draw that?) may encounter obstacles that relate to the applicability of the above markers. A first possible obstacle pertains to traditional religious practices and god representations as conveyed in religious art. From the child’s perspective, some representations may be perceived to transgress gender categories. Both Christian and Buddhist traditions provide examples of art that breaches these gender

markers. In the Christian context, male priests and other ordained masculine individuals are often pictured wearing dresses or robes; Jesus Christ and male saints are usually shown with long hair and dresses or robes. In the Buddhist context, one finds males represented with red lips or jewels. Children socialized within a socio-cultural environment that is strongly characterized by such religious traditions receive specific knowledge about visual codes and can use the knowledge in a manner that fits their esthetic intentions. Such is the case of a Russian girl who produced a rather feminine-looking figure, whereas her accompanying text conveys intentions more clearly: “God is in Paradise. I wanted to draw Paradise, where Jesus Christ is seated in his throne” (ru09_sp_f_px_11_xx_nas, Fig. 5.1).

A second issue that the child may have to deal with pertains to feminine or masculine stereotypical elements according to his/her current cultural environment. That environment may or may not be consistent with traditional religious features (ch16_vd_f_rrd_07_08_mar)³.

Two additional difficulties may be found in relation to how researchers themselves handle the decoding of gender markers. Researchers need to be able to recognize gender codes within a specific religious tradition, and they need to be able to account for how gender stereotypes work in a given socio-cultural environment. For example, long hair may point to masculinity—as well as femininity—among Japanese children who are very familiar with *manga*⁴ (jp04_fa_f_pkx_14_03_ikx, Fig. 5.2). However, a similar approach to masculinity within a background distinguished by prevalent Christianity would be expressed differently and would require some obvious reference to traditional iconography, without which the participant’s intention might simply go unnoticed.

A child’s intentions of constructing gender in their representation might be difficult to interpret solely from their drawing. In that regard, referring to a written description attached to a drawing can prove to be very useful. Illustrating this point with the Japanese example mentioned above (jp04_fa_f_pkx_14_03_ikx), the written description provided by the participant substantiates the researcher’s initial opinion that the figure was intended as masculine. However, there are instances where the drawing and the description are in obvious contradiction. These situations pose huge problems for the researchers. Heller (1986) cited one such divergence in the case of Lorraine: She verbally emphasized god’s androgyny; however, it was not at all apparent in her drawing. The figure she had drawn was clearly masculine. A similar situation occurs in the sample from the present study: a drawing from Buryatia distinctly depicts a feminine figure although the written text indicates masculinity through the use of the pronoun “he” (ru08_bo_f_pb_11_03_tou).

Although most drawings of god show an anthropomorphic figure, they do not necessarily display ordinary human beings. They often mix human features with

³Links to quoted images that are not reproduced in this chapter can be found in the index at the end of the book.

⁴*Manga* refers to type of Japanese graphic novel.



Fig. 5.1 <http://ark.dasch.swiss/ark:/72163/1/0105/U69jrc=ht2CfGVy1SVIDZwG.20180702T193943572Z>

other sentient entities (e.g., animal or vegetal), or with non-sentient entities (e.g., light, cloud). This is an additional hurdle that researchers confront when assessing gender typing.

Fig. 5.2 http://ark.dasch.swiss/ark:/72163/1/0105/G_qpvY=aRvirrmXrQneOOgY.20200318T151208653012Z



Forms of Normative Pressure and Transgressive Gender Typing

Three central forms of normative pressure can be assumed with respect to gender typing divine figures in children's drawings. Each source suggests a distinct form of gender transgression. First, a prevalent gender category associated with divine figures within a specific religious tradition may exist. It is reasonable to think in this case that children who face an overrepresentation of masculine figures are likely to draw a masculine god, by a mere exposure effect. It may be further reinforced by a specific gender ideology that is encouraged by religious institutions (Whitehead, 2012).

Second, research on gender development suggests that some in-group favoritism operates based on one's gender (i.e., female or male). This may result in a propensity to prefer activities, behaviors or objects that are typically associated with one's gender, and it appears that boys are particularly prone to such an inclination (Bussey & Bandura, 1999). Similar observations have been made in children's drawings of human figures (Arteche et al., 2010).

Third, gender norms that prevail in a given social environment might also influence a child's tendency to attribute a particular gender category to a divine figure. Patterns of hegemonic masculinity are likely to reify masculine power (Connell & Messerschmidt, 2005). This may involve internalization processes, on the part of both female and male individuals (Uhlmann & Uhlmann, 2005).

So, children are confronted with at least three forms of normative pressure when attempting to draw god. As a result, transgressions of gender norms may appear to various degrees, depending on the prevalent gendered expression being constrained by each of these three sources of influence. Thus, a figure may stand in contradiction to gender markers or expectations with respect to one such source. The conflation of these forms of pressure may also result in another type of transgression: Figures may not abide by binary genders, but may present ambiguity by appearing androgynous or undifferentiated.

In the main, the transgressive quality of a gendered god depends on a series of factors that are either specific to the participant—such as their own gender—or characteristic of the surrounding socio-cultural environment. Such factors may act synergistically or antagonistically. The child's mastery of gender codes, both at a cognitive and at a graphic level, add degrees of interpretive complexity to the task of the researcher.

Gender Categories and Children's Socio-Demographics

Data Sample

In order to conduct an analysis of gender categories in children's drawings of god we used a sample of $N = 1000$ participants. We engaged participants from four different socio-cultural environments: Buryatia ($N = 354$), Saint Petersburg ($N = 174$), Japan ($N = 143$) and French-speaking Switzerland ($N = 329$). Participants' ages ranged from 6 to 17 years and the age distribution across all four groups was roughly equal.

In the Japanese group, half of the children attended a Buddhist school and the other half attended a secular school. All children from the Buryat group attended a public (secular) school; however, this group includes two ethnic sub-groups: children from a Slavic Russian background, characterized by Christian Orthodox practices; and children from a Buryat Russian background, characterized by Buddhist practices. Children in the group from Saint Petersburg represented two distinct schooling contexts: secular schooling and Orthodox schooling (in a church setting). Finally, the Swiss group of participants includes children from religious school (Catholic or Protestant) and secular school contexts.

Gender Categories and Object of Study

For the purpose of the present study, it is important to consider a few key-notions previously suggested by West and Zimmerman (1987, 2009): gender, sex category, and accountability. According to these authors, gender, as a socio-cultural construct,

is performed in order to put forth one's accountability for a particular sex category (usually woman or man). Nonetheless, the concordance with such a category may not necessarily be perceived in direct connection with a high degree of feminine or masculine expression. As demonstrated by Garfinkel (1967), a woman may be seen as non-feminine without being a poor candidate for the woman category. Bearing this in mind should help clarify the present approach. First, we assessed the nature of the gender (gender identity) of the figures in the drawings—not the *degree* of expression according to a particular gender dimension. Second, references are made to *gender* categories (see Riegel & Kaupp, 2005) and not to *sex* categories mainly because the nature of the drawings does not permit researchers to assume the existence of actual biological features on the drawn god figures.

We assigned every drawing from the sample to one of the following five categories: masculine, feminine, androgynous, undifferentiated, and irrelevant, respectively. The first two categories represent unambiguous figures. Androgynous figures exhibit both feminine and masculine traits. Undifferentiated figures display such a weak expression of gender traits that it is impossible to assign them to any of the previous categories. We placed non-anthropomorphic figures in the *irrelevant* category; they do not qualify for further analysis according to gender.

Gender analysis in the present study relied on both the drawing and its accompanying written description. Three different raters (a woman and two men) from the same research team in the psychology of religion assessed the data. A Kappa coefficient was computed by pairs of raters, leading to the following results: .69, .65, and .59. Interrater reliability was relatively low, given that it is usually deemed acceptable from .67 upwards (Hallgren, 2012). This observation reflects the degree of ambiguity inherent in the data. Disagreements between raters were resolved further through discussion, except in the case of seven drawings. These seven cases were removed from the analysis and do not appear in the report below. The final sample size, therefore, was $N = 993$.

Distribution of Gender Categories

We observed the following from the total sample (all four groups of participants).
Raters classified

- 73.0% of the figures as masculine
- 11% of the figures as undifferentiated
- 9.5% of the figures as irrelevant
- 5% of the figures as feminine
- 0.8% of the figures as androgynous

Cross-Cultural and Inter-Faith Comparison on Feminine Figures

Because of the large predominance of masculine figures overall, the presence of feminine figures, when considered in tandem with the place of data collection, can be informative because it may reflect the specific position of feminine figures in the various cultural and faith settings. Observations in this vein may also indicate the normative pressures that contribute to adopting a binary view of gender⁵:

- 18.2% in Japan
- 8% in Buryatia
- 1.4% in Saint Petersburg
- 0.9% in Switzerland

Gender of the Divine Figure vs. Gender of Participant

Certain categories of figures were drawn mostly by female participants. This is the case of feminine figures (90% from that category) and androgynous figures (62.5% from that category). Only slight differences occurred between female and male participants regarding the use of the other gender categories. The following percentages represent the use of feminine divine figures by female and male participants, respectively, for each cultural group:

Female participants

- French-speaking Switzerland: 1.2%
- Saint Petersburg: 2.6%
- Buryatia: 15.4%
- Japan: 38.3%

Male participants

- French-speaking Switzerland: 0.6%
- Saint Petersburg: 0.0%
- Buryatia: 0.9%
- Japan: 3.6%

Developmental Aspects

In order to explore the possible effect of age on the gender typing of divine figures, we grouped the drawings by the participant's age. Two groups were formed: participants 6–10 years old and participants 11–17 years old. We made two principal observations. With increased age there is (a) a decrease in the undifferentiated gender category (from 14.5% down to 8.5%), and (b) an increase of irrelevant figures (rising from 5% up to 12.8%).

⁵ Percentages are indicative of feminine figures within each group.

Summary

Results confirm the three hypothesized forms of normative pressure through the identification of related levels of gender transgression. Gender typing of the divine as it is communicated within a religious tradition appears to influence children in their choice of gender categories used to depict god. That is, children from a socio-cultural background strongly characterized by Buddhism do use feminine figures to a greater extent than children from a mostly Christian background do. In contrast, in the Christian tradition masculine figures through the Father and Christ are emphasized. Although Catholicism and Christian Orthodoxy do accentuate the figure of the Virgin Mary, they do not grant her the status of a goddess. In that respect, feminist theology has harshly criticized the preponderance of masculinity attributed to the divine in the Christian tradition (Johnson, 1984; Lindsey, 2015). It is quite the opposite for the Mahayana Buddhist cosmology, present in Japan and Buryatia, which includes several goddesses (Shaw, 2015). This opens a whole range of possibilities for children from such a background to draw away from masculine figures of the divine. Such potential is particularly evident in the Japanese context, where the word *kami* is used to name a divine being (Dalby, 2015), which is a gender-neutral term and is neither singular nor plural). Moreover, there are feminine Shinto deities (Miller, 2010), which adds to the representability of the feminine. The Japanese group of children, therefore, is less likely than the other groups to be subject to such forms of normative pressure in favor of masculine figures. Concerning Buryat children, the influence of Buddhist representations is coupled with influence of Christianity (Vanchikova, 2006). This might explain the smaller percentage of feminine figures from this group compared to the Japanese group. More generally, the use of gendered articles in the language of the participants has a plausible impact of the gender typing of god. It is worthwhile to note that, except for the Japanese group, the task referred to a masculine word in the language spoken by the children, even though the wording of the instructions avoided any use of gender articles.

Depending on whether the participant is female or male, the assumed underlying in-group favoritism should be observable. We expect to see a higher proportion of feminine divine figures in the drawings of female participants. We found that accounting for the participant's cultural background did suggest some interactions with their own gender, in a manner that would either favor or inhibit its expression on the divine figure.

The last level of normative pressure, masculine hegemony, seems to be present across all groups from the sample, although it remains difficult to pin it down and separate it from the forms of normative pressure coming from religious traditions because they lean in the same androcentric direction.

From a developmental perspective, it may be that the undifferentiated gender category, as young participants use it, leads essentially to non-anthropomorphic figures (gender-irrelevant figures) in the oldest participants.

Besides gaining insights into children's utilization of specific gender categories in relation to god, we also explored ways in which these categories are expressed. This issue will be covered in the next section.

Strategies Used by Children to Express Gender in Drawings of God

We structured the analysis of gender typing strategies utilized by children so that each gender category (i.e., feminine, masculine, androgynous and undifferentiated) has been addressed across all four socio-cultural groups. The purpose here was not to conduct an exhaustive analysis, but rather to get a sense of the possible strategies used to express gender. Additionally, this analysis aids in identifying the extent to which these strategies were unique to a particular socio-cultural group or employed by more than one of the groups represented in the study.

Masculine Divine Figures

French-speaking Switzerland The divine figure may exhibit biological features that are typically associated with the masculine category, such as a beard, but at the same time, the figure may be wearing a dress, an item of clothing frequently identified as feminine (ch10_ne_m_pfo_12_07_raf). The masculine category may also be accentuated through text (e.g., the words "a man") provided by the participant (ch10_ne_m_pfo_12_07_raf). Influence from the Christian tradition is often evident. Clear traditional references, such as Christ on the cross, indicate the masculine gender of the figure. This can be very useful, particularly alongside ambiguously gendered features (ch09_vd_m_pbu_11_11_jul). The divine figure may also be represented as an ordinary human being whose clothes stipulate identification as a masculine figure (ch10_ne_f_psr_08_05_ama).

Saint Petersburg Saint Petersburg Some figures are depicted as celestial patriarchs, and these happen to be very masculine, they have beards and a tough appearance (ru10_sp_m_rs_15_02_ale, Fig. 5.3). Beyond depicting gender per se, it seems that participants sometimes use masculine figures to accentuate power qualities, as in this case, "I meant that god is almighty and stands above us and holds our world" (ru10_sp_m_rs_15_02_ale). We observed representations of Jesus Christ (ru09_sp_f_rn_17_01_kri), as well as god figures whose patriarchal qualities could be perceived only through the participant's written description of the drawing (ru09_sp_m_px_13_03_ern).



Fig. 5.3 <http://ark.dasch.swiss/ark:/72163/1/0105/LBYby6ZZRYO=3KsYD0MhoQ3.20180702T195644194Z>

Buryatia Influences of Buddhist or Christian traditions are apparent in depictions of Buddha (ru12_bo_f_pb_15_03_lud) or Jesus Christ (including compositions featuring the Madonna and Child), respectively (ru12_bo_f_px_12_00_nas). An influence from shamanism also emerged, found, for example, in the form of a human figure with the head of a dog (ru08_bo_m_pb_10_11_tam). Other sources, such as Ancient Greek mythology (e.g., Ares, god of war), serve to inspire the children's efforts (ru08_bo_m_pb_10_09_ars). Additionally, researchers identified borrowings from popular culture in the drawings, such as the depiction of Bruce Almighty, a movie character played by actor Jim Carrey (ru09_bo_m_px_13_11_vas).

Japan As one would expect, Buddha figures prominently in drawings from this group of participants (jp04_to_m_rnx_08_08_stx), but we also noted the presence of characters from popular culture, such as Goldorak, depicted as a patriarch and surrounded by his celestial court consisting of the Mario Brothers (jp03_to_m_

Fig. 5.4 http://ark.dasch.swiss/ark:/72163/1/0105/bd2yeyX7T_W8qkVci3iB VAV.2020031 8T140231899891Z



pfx_10_02_tax). References to people from the child's own family (e.g., grandfather) also appear (jp03_ca_f_rix_07_10_amx, Fig. 5.4).

Divine figures may be characterized as masculine on two different levels: through gender features themselves and through references to familiar characters. While the first level simply consists in including stereotypically masculine features on the divine figure, at the second level children reference characters whose sexual category is known, for example: a child's grandfather, Buddha, Jesus Christ, or Bruce Almighty.

The commonly gender-transgressive character of traditional religious representations (e.g., long hair, dresses) may be lessened by the inclusion of more contemporary features that fit masculinity more tightly. This is the case of Jesus Christ in French-speaking Switzerland (ch16_vd_f_rcb_14_11_oxa) or Buddha in Buryatia (ru12_bo_f_pb_15_03_lud).

Feminine Divine Figures

French-speaking Switzerland Figures may exhibit features that are usually considered feminine, such as feminine curves, braids, pink cheeks and lips (ch16_fr_f_rcn_12_09_gae). These drawings also reference religious traditions that are not typical of this group's cultural background, such as the Hindu goddess Lakshmi (ch09_vd_f_pbu_12_00_oli, Fig. 5.5).

Saint Petersburg References are made to feminine figures from the Christian tradition, such as the Virgin Mary, whose identification was supported by the text accompanying the drawing (ru09_sp_f_px_08_01_sta). Some drawings reference other human based entities, such as fairies (ru09_sp_f_px_07_10_nas).

Buryatia These drawings depict feminine body features, such as prominent breasts (ru12_bo_f_pb_12_06_adi). Some gendered personality traits can also be found in written texts, as in the case of a drawing that depicts a woman warrior (ru09_bo_f_px_11_03_nel). The text that accompanies the drawing states: "My god is a woman. She is authoritative, untamable and glowing in her beauty. She has a long and beautiful stick which can do magic..." Another representation exhibits the Virgin and Child from the Christian tradition, but in an unusual twist, the participant indicates that it is the mother, Mary—rather than the child—who is the divine figure (ru09_bo_f_px_10_10_vik). It also happens that the feminine qualities of the divine figure happen to be only clearly apparent in the written text (ru09_bo_m_px_10_06_bou).

Japan Many figures are gendered as feminine by very stereotypical features (especially the hair and clothes) and sometimes they look like princesses (jp03_to_f_pfx_13_06_sax, Fig. 5.6). Some figures resemble traditional Christian figures, such as Mary,⁶ (jp04_to_m_rtx_10_10_kyx). In some exceptional instances, feminine features (e.g., long feminine hair) are used to symbolize qualities that go beyond gender, for example: the act of protecting the world can be graphically embedded in the figure's hair (jp04_ca_f_rix_14_03_kkx).

We see two main strategies here. Some figures display stereotypical feminine traits (and concurrently bear masculine features, but at a sufficiently low level for those figures not to be androgynous). Other figures do clearly refer to traditional feminine deities. It is worthwhile to note that at the graphic level, the expression of feminine traits seems to be more straightforward in the Buryat and Japanese groups.

⁶It is worthwhile to note that this might also be construed as an instance of borrowing from within the Japanese popular culture. In fact, there are stories about the Virgin Mary (known as "Maria-sama ga Miteru" in Japanese, which translates to "The Virgin Mary is Watching you" in English), in various forms, such as novels, anime, or manga (Hairston 2006).



Fig. 5.5 <http://ark.dasch.swiss/ark:/72163/1/0105/hsU3HEEHT3GE3Y7NOCskjwE.20201008T10291430686Z>

Androgynous Divine Figures

French-speaking Switzerland Gender markers may be found on the outfit (dress, earrings and braids) or on the body (beard and hairy legs) (ch10_ge_f_rbc_15_04_val, Fig. 5.7). The divine figure may also be divided into half a woman and half a man (ch10_ge_m_pco_11_00_flo; ch09_ge_m_pco_10_00_flo). The use of more

Fig. 5.6 <http://ark.dasch.swiss/ark:/72163/1/0105/FktBI22cR7ykWhxJ2II3BQH.20200318T122236790496Z>



than one gender in the divine figures may imply androgyny as well (ch10_ge_f_rbc_12_11_jul).

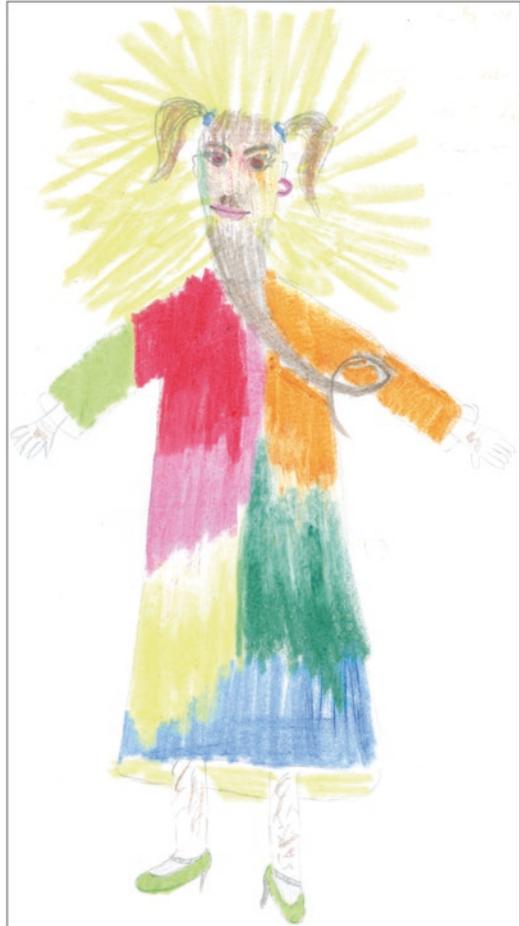
Saint Petersburg No androgynous figure was identified in this group.

Buryatia Researchers found conflicts between feminine and masculine features, including the body, clothes and hair (ru09_bo_f_px_08_00_tan) or the cheek color (ru09_bo_f_px_13_02_eka), that are not explicitly resolved in the accompanying texts.

Japan The androgynous qualities of the divine figure that bears a somewhat masculine appearance may be grasped by referring to the written text provided by the participant (jp04_fa_m_pqx_11_05_tyx). In this group, we note that androgyny may be distributed across several divine figures within one drawing, some of them feminine, others masculine (jp03_to_f_pfx_07_06_max, Fig. 5.8). Androgyny also appears as a conflation; several known cultural figures may be condensed into one. For example, one drawing (jp04_to_m_rtx_08_09_fyx) displays a single figure that combines the “Seven Lucky Gods”, including Benzaiten, who is a feminine character (Miller, 2010).

With regard to androgynous figures, researchers identified three main strategies employed by the participants. Following one of these strategies, participants mixed

Fig. 5.7 <http://ark.dasch.swiss/ark:/72163/1/0105/6TefojrqQ9SPj22i2ca3qAo.20201009T120536915466Z>



feminine and masculine features on a same figure with relatively high degrees of femininity and masculinity. According to another strategy, participants represented the god figure in a way that divided the divine being into distinct feminine and masculine parts. In the third strategy, participants expressed androgyny of the divine through the distribution of gender traits across multiple figures, each figure standing for either the feminine or the masculine categories. This particular representation could also suggest polytheism⁷.

⁷We are aware that there could be some misunderstanding over theological biases concerning the possible construal of a same divine *substance* (to use the theological term) in multiple representations of the divine. This is not the case. Considering a gender category, such as androgyny, across several god figures is derived from the methods. More precisely, each drawing is assigned to a gender category, be it for one or more god figures. In the main, this approach does not group theologially, but instead classifies on the basis of gender instead.



Fig. 5.8 <http://ark.dasch.swiss/ark:/72163/1/0105/8vJ4O4CgSIuweA7sQr4xGQI.20180702T170041568Z>

At an intercultural level, Saint Petersburg was found to be the only group that contained no figures classified as androgynous. Also, while ontological duality as expressed through gender seemed to characterize the group from French-speaking Switzerland the Buryat group referred to it without necessarily involving gender at all (e.g., ru09_bo_m_px_11_06_vit, Fig. 5.9).

Undifferentiated Divine Figures

French-speaking Switzerland Gender traits are, frankly, weakened on figures having a human silhouette (ch08_ge_f_rap_11_00_and). In other drawings, there is instead some personification of a non-human entity (e.g., a light). The participant achieves this personification by drawing the non-human entity with a human face (ch09_vd_f_pbu_12_06_mel, Fig. 5.10). The participant may also draw the representation of god as a faceless figure in a way that makes it impossible for the researchers to identify its gender (ch10_ge_f_ral_13_05_kok).

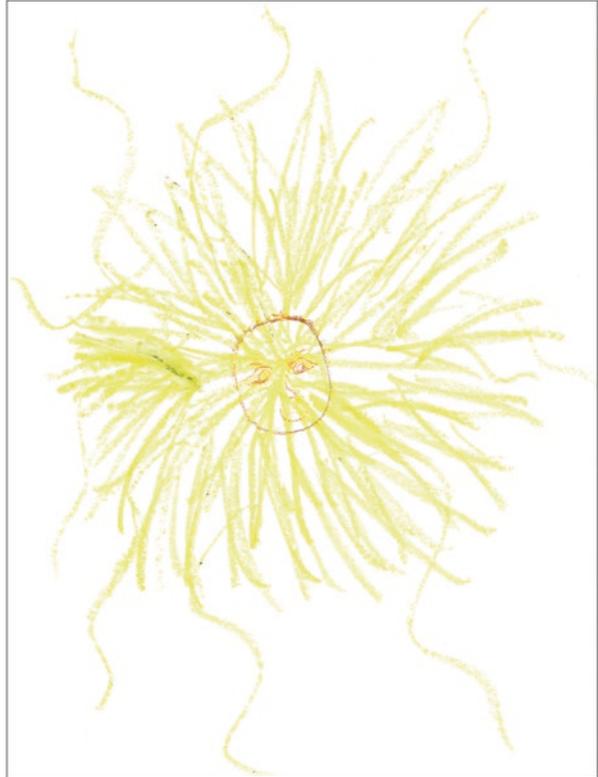
Saint Petersburg Gender traits for this group are also rather weakened, sometimes this feature is reinforced by an accompanying statement that god appears to be “not an ordinary human being” (ru09_sp_f_px_11_04_tan). Here too, the absence of a face may lead to undifferentiated figures, as is the case, for example, of the drawing of a Christian angel. The descriptive text accompanying this drawing underscores the figure’s ineffable properties (ru09_sp_f_px_11_xx_ana).



Fig. 5.9 http://ark.dasch.swiss/ark:/72163/1/0105/v4QFu_6kSs27ZrjHEfwn6gV.20180702T192715355Z

Buryatia Similarly, in this group, faceless figures may lead to a lack of gender differentiation (ru09_bo_f_px_11_03_dar), and here again this applies to angels (ru08_bo_f_pb_15_01_nin). Gender attenuation also occurs on otherwise traditional representations of Buddha, sometimes depicted as a statue, “Burkhan” (ru08_bo_f_pb_07_05_ali). A strategy that seems to be typical of this socio-cultural group consists in adding extra human body features (e.g., eyes and ears) to an already

Fig. 5.10 <http://ark.dasch.swiss/ark:/72163/1/0105/oE5E00QaRsKClmZq6r7v5wA.20201008T104248031409Z>



complete human figure. This expresses multiplicity in the divine; yet, the figure remains gender-neutral (ru08_bo_m_pb_11_09_dan).

Japan As in the other groups, gender traits may be weakened, and different types of characters may be concerned, such as Buddha (jp04_to_m_rtx_08_07_whx), or more ordinary figures (jp03_ca_f_rix_13_02_rix). In this group, the absence of a face is characterized by the inclusion of a mask (jp04_ko_m_ryx_13_01_trx, Fig. 5.11).

We observed two main approaches to drawing undifferentiated figures in the present sample. One approach consists in reducing the salience of gendered features overall, and another approach equates to attenuating features that make a human figure typically human, such as the face. The two groups from Saint Petersburg and French-speaking Switzerland appeared to blur gender expression by applying personification to non-human figures. Regarding the absence of a face, Japanese participants stood out from the others by sometimes including masks in place of faces. Unlike the other gender categories, undifferentiated gender was only rarely reflected upon, or mentioned in, the written texts describing the drawings. Undifferentiated gender has the possible effect of depicting a god that transcends gender: what Thatcher (2011) referred to, in the Christian tradition, as a *supra-sexual* god.

Fig. 5.11 http://ark.dasch.swiss/ark:/72163/1/0105/aa_7HOHQZqersFw3Qic4gd.20200325T144323000095Z



Summary

There seem to be common strategies for gender typing that are influenced by religious traditions. In this project, Christian models prevail in the groups from Saint Petersburg and French-speaking Switzerland; Buddhist models predominate in Japan and Buryatia. It is worthwhile to note, that although the Buddhist model is prevalent in drawings from Buryatia, the Buryat group did manifest a complex influence from both religious models. Dandarova (2013) had already observed such a mixture of influences.

Some drawings rely mainly on canonical religious examples, others, however, do vary more from ready-made representations and seem to tie into several forms of gender transgression. A number of drawings showed evidence of borrowing from outside of the participant's socio-cultural background. These borrowings include references to figures drawn both from religious traditions and from popular culture (e.g., anime).

Discussion

Drawings are a particularly appropriate medium through which children may communicate representations of god. Anthropomorphic god representations, predominant in all four samples, ineluctably express gender in forms that are either unambiguously pronounced (i.e., feminine or masculine), mixed (i.e., androgynous), or indistinguishable (i.e., undifferentiated). At the same time, seeking to decode gender in children's drawings of god is an ambitious objective. The difficulties inherent in the task necessitate the use of the multiple raters. The descriptive text provided by the participants helped raters to interpret the drawings and reduce the (at times high) degree of ambiguity, and could therefore stand as ekphrastic information.

The present findings point to a great diversity of god representations in all four socio-cultural groups (i.e., Saint Petersburg, Buryatia, French-speaking Switzerland, and Japan). Similarities, as well as differences, among these groups have been highlighted by analyzing the drawings across four gender categories (i.e., feminine, masculine, androgynous, and undifferentiated). We also observed three different levels of influence: predominant religious tradition(s) within a socio-cultural environment, the artist's gender, and gender power relationships. The respective influences stemming from all three levels may cause tension or even conflicted feelings in the child. The impact of the first level may be noticed in the utilization of fewer feminine figures in groups that are strongly characterized by Christianity (i.e., Saint Petersburg and French-speaking Switzerland). Religious traditions do seem to bear an effect in that regard; however, it does not mean that feminine figures are constrained to abide by traditional iconography. Instead, this influence is understood as relating to gender in a broader sense, rather than concerning only canonical styles. Regarding the second level, female participants clearly used feminine figures more frequently. The third and last level was most complex to examine because it pertains to broader socio-cultural trends. Nevertheless, general androcentrism in the data may, to some degree, be viewed as the expression of general cross-cultural masculine hegemony in the groups that were studied. Finally, a developmental pattern became apparent; divine representations progressed towards an absence of gender by an increased use of non-anthropomorphic figures among older children (Brandt et al., 2009; Dandarova, 2013; Hanisch, 1996; Ladd et al., 1998).

With respect to the strategies that children employ in their drawings—insofar as their drawing abilities permit, and especially in accentuating the salience of gendered properties—one may think of *perceptual lures*, such as the ones used in ethological research (Detrain & Deneubourg, 2009). Lures may equate to the insertion of common gender markers, the presence of traditional and popular figures, or the inclusion of descriptive texts associated with the drawings. Researchers face two types of data: visual and textual. Combining these elements in the form of a perceptual lure, if well performed, leads to a frank and unequivocal expression of gender (this can include mixed gender).

There are distinctions between explicit and implicit performances of gender. Goffman (1976) has coined the term *gender display* in order to refer to one's affiliation with a particular gender. Gender can be willingly (explicitly) performed in the form of what Goffman has called a *given*. This corresponds to the perceptual lures mentioned above. Gender can also be *given off*, through elements that are deliberately put forth by the social actor. There are many parallels in the data between these concepts and the findings of present study, specifically because gender was not always made explicit by the children, and even seemed to be out of the child's conscious reach at times.

Observations from the present sample have underlined the transgressive nature of certain divine figures with regard to gender; however, possible tensions ensuing from transgression were found to be attenuated in the case of more modern representations and occasional borrowings from popular culture. Gender was also sometimes expressed through divine representations taken from religious traditions outside the participant's own background. We found this especially in the case of feminine figures, which often appeared to conform to ready-made depictions available in the wider cultural context. Analysis of the data also discovered that known feminine characters (e.g., the Virgin Mary) are, by some, credited with a divine nature.

References to religious figures were less obvious in drawings of androgynous or undifferentiated figures that did not fit a binary (either masculine or feminine) view of gender. Nevertheless, angel-like Christian figures were often drawn as androgynous or undifferentiated figures, such as those found in the paintings of Leonardo da Vinci or Michelangelo, exhibiting either mixed (feminine-masculine) or attenuated gendered features.

Beyond communicating gender for itself, gender typing may underscore other types of qualities. For example, researchers found that participants conveyed a sense of mystery through the use of a beard (which is usually associated with the masculine category) or through faceless figures (often gender-undifferentiated). Similarly, almighty power may well be associated with sturdy masculine figures or with feminine warriors. As for androgynous or undifferentiated figures, they are sometimes used to convey some multidimensional nature of god. Such effects are not unique to gender, and there might be overlaps between the functions endorsed by a variety of symbols.

In conclusion, when drawing god in an anthropomorphic form, children generally cannot ignore gender typing, and therefore their drawings may transgress gender-typing norms. This can result in some surprising compositions. Children from various different socio-cultural backgrounds do copy, reconstruct, and create throughout the process of producing their drawings of gendered gods. Future research should examine social scenes and explore how their drawings might illustrate power plays based on gender. In that regard, it might also be interesting to focus on drawings in which the divine is spread over several figures of the same gender only. This can result in very feminine (jp03_fa_f_pfx_10_02_eri, Fig. 5.12) or very masculine drawings (jp03_to_m_pfx_10_02_tax) that may call to mind sisterhood and brotherhood organizations that aim to heighten empowerment and social support in the face of gender discrimination (Radina, 2017).



Fig. 5.12 http://ark.dasch.swiss/ark:/72163/1/0105/D_XCS0bqSzyCy0sv0QInxQd.20200318T121534281293Z

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Chapter 6

Where Gods Dwell? Part I: Spatial Imagery in Children's Drawings of Gods



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and Pierre-Yves Brandt 

Abstract Supernatural agents, although imagined by humans as omnipresent, cannot escape being placed (at least mentally) by believers somewhere in physical space. For example, kami in Shintoism are believed to reside in natural elements of the landscape. In Christianity, God is typically associated with Heaven. Similarly, Jesus is said to have ascended into Heaven after his resurrection. According to Buddhist mythology, gods live in the heavens, and the next Buddha, Maitreya, will descend to earth from heaven.

This study (Part I of a two-part project) investigates the role of spatiality in children's conceptions of the divine as shown through their drawings of god. We collected drawings by participants from four different cultural and religious environments ($n = 1156$): Japanese (Buddhism and Shinto), Russian-Buryat (Buddhism, Shamanism), Russian Slavic (Christian Orthodoxy) and French-speaking Swiss (Catholic and reformed Christianity). Our study indicates that the tendency to place god in the sky was not strongly related to a particular cultural or religious context. Children from all groups most often drew god either in the sky or with no background at all. We note two implications for folk psychology: (1) Children tend to conceptualize god in single location, (2) They often associate the divine with a celestial background.

Keywords Cross-cultural · Children's drawings · God representations · God concept · God's dwelling · Drawing background

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Space is one of the main dimensions of human existence. We live in space and organize our actions in the spatial world. From the early years of our life, we learn to locate objects and entities in space. This capacity is ontologically fundamental and undoubtedly critical from a biological point of view. Tuan wrote, “Spatial perceptions and values are grounded on common traits in human biology, and hence transcend the arbitrariness of culture. Although spatial concepts and behavioural patterns vary enormously, they are all rooted in the original pact between body and space” (Tuan, 1979, p. 393).

Our religious belief system is also formed by our everyday experiences with the physical world and with the cultural environment in which we live. Even supernatural agents, imagined by humans as entities with uncertain boundaries and supernatural physical properties allowing them to be everywhere at the same time, cannot escape being positioned somewhere in the physical space by believers. For example, in Shinto, the belief system traditionally connected with our Japanese sample, the multiplicity of the “way of the kami”¹ presupposes their different spatial locations. Dossett (1994) notes that some kami are connected with geographical regions, such as villages and provinces, while others are believed to reside in mountains, trees, forests, rivers, or in celestial bodies. Mountains have an especially important place in Shinto. They are believed to be the link between heaven and earth; they are also considered as “the other world” where one goes after death (Hori, 1966). Buddhism added the idea of paradise to the extant concept of mountains because death gave the opportunity for salvation and rebirth into Buddha’s Pure Land. For instance, the mountain of Kumano in central Honshū was identified as the Pure Land of the bodhisattva Kannon (Goodwin, 1989). Moreover, according to Buddhist mythology, gods inhabit 26 heavens, and the next Buddha, Maitreya, will descend to earth from Tūṣita heaven.

In Christian theological reflections, omnipresence is one of the major attributes of God.² God can be not bound to a particular place, physically located in empirical space; He is far above all spatial distance and separation (Brunner, 2014). At the same time, in the Bible, and more particularly in the Old Testament, God is consistently associated with a heaven that is located above in the sky and is identified as the place where immortal souls go after death of the physical body (Van Noppen, 1995). Moreover, the claim that Jesus was divine and came to earth

¹ Shinto is usually translated as the “way of the kami” where *kami* means gods or deities, sometimes souls or spirits. According to Rots (2017) it is practically impossible to give a neutral, empirically adequate definition of Shinto because it is a historical construct, subject to continuous negotiation and redefinition and not the indigenous worship tradition of Japan. According to Rots, modern Shinto is largely an invented tradition that developed out of Buddhism and incorporated elements from a variety of sources, including existing shrine traditions, imperial rites, and Confucian ideology. Shinto has no founder, no official sacred scriptures, and presents a mixture of polytheism, nature and ancestor worships, and emperor cults.

² Why the term *god* begins sometimes with an uppercase letter G, sometimes with a lowercase letter g, and why it appears sometimes in the singular and sometimes in the plural, is explained in the introductory chapter of this book (Chap. 1, this volume).

only to die, then rise from the dead, and finally ascend back into heaven to retake his throne serves as the basis for much of the Christian faith (Wright, 2000).

The primary concern of the whole project presented in this book is to investigate how children from different cultural and religious contexts imagine and depict the divine. In the current paper, we address one of the unexplored aspects of this issue. We explore children's conceptions of god's dwelling as presented in their drawings of the divine. We collected data from four groups of participants characterized by different cultural and religious environments: Japanese (Buddhism and Shintoism), Russian-Buryat (Buddhism, Shamanism), Russian Slavic (Christian Orthodoxy) and French-speaking Swiss (Catholicism and reformed Christianity).

God's Dwelling Place as Shown in Children's Drawings: A Literature Review

Existing research presents only fragmentary data on this topic. Hanisch (1996) gives the most complete findings on the subject we could locate. He examined drawings by children ($n = 1471$, 6–16 years old) from Western Germany, considered by Hanish as a religious environment, and of children ($n = 1178$, 6–16 years old) from Eastern Germany, who were not religiously educated at the time of his data collection. According to his results, 41.3% ($n = 351$) of the children from Western Germany who drew anthropomorphic³ representations of God positioned the figure "in clouds."⁴ As for children from Eastern Germany, their number was slightly higher, precisely 46.4% ($n = 482$). Unfortunately, the author did not present the data for other types of background, nor did he provide the percentage of such drawings (the sky as background) that he found in non-anthropomorphic representations. Hanish explored also the implications of age on the drawings. The trend he discovered is rather complex and dependent upon the different samples. In Western Germany 41.5% of the youngest children (7 years old) drew God in clouds; while in Eastern Germany, only 24% did this. The percentage of God figures positioned in the clouds increases in both groups, but peaks at different ages. In representations from Western Germany, drawings with God drawn in the clouds peak (55.2%) at 14 years of age. In Eastern Germany, such pictures peak (59.6%) at 12 years of age. Regarding the older age group (16 years of age), the sample from Western Germany contains no such drawings. The percentage of such drawings from that age group in the sample from Eastern Germany has fallen to 37%. Hanish also examined the effects of the participant's sex on their representation of God. He found that in both

³These results concern only drawings categorized by Hanish as anthropomorphic. It should be noted here that Hanish did not categorize as anthropomorphic drawings showing a hand as a symbol of God. In our research, we took all types of drawings into consideration.

⁴"God in clouds" is one of Hanish's categories. We do not know if he included in this category any drawings that lacked clouds but depicted a god figure set against blue coloured, sky-like background.

samples, more girls than boys drew God in the clouds (42.5% girls versus 40% boys in Western Germany and 49% girls versus 43% boys in Eastern Germany⁵).

As for other studies, results are not consistent because the categories and various elements distinguished by different researchers often overlap, blurring the picture of our understanding rather than providing better focus. Nevertheless, we see that children often represent god in the sky, or as levitating above the ground. For example, Pitts (1976) reported that children from diverse groups of North American religious denominations ($n = 180$, 6–10 years old) often portrayed God in a non-earthly context, e.g., amongst clouds. Tamm, working with a Swedish sample ($n = 425$, 9–18 years old), identified one of the most popular categories as *God in heaven* (Tamm, 1996). Kay and Ray (2004) examined the frequency of the various elements drawn by children in a Church of England primary school ($n = 135$, 4–11 years old) and found that majority of children depicted God as levitating (87.9% of girls and 70.8% of boys).

Pneumatikos (2002) reported another finding relevant to our research, although the task cited was not identical to that which we cited above. The author asked children (English-speaking primary school children living in Luxembourg who self-identified as either Catholic or Greek Orthodox, $n = 132$) to “draw their own house and the house where God lives”. Pnevmatikos distinguished four main groups of drawings. The first group of drawings represented material constructions on Earth (a real house or a real church) drawn by children at the same level as their house. According to Pnevmatikos, the underlying idea is that God is like a real man who lives on Earth and does not differ ontologically from human beings. The second group of drawings represented material constructions in the clouds (a real house, a real church, or a real garden). The underlying idea is that either God is a human being whose soul has never been freed from his body (Jesus Christ resurrected) or is the soul of a dead human being, now living in heaven under analogous conditions to those of real life on Earth. In the third group, children drew houses or symbolic elements like the gates of paradise, houses made of clouds in heaven, or angels and planets. The underlying idea is that God does not need a material house to live in but does need a particular spiritual place to live in. For Pnevmatikos, this does not suggest that the children are aware of the symbolic nature of God’s dwelling place. The last type of drawing was done by Catholic children who drew clouds labelled with qualities like goodness, love, peace, etc. For Pnevmatikos, this type of drawing implies that God does not need a tangible house or a particular place to live in, but that He exists anywhere where such qualities exist. As for the age effect, Pnevmatikos found the gradual diminution of drawings of the first type (God as a human being living on Earth) from 55% in first grade to 3.7% among fifth graders. The second type of drawing (God living in a material construction in heaven) increased from 15% among the first graders to 66.7% for the older participants. The percentage of the third type remained almost the same (15–30%) for all grades. The fourth type

⁵Hanish did not include inferential statistics.

appeared only as a small percentage (6.3%) among fourth graders (Pnevmatikos, 2002).

From the studies cited above it is clear that children often imagine gods as beings physically located in some space on the Earth, in the sky, or somewhere in a heavenly realm. It means that the idea of god as omnipresent (not bounded to a particular place) as is taught in Christian doctrine, appears both rather late in the developmental stage, and according to the religious education made available to these children (Hanisch, 1996; Pnevmatikos, 2002). As for results showing gender differences, some studies have revealed that girls more frequently represented god as a being in the clouds (Hanisch, 1996) or in heaven (Tamm, 1996), or drew god as levitating (Kay & Ray, 2004).

Aims of the Study

The review of research we have presented above shows that children often represent gods as celestial beings and draw them in the sky. Unfortunately, these studies presented only fragmentary data on this topic. Moreover, we found no studies conducted in non-Western cultures that considered god's dwelling in their analysis. The present research aims to fill this gap and looks for a more nuanced and consistent account of children's conceptions of god's dwelling. To do this we explored the background in children's drawings of god and identified the context (celestial, terrestrial, or other) in which children placed god when composing their drawings. We also aim to examine if the drawn background would be impacted by age, gender, and religious vs. public school settings, and, further, to examine if developmental and gender patterns would be the same in our culturally and religiously diverse t samples.

Data Sample

For the purpose of the present study we used a subset of the drawings collected in Japan, Russia, and Switzerland ($n = 1156$; age min = 6 years and 3 months, age max = 15 years and 11 months).⁶ Drawings from Japan ($n = 135$) were collected in regular and Buddhist schools in four prefectures, namely Tokyo, Kyoto, Fukushima, and Chiba. Drawings from Russia ($n = 511$) were divided into two separate samples because of important cultural and religious differences between children from two different ethnic groups, Russian-Slavic and Russian-Buryat. The Russian-Buryat subsample ($n = 219$) of drawings was collected in regular schools in Ulan-Ude

⁶The data used in this study were initially selected and annotated for the study described in part II (Chap. 7, this volume). For this reason, blank sheets of paper, or drawings containing more than one god figure were excluded.

(Buryatia), where the majority of children declared themselves to be Buddhists. Regarding the Russian-Slavic subsample ($n = 292$), drawings were collected both in regular schools (Ulan-Ude and Saint Petersburg) and in Orthodox parishes (Saint Petersburg). Drawings from the French-speaking part of Switzerland ($n = 510$) were collected in regular schools and in Protestant and Catholic parishes. To study the age effect, all samples were divided into three age groups (7–9 years, 10–11 years, and 13–14 years old). For more detailed information about age groups (age, M and SD), see Table 6.1.

Method

*Drawing Task*⁷

Researchers provided participants with paper (size A4), a graphite drawing pencil, a set of wax pastels, and coloured pencils. The following instruction was used in all countries:

Have you ever heard the word “god”? Close your eyes and try to imagine it. Now draw it.
Do not look at your classmates, because I would like to know how you imagine it.

After completing this task, the participants were asked to describe their drawings and to answer a questionnaire about their religious environment. Researchers arranged to meet with small groups of participants (10–12); participants worked individually on the drawing task. Time for drawing was not limited and the full session lasted 40 min on average.

Coding Drawings

In order to study images of god’s dwelling place in the children’s drawings, two judges (both females; one of whom is the first author of this article) coded the background of each drawing independently. We based the coding on the content of the drawing, and, in some cases, on the children’s description of their work, in order to obtain precise information about the image. Six categories were employed to identify the location of god representations in the pictorial space. They included five types of background (1–5) and the absence of any background (6):

1. *In the Sky* (god figure is set in a background of clouds and/or blue colour, the earth and/or terrestrial decor is far below but the Earth is not represented as a planet) (see examples of drawings, Fig. 6.1);

⁷For more detail about the procedure see the introduction to the present volume (Chap. 1, this volume).

Table 6.1 Participants' socio-demographics

Samples	Age		Young age		Middle age		Older age		Child's gender		Context	
	M	SD	M	SD	M	SD	M	SD	Girls	Boys	Regular	Religious
Japanese (n = 135)	10.88	2.29	8.09	0.49	11.07	0.55	13.60	0.42	58 (42.96%)	77 (57.04%)	55 (40.74%)	80 (59.26%)
Russian-Buryat (n = 219)	10.97	2.69	7.81	0.64	11.22	0.71	13.90	1.04	113 (51.60%)	106 (48.40%)	219 (100%)	0 (0%)
Russian-Slavic (n = 292)	10.90	2.18	8.17	0.65	11.20	0.66	13.37	0.72	152 (52.05%)	140 (47.95%)	195 (66.78%)	97 (33.22%)
Swiss (n = 510)	10.99	2.41	8.18	0.73	10.92	0.83	13.71	0.79	266 (52.16%)	244 (47.84%)	223 (43.73%)	287 (56.27%)



Fig. 6.1 Drawings representing the *god-in-the-sky* category from Japanese, Russian-Slavic and Swiss samples (http://ark.dasch.swiss/ark:/72163/1/0105/IFGUoiGkQ_ebEM9KQMnwRQm.20200407T131153635227Z, <http://ark.dasch.swiss/ark:/72163/1/0105/bHuHkm9FQ767zrFyTm7txAf.20180702T191757675Z>, <http://ark.dasch.swiss/ark:/72163/1/0105/9yqWi69TRlagOTciTCzLUQl.20201010T084537738978Z>)



Fig. 6.2 Drawings representing the *god-on-earth* category from Japanese, Russian-Buryat and Swiss samples (<http://ark.dasch.swiss/ark:/72163/1/0105/3ibe2A2KSmiSua9jti9Etge.20180702T165551173Z>, http://ark.dasch.swiss/ark:/72163/1/0105/U_sHKj5TSsict3DnXNY2sQq.20180702T184705255Z, <http://ark.dasch.swiss/ark:/72163/1/0105/bfi8ECn8Q6t6wyfKNuXsAtgD.20201008T101853913774Z>)

2. *On Earth* (god's feet touch the ground or the surface of the water) (see examples of drawings, Fig. 6.2);
3. *Levitating* (god levitates above the ground, feet do not touch the ground or the surface of the water) (see examples of drawings, Fig. 6.3);
4. *Outer Space* (Earth is represented as a planet, the stars and other planets can also be represented; the figure of god dominates the universe) (see examples of drawings, Fig. 6.4);
5. *Other Background* (all pictures that do not meet the criteria of previous types, e.g., god is depicted in paradise, supported by the children's description of their



Fig. 6.3 Drawings representing the *god levitating* category from Russian-Slavic, Russian-Buryat and Swiss samples (<http://ark.dasch.swiss/ark:/72163/1/0105/R51HZfJORHid8ISt=WmzSgR.20180702T19364819Z>, <http://ark.dasch.swiss/ark:/72163/1/0105/x1B5WpDIS7KsIp=qjv8mjw2.20180702T185330748Z>, http://ark.dasch.swiss/ark:/72163/1/0105/yl4vFkVDQeyd-VGaZqY_IUgE.20180702T164531789Z)



Fig. 6.4 Drawings representing the *outer space* category from Japanese, Russian-Slavic and Russian-Buryat samples (<http://ark.dasch.swiss/ark:/72163/1/0105/r6MMzwV0THCe6F7bfgUkgY.20200415T113646218451Z>, http://ark.dasch.swiss/ark:/72163/1/0105/4bMI3AEfThaXUPZ_3PzYbw6.20200906T104809769572Z, <http://ark.dasch.swiss/ark:/72163/1/0105/4guytwtQGSFK13DygidQ4.20180702T201302842Z>)

- own drawings, or with other characters like angels, humans, and/or animals in the absence of any other background) (see examples of drawings, Fig. 6.5);
6. *No Background* (no background was drawn) (see examples of drawings, Fig. 6.6).

Inter-rater agreement was measured with Cohen's Kappa. The inter-rater agreement was excellent for all samples: Japan: $\kappa = .97, p < .001$; Russian-Buryat sample: $\kappa = .95, p < .001$; Russian Slavic sample: $\kappa = .94, p < .001$; Switzerland: $\kappa = .94, p < .001$.



Fig. 6.5 Drawings representing the *other background* category from Russian-Buryat, Russian-Slavic and Swiss samples (<http://ark.dasch.swiss/ark:/72163/1/0105/GVnHho8MRtWIVmMZQ9o64QK.20180702T192340855Z>, http://ark.dasch.swiss/ark:/72163/1/0105/xRCqLiZH-SOC1h0K0_loM6Qx.20180702T195711637Z, <http://ark.dasch.swiss/ark:/72163/1/0105/WipnUlu7SeuOIeN12Q3UiQJ.20201008T101217863717Z>)

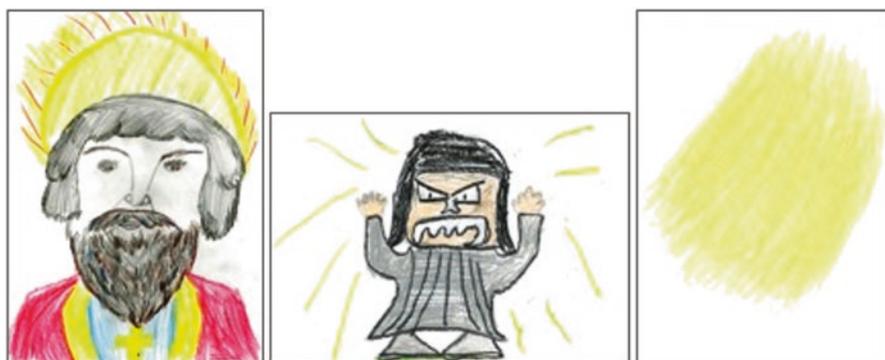


Fig. 6.6 Drawings representing the *no background* category from Russian-Slavic, Japanese and Swiss samples (http://ark.dasch.swiss/ark:/72163/1/0105/2IkdKr_KT1ixLfiEpVFtAS.20200906T082317495333Z, <http://ark.dasch.swiss/ark:/72163/1/0105/0IObP2HASw2u8RE4nBv1kgM.20200311T145442226719Z>, <http://ark.dasch.swiss/ark:/72163/1/0105/8CECSoEMQW=cbV8OLcDWCQn.20201010T083618347468Z>)

Statistical Analysis

We performed a Pearson's chi-square test of significance to compare background types in the data. The possible contributing factors that were examined included children's culture and religion (as defined by one's country or ethnicity), age, gender, and religious schooling.

Results

Effects of Culture and Religion

Results of the Pearson's chi-square test of significance are presented in the Table 6.2. As we observe throughout the dataset, there was a significant dependency between country and background type ($\chi^2(15) = 56.65, p < .001$). Our results indicate that a large proportion of participants did not draw any background: one third of the children in the Russian-Buryat (30.1%) and the Russian-Slavic (31.8%) samples, 42.2% of the Swiss children, and a half of the Japanese children (50.4%).

When the children did draw backgrounds, they most often depicted god in the sky (across all samples). Nearly the same percentage of children in the Russian-Buryat (44.3%) and the Russian-Slavic (41.1%) samples drew god in the sky, while slightly fewer participants in Japan (31.1%) and Switzerland (28.8%) did this. As shown by the descriptive statistics in Table 6.2, we found that the next most frequent background type depicted by the participants was god on earth. This was true for drawings from all locations except Japan. The god-on-earth category appeared in 14.6% of the Russian-Buryat drawings, 15.1% of the Russian-Slavic drawings, and 11.2% of the Swiss drawings. Only 3.7% of Japanese drawings depicted god on earth. In the Japanese sample, other background was the second most frequent category (10.4%). In these drawings, god or kami were depicted in company with other entities such as angel(s), human(s), or animal(s). Other categories of background, such as levitating and outer space, were drawn relatively infrequently in all samples. We did note that Swiss children drew an outer space background more frequently (6.9%) than participants from other locations.

Table 6.2 The distribution of drawings according to culture and religion

Samples	In the sky (%)	On Earth (%)	Levitating (%)	Outer space (%)	Other background (%)	No background (%)
Japanese (n = 135)	31.1	3.7	1.5	3.0	10.4	50.4
Russian-Buryat (n = 219)	44.3	14.6	4.1	2.7	4.1	30.1
Russian-Slavic (n = 292)	41.1	15.1	2.1	4.5	5.5	31.8
Swiss (n = 510)	28.8	11.2	3.5	6.9	7.5	42.2

Table 6.3 The distribution of drawings according to age

Samples	Age groups	In the sky (%)	On Earth (%)	Levitating (%)	Outer space (%)	Other background (%)	No background (%)
Japanese (n = 135)	Young (n = 45)	17.8	–	–	–	15.6	66.7
	Middle (n = 47)	44.7	4.3	4.3	4.3	6.4	36.2
	Old (n = 43)	30.2	7.0	–	4.7	9.3	48.3
Russian-Buryat (n = 219)	Young (n = 77)	24.7	24.7	6.5	3.9	3.9	36.4
	Middle (n = 65)	56.9	7.7	1.5	–	3.1	30.8
	Old (n = 77)	53.2	10.4	3.9	3.9	5.2	23.4
Russian-Slavic (n = 292)	Young (n = 93)	38.7	20.4	5.4	4.3	2.2	29.0
	Middle (n = 109)	42.2	11.9	0.9	2.8	5.5	36.7
	Old (n = 90)	42.2	13.3	–	6.7	8.9	28.9
Swiss (n = 510)	Young (n = 169)	23.7	13.6	4.1	3.6	8.9	46.2
	Middle (n = 162)	27.2	9.9	3.7	3.7	10.5	45.1
	Old (n = 179)	35.2	10.1	2.8	12.8	3.4	35.8

Effects of Age

We found a statistically significant dependence between age and the type of background in three out of four samples (see Table 6.3). The Russian-Slavic sample ($\chi^2(10) = 17.16$, $p = .070$) did not demonstrate statistical significance, but the Japanese ($\chi^2(10) = 20.28$, $p = .027$), Russian-Buryat ($\chi^2(10) = 26.05$, $p = .004$), and Swiss ($\chi^2(10) = 29.67$, $p = .001$) samples did. We discovered another trend of similarity across these same three samples when considering the no background category: Japanese (66.7%), Russian-Buryat (36.4%), and Swiss (46.2%) children from the youngest age group drew god more often without any background than the older age groups. Concerning other types of background, we observed that younger children from all locations (except for the Japanese sample) represented gods standing on the ground (god on earth) with relative frequency when compared to other age groups. The number of such drawings of god on earth was equal to the number of drawings categorized as god in the sky in the youngest age group in Russian-Buryat sample (24.7% god on earth, 24.7% god in the sky). Then, the percentage of the

drawings of god on earth dropped considerably in the middle age group, while the drawings of god in the sky increased in all samples. As for the older children, specific tendencies differed by location. In the Japanese and Russian-Buryat groups, the number of drawings of god in the sky decreased slightly among the oldest children, when compared to the middle age group—this was particularly marked among Japanese children. As for the Russian-Slavic group, the percentage of drawings of god in the sky remained equal from the middle to the older age groups. In the Swiss group, there was a gradual increase in drawings of god in the sky across age groups; as age increased, so did the number of drawings that depicted god in the sky.

Effect of Children's Gender

No significant dependence was found between gender and background types in all samples: Japanese ($\chi^2(10) = 3.49, p = .674$), Russian-Buryat ($\chi^2(10) = 4.77, p = .445$), Russian-Slavic ($\chi^2(10) = 0.49, p = .992$), and Swiss ($\chi^2(10) = 7.21, p = .205$). However, the percentage of drawings of god in the sky showed that girls in all locations—except Japan—drew such pictures more frequently than boys did (see Table 6.4). This tendency was particularly marked in the Russian-Buryat and Swiss samples.

Table 6.4 The distribution of drawings according to the child's gender

Samples	Gender	In the sky (%)	On Earth (%)	Levitating (%)	Outer space (%)	Other background (%)	No background (%)
Japanese	Girls (n = 58)	31.0	5.2	1.8	5.2	6.9	50.0
	Boys (n = 77)	31.2	2.6	1.3	1.3	13.0	50.6
Russian-Buryat	Girls (n = 113)	47.8	15.0	1.8	3.5	3.5	28.3
	Boys (n = 106)	40.6	14.2	6.6	1.9	4.7	32.1
Russian-Slavic	Girls (n = 152)	41.4	15.1	2.0	4.6	4.6	32.2
	Boys (n = 140)	40.7	15.0	2.1	4.3	6.4	31.4
Swiss	Girls (n = 266)	32.0	11.7	2.6	6.4	9.0	38.3
	Boys (n = 244)	25.4	10.7	4.5	7.4	5.7	46.3

Table 6.5 The distribution of drawings according to the schooling context

Samples	Schooling	In the sky	On Earth (%)	Levitating (%)	Outer space (%)	Other background (%)	No background (%)
Japanese	Regular (n = 55)	38.2	1.8	–	3.6	7.3	49.1
	Religious (n = 80)	26.3	5.0	2.5	2.5	12.5	51.3
Russian-Slavic	Regular (n = 195)	47.7	12.8	2.1	4.6	4.1	28.7
	Religious (n = 97)	27.8	19.6	2.1	4.1	8.2	38.1
Swiss	Regular (n = 223)	26.5	10.8	3.1	3.1	5.8	50.7
	Religious (n = 287)	30.7	11.5	3.8	9.8	8.7	35.5

Effects of Religious or Regular Schooling Contexts

As for the relation between the drawn background and the religious or secular schooling contexts, we examined the data from the three samples (Japanese, Russian-Slavic and Swiss) for which drawings were collected in two distinct settings⁸ (see Table 6.5). A chi-square test showed a statistically significant dependency between the type of background and schooling in the Russian-Slavic ($\chi^2(5) = 12.06, p = .034$) and the Swiss ($\chi^2(5) = 17.22, p = .004$) samples. In the Russian-Slavic sample, children in regular schools depicted god in the sky (47.7%) more frequently than the *god on earth* (12.8%). The difference between these two types of backgrounds was not so large in drawings collected in Orthodox parishes where 27.8% of the drawings showed a background that was characterized as god in the sky and 19.6% of the drawings placed the figure of god on earth. In the Swiss sample, the difference between drawings collected in regular schools and in religious classes was small; the percentages for the god-in-the-sky category were 26.5% and 30.7% respectively, the percentages for the god on earth category were 10.8% and 11.5% respectively. Apparently, the main difference between these two Swiss samples resides in the percentage of drawings composed without any background. In the regular school setting, 50.7% of drawings had no background. In the religious school setting, only 35.5% of the drawings had no background. In the regular school setting, 3.1% of the drawings fit the outer space category; the percentage from the religious school setting was higher (9.8%). In the sample from Japan, there was no statistically significant dependency ($\chi^2(5) = 4.79, p = .442$) between drawings collected in Buddhist or regular school settings and the background types, although children from the regular schooling context (38.2%) drew a

⁸ We did not conduct an analysis on the Russian-Buryat sample because there was only one type of schooling represented in the data.

god-in-the-sky type of background more often than children from a religious school context (26.3%).

Discussion

The present study examined children's visualisation of god's dwelling place as represented in their drawing of god; particularly, we looked at the background surrounding the god figure. We examined three variables (age, gender, and religious schooling) thought to influence the background that the children composed in their drawings.

Children from all four groups most often drew god in the sky or with no background at all. The former was predominant among drawings showing an actual background. Our findings maintain consistency with previous studies conducted in Western (predominantly Christian) countries. These studies indicate that most often children visualize god's dwelling to be the sky (Hanisch, 1996; Kay & Ray, 2004; Pitts, 1976; Pnevmatikos, 2002; Tamm, 1996). The tendency to draw god in the sky was particularly marked in the Russian groups, one of which (Russian-Slavic) is characterized by Christianity and the other (Russian-Buryat) by non-Christian references (mainly Buddhism and Shamanism). The tendency to draw god in celestial background was also present in drawings from Japan, where the sample was largely characterized by participants who self-identified as Buddhist or Shintoist. These findings indicate that the tendency to imagine god in the sky might not be related solely to a particular cultural or religious context. Meanwhile, observations based on content showed that children from the Japanese or the Russian-Buryat sample were more likely to draw gods coming from outside their typical religious environments than children from the Russian-Slavic or the Swiss sample were. For instance, drawings depicting angels or an old bearded man in the clouds were not rare in their drawings.

Age was a significant contributor to background preference in the Japanese, Swiss, and Russian-Buryat drawings, but not in the Russian-Slavic drawings. This developmental trend generally began in the middle age group and then plateaued through the oldest. This general effect of age was consistent with our predictions. Conversely, with increased age, there was a decreased occurrence of the god-on-earth type of background. This means that with age, not only do god representations become more celestial, but they also lose their earthly characteristics. This is important, as either of these trends could stand independent of the other (celestial features could increase with no loss of earthly characteristics; celestial features could remain stable while earthly characteristics diminish). This was not the case for the Japanese drawings, but we note that drawings depicting the god-on-earth background type were underrepresented in that group generally.

We found that culture and traditional religious beliefs seem to have a greater effect on the choice of drawn background in the older age group when compared to the two other age groups. For instance, the number of drawings representing the god

in the sky remained equal or even decreased in the oldest age groups of the Russian-Buryat and Japanese samples, respectively. Both of these religious and/or cultural groups are marked by Buddhism and animistic beliefs (Shinto in Japan and Shamanism in Buryatia). Shinto and Shamanism are characterized by beliefs in the multiplicity of supernatural entities residing everywhere: in mountains, trees, forests, rivers, celestial bodies, and in other natural phenomena such as thunder and wind, etc. Although drawings representing gods incarnated in such natural settings and phenomena were seldom found in either of these samples, animistic representations could have had an influence on the observed decrease of the god-in-the-sky type of background. Another explanation might be that the oldest children from these groups more often represented Buddha (and other Buddhist deities) while other age groups typically represented gods in the form of angels or as bearded old men in the sky. This would therefore consist in an indirect influence of age on the type of background through the choice of god representations. On the other hand, in the Russian-Slavic and Swiss groups drawings representing the god-in-the-sky type of background did not decline—in fact, they consistently increased among the drawings by Swiss children. As mentioned earlier, God in Christian faith and iconography is consistently associated with Heaven. Consequently, children from a predominantly Christian background are prone to continue to represent a god figure in the context of a literal heaven. Finally, other types of drawings also associated with the upper part of the paper, such as the levitating or outer space background types, did not show particular developmental trends.

As for the influence of gender, our results were not significant. However, there was a slight tendency for girls to draw the god-in-the-sky background type more often than boys did (except in the Japanese group). This result is consistent with findings reported in previous studies (Hanisch, 1996; Tamm, 1996; Kay & Ray, 2004).

Regarding the effect of religious schooling, our research showed mixed results. Russian-Slavic (with a significant schooling effect) and Japanese (without a significant schooling effect) children in religious schools depicted the god-in-the-sky background type considerably less often than the god-on-earth background type when compared to children from regular schools. This could be due to the broader impact of religious socialization and, consequently, of traditional religious iconography, on the drawings of these children. For instance, Russian-Slavic children often represented the face of god in the form of an icon. In the Swiss sample, the effect of schooling was significant but the main difference resided primarily in the ratio of drawings with a drawn background to drawings without a drawn background. We also found in the Swiss sample that drawings representing the outer space background type occurred three times more frequently in the religious school setting than in the regular school setting.

Conclusion

A question that has received much attention within the field of the psychology of religion is how the concept of god is represented in human minds. Unfortunately, much of the existing research has focused on mental, rather than physical, characteristics of god (Nyhof & Johnson, 2017). The present study has shown that spatiality contributes to the way individuals conceive of the divine. A systematic examination of the drawn background in children's drawings collected in culturally and religiously diverse groups (Japanese, Buryat-Russian, Slavic-Russian, French-speaking Swiss) revealed that children more often depicted god's dwelling in the sky (when children drew a background). Moreover, results indicate that older children were more likely to depict god in the sky. It can be assumed that children acquire such representations—passively and/or actively—through agents of socialization such as families, religious institutions, and the mass media. The consistency across cultural and religious environments to set god in the sky is striking. Why is the sky so consistently associated with the dwelling place of the divine? One possible explanation could be suggested by recent studies inspired by theories of embodied cognition and conceptual metaphor, both of which provide evidence for a link between a vertical dimension and the concepts associated with affect, size, power, high social status, morality, wealth, intellect (for review on this topic, see Cian, 2017). Following this line of research, our second study, Part II (Chap. 7, this volume) will attempt to apply these theories to children's pictorial productions in order to see whether or not children exhibit a tendency to draw god representations in the upper part of their drawings.

Finally, at least, two limitations of this study should be acknowledged. First, developmental changes were examined by a cross-sectional design. Second, factors such as the level of religious commitment or the positive/negative attitude toward god figure were not taken into account in the present study. More generally, future research will be needed to explore how the spatial dimension is involved in our conceptualization of the divine. In particular, possible universalism in spatial processing of the divine should be examined further.

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Chapter 7

Where Gods Dwell? Part II: Embodied Cognition Approach and Children's Drawings of Gods



Zhargalma Dandarova-Robert , Christelle Cocco , Grégory Dessart ,
and Pierre-Yves Brandt 

Abstract Empirical demonstrations of the embodied and grounded cognition approach, involving diverse areas and phenomena, have increased exponentially in recent years. However, little research has been done in the religious domain. To the best of our knowledge, no study based on this theoretical framework has explored spatial dimension in pictorial representation of the divine in children's drawings or in religious art in general. The present study represents the very first attempt to investigate if and how spatiality is involved in the way children depict the divine in their drawings. Drawings collected from four groups of participants (n = 1156, ages 6–15) characterized by different cultural and religious environments: Japanese (Buddhism and Shinto), Russian-Buryat (Buddhism, Shamanism), Russian Slavic (Christian Orthodoxy), and French-speaking Swiss (Catholic and reformed Christianity) were annotated using the *Gauntlet* annotation tool and then analysed. The main result indicates that children from all four groups generally depict god (the centre of the annotated representation) in the upper part of their drawings. Further testing indicates that the type of composition (for instance, god depicted alone or as standing on the ground where the sky is also depicted) did not serve as a major influence on the child's placement of god.

Keywords Cross-cultural · Children's drawings · God representations · Spatiality · Embodied cognition · Conceptual metaphor theory

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In the last few decades, the embodied and grounded cognition approach has expanded considerably across many domains of scientific knowledge such as the cognitive sciences, psychology, philosophy, linguistics, cognitive anthropology, and robotics (Barsalou, 2010; Borghi & Pecher, 2011; Varela et al., 2017). The main idea of the embodied and grounded cognition approach is that the mind must be understood in the context of its relationship to a physical body that interacts with the world. This idea runs contrary to the classical cognitive paradigm, in which the mind has been viewed as an abstract information processor, whose connections to the outside world were of little theoretical importance (Wilson, 2002). The study of abstract concepts, which has posed a significant problem for traditional theories, received a significant attention in the frame of the embodied and grounded cognition approach (Barsalou, 2010; Borghi et al., 2017). The conceptual metaphor theory of Lakoff and Johnson (1980) is particularly useful to the current research on divine representations. This theory postulates that metaphors are not just a matter of language; it emphasizes the fact that human thought processes are largely metaphorical in nature. Metaphors constitute mental associations between basic source concepts derived from interactions with the physical and social world and target concepts that represent abstract referents. In their research, Lakoff and Johnson showed how hundreds of primary metaphors are inevitably acquired on the basis of bodily interactions with the physical environment. Metaphors also reveal the way people represent and think about abstract concepts. Metaphors facilitate understanding and reasoning with abstract concepts. According to Lakoff and Johnson, this is the chief role of metaphors. Empirical demonstrations of this approach, involving diverse areas and phenomena, have increased exponentially recent years but, unfortunately, little research has been done in the religious domain. In the present study, we will attempt to apply embodied cognition theory and the conceptual metaphor theory to children's drawings of god¹ in order to investigate if and how spatiality is involved in the way children depict the divine in their drawings.

The Embodied Cognition Approach and God Representation: A Literature Review

Researchers have studied extensively the link between spatial location (up/down) and a variety of different concepts. The results provide evidence for a link between the vertical dimension and the concepts associated with affect, size, power, social status, morality, wealth, and intellect (for a review on this topic, see Cian, 2017). For instance, studies have shown that people identify powerful-non-powerful groups faster when the groups are presented graphically in high-low vertical positions, respectively

¹Why the term *god* begins sometimes with an uppercase letter G, sometimes with a lowercase letter g, and why it appears sometimes in the singular and sometimes in the plural, is explained in the introductory chapter of this book (Chap. 1, this volume).

(Schubert, 2005). Powerful individuals were categorized more quickly when they were paired with mountains than when they were paired with level terrain (Gagnon et al., 2011). Powerful brands are preferred more frequently when the brand logo is depicted in a higher position in opposition to non-powerful logos (Sundar & Noseworthy, 2014). People in a position of upright posture generate and recall positive thoughts more easily than those in a position of drooping posture (Wilson & Peper, 2004). People recognize words with a moral meaning more quickly when they appear toward the top (as opposed to the bottom) of the screen (Meier et al., 2007b).

Two studies, from among those done on the topic, are of particular interest to our project. In the first one, Meier et al. (2007a) proved, in a series of six experiments, that cognitions related to the divine are embodied in nature and that representations of the divine (as opposed to the profane) borrow from the vertical domain of perception. For instance, the first of these experiments showed that participants categorize God-related words (Almighty, Creator, Deity, and Lord) faster when the words were paired with up-related words (high, top, above, and ascend). In the second experiment, Meier et al. found that participants categorized God-related words faster when these words were presented at the top (vs. bottom) of the screen. Their third experiment tested the participants' memory for spatial locations: participants were presented with God-like images, Devil-like images, and images of neutral objects unrelated to religion (e.g., a spoon). As researchers predicted, participants recalled the positions of the God images to be higher than they actually were and participants recalled the Devil images to be lower than they actually were, both relative to a neutral image (Meier et al., 2007a).

The other study of particular interest to us is the 2010 study by Chasteen, Burdzy, and Pratt. Their experimental design examined not only the associations between God-Devil and up-down related words but also the associations between these words and left-right. As predicted, participants detected targets that appeared in locations that were spatially compatible to the concepts of God and Devil. Specifically, participants detected targets faster in either the up or right-side locations when God-related words appeared first. In contrast, participants were faster to respond to the down or left-side locations when Devil-related words appeared first. Their study also revealed that the orientation of attention occurred regardless of the religiosity of the participants (Chasteen et al., 2010).

In sum, results of these two studies provide evidence that people's representations of the divine have strong spatial components and, more specifically, they closely associated with something located in an up (spatially) position. Our research moves further to explore the potential effect incurred by the activation of internal representations of the divine: How does the activated internal representation of the divine impact pictorial production? To the best of our knowledge, no study has explored this facet of pictorial representations of the divine, either in children's drawings or in religious art in general. Moreover, we did not find studies of pictorial art based on the embodied cognition theory that propose to explore the location of particular elements in pictorial space. This is true for research on children's drawings as whole. In this sense, our study represents the very first attempt to apply embodied cognition theory and conceptual metaphor theory to pictorial production.

Aims and Hypotheses

Following the grounded or embodied cognition approach and, especially the theory of conceptual metaphor as described by Lakoff and Johnson (1980), our main hypothesis was that children would demonstrate a tendency to place their god representations in the upper part of their drawings. Popular beliefs according to which divine beings dwell in the sky or heaven and the idea of gods as all-powerful beings are commonly found, even in diverse religious systems. Children acquire such representations passively and/or actively through a variety of socialization agents like families, religious institutions, and the mass media. Growing older, children would become more familiar with such representations and would consider god as a powerful figure located somewhere in the sky. Consequently, the tendency to place god representations in the upper part of the drawings should depend on children's age. Concerning other possible contributing variables (e.g., gender, type of schooling), no hypothesis was advanced due to the innovative and exploratory nature of our research and the lack of past empirical data in this area.

Data Sample

For the purpose of the present study we used a subset of the drawings collected in Japan, Russia, and Switzerland ($n = 1156$; age min = 6 years and 3 months, age max = 15 years and 11 months). Only the drawings that could be annotated were selected from this subset.² Drawings from Japan ($n = 135$) were collected in regular and Buddhist schools in four prefectures, namely Tokyo, Kyoto, Fukushima, and Chiba. Drawings from Russia ($n = 511$) were divided into two separate samples because of important cultural and religious differences between children from two different ethnic groups, Russian-Slavic and Russian-Buryat. The Russian-Buryat subsample ($n = 219$) of drawings was collected in regular schools in Ulan-Ude (Buryatia), where the majority of children declared themselves to be Buddhists. Regarding the Russian-Slavic subsample ($n = 292$), drawings were collected both in regular schools (Ulan-Ude and Saint Petersburg) and in Orthodox parishes (Saint Petersburg). Drawings from the French-speaking part of Switzerland ($n = 510$) were collected in regular schools and in Protestant and Catholic parishes. To study the age effect, all samples were divided into three age groups (7–9 years, 10–11 years, and 13–14 years old). For more detailed information about age groups (age, M and SD), see Table 7.1.

²Neither drawings containing more than one god figure, nor blank sheets of paper (submitted by children as either a representation of god, or an indication of the impossibility of drawing god) could be annotated and these submissions were excluded from further analysis.

Table 7.1 Participants' socio-demographics

Samples	Age		Young age		Middle age		Older age		Child's gender		Context	
	M	SD	M	SD	M	SD	M	SD	Girls	Boys	Regular	Religious
Japanese (n = 135)	10.88	2.29	8.09	0.49	11.07	0.55	13.60	0.42	58 (42.96%)	77 (57.04%)	55 (40.74%)	80 (59.26%)
Russian-Buryat (n = 219)	10.97	2.69	7.81	0.64	11.22	0.71	13.90	1.04	113 (51.60%)	106 (48.40%)	219 (100%)	0 (0%)
Russian-Slavic (n = 292)	10.90	2.18	8.17	0.65	11.20	0.66	13.37	0.72	152 (52.05%)	140 (47.95%)	195 (66.78%)	97 (33.22%)
Swiss (n = 510)	10.99	2.41	8.18	0.73	10.92	0.83	13.71	0.79	266 (52.16%)	244 (47.84%)	223 (43.73%)	287 (56.27%)

Method

*Drawing Task*³

Researchers provided participants with paper (size A4), a graphite pencil, a set of wax pastels, and coloured pencils. The following instruction was used in all countries:

Have you ever heard the word “god”? Close your eyes and try to imagine it. Now draw it. Do not look at your classmates, because I would like to know how you imagine it.

After completing this task, the participants were asked to describe their drawings and to answer a questionnaire about their religious environment. Researchers arranged to meet with small groups of participants (10–12); participants worked individually on the drawing task. Time for drawing was not limited and the full session lasted 40 min on average.

Annotation

Three trained annotators located god representations in drawings by the rectangular framing function within the *Gauntlet* annotation tool. For all of the samples, we achieved an excellent level of agreement between the annotators: ICC = 0.966 with 95% confident interval = 0.948–0.978 for the Swiss sample and ICC = 0.998 with 95% confident interval = 0.997–0.999 for all Russian samples. We calculated the ICC estimates and their 95% confident intervals using R (version 3.4.3) and the package *irr* (version 0.84) based on a single-rating, absolute-agreement, two-way model.

Statistical Analysis

We used one sample *t* test to verify if the means of god representations (the middle points of the annotated figures) were situated higher than the midline of the drawing (sheet of paper). Logistic regression analysis was used to check the influence of age, sex, schooling, paper format and type of composition on the location (up vs. down) of god representations (as a dependent variable). We also used Chi-square tests to analyse the distribution of drawings according to three parts of the sheet.

³For more detail about the procedure see the introduction of the present volume (Chap. 1, this volume).

Results

Control of Drawing Orientation and Composition Type

Children were free to choose the orientation of their paper (landscape or portrait) while drawing. To be sure that this factor has no impact on the depiction of god representations, we assessed the homogeneity of variances using Levene's Test of Equality of Variances and ran an independent t-test on the data with a 95% confidence interval (CI) for the mean difference. Results indicate that there is no impact of paper orientation on the location of the god representations.

We also controlled for composition type in order to exclude any possible effect of the type of composition on the location of the god figure. Two judges assigned each drawing to one of two categories: (1) compositions consisting of one-dimensional space where there was either celestial or terrestrial background (but not both), or there was no drawn background at all (see examples, Fig. 7.1); (2) compositions representing two-dimensional space consisted of the sky and the earth (ground, water surface etc.) (see examples, Fig. 7.2). The level of agreement was either excellent or good: Japan (N = 135), Cohen's Kappa = 1; Russian-Buryat (N = 219), Cohen's Kappa = .906; Russian Slavic (N = 292), Cohen's Kappa = 1; Switzerland (N = 510), Cohen's Kappa = .875. Results revealed that a minority of children drew two-dimensional compositions: 7.4% in Japan, 25.6% in the Russian-Buryat sample, 25.7% in the Russian-Slavic sample, and 18.8% in the Swiss sample. Many children did not draw any background (Chap. 6, Table 6.2, this volume).



Fig. 7.1 Compositions representing one-dimensional space (<http://ark.dasch.swiss/ark:/72163/1/0105/sLAXx2BEQjGKnyhmI4cumwO.20180702T194908382Z>, <http://ark.dasch.swiss/ark:/72163/1/0105/n19QwjZPTISVr1XPW0FvXAq.20180702T190509004Z>, <http://ark.dasch.swiss/ark:/72163/1/0105/Qh5sT1=GTxqtXIcp8ZkOMw4.20180702T200755887Z>)

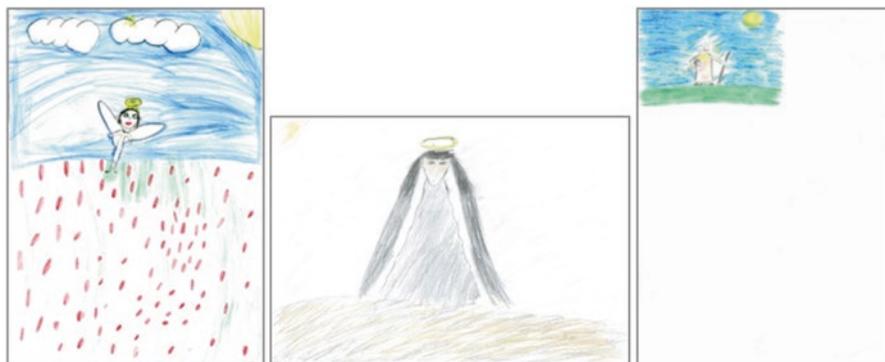


Fig. 7.2 Compositions representing two-dimensional space (<http://ark.dasch.swiss/ark:/72163/1/0105/DbLM1MvITVOxXGzCCbKRKwZ.20180702T202034614Z>, <http://ark.dasch.swiss/ark:/72163/1/0105/j101DeeNSp27MxwroxmaDgv.20200415T110941987222Z>, http://ark.dasch.swiss/ark:/72163/1/0105/gYZxqCC1QiqqydoN3_LbuQ1.20180702T201346519Z)

Table 7.2 Means of middle points of annotated representations of God

Samples	N (%)	Means of middle points of annotated representation		
		M	SD	Medians
Japan	135 (100%)	0.56	0.11	0.56
Russian-Buryat	219 (100%)	0.57	0.14	0.56
Russian-Slavic	292 (100%)	0.57	0.12	0.56
Switzerland	510 (100%)	0.53	0.15	0.52
Total	1156 (100%)	0.55	0.14	0.54

Location of the God Figure⁴ in Relation to the Midline of the Page

The middle point of the annotated representation of god (the rectangular box denoting the position of the god figure on the page) was considered as the main coordinate of god's localization on the y-axis of the whole picture (sheet of paper) (see examples of annotated drawings, Fig. 7.3).

Then, it was divided by the size of the image to obtain comparable values between 0 and 1 (for more details see Cocco & Ceré, Chap. 9, this volume). Figure 7.4 presents the middle points of all annotated representations of god in each of four culture/religion samples (Japanese, Russian-Buryat, Russian-Slavic and Swiss) according to the y-axis of the whole picture.

⁴The term *figure* is used here to refer to all kinds of god representations—anthropomorphic, abstract and symbolic—found in children's drawing.

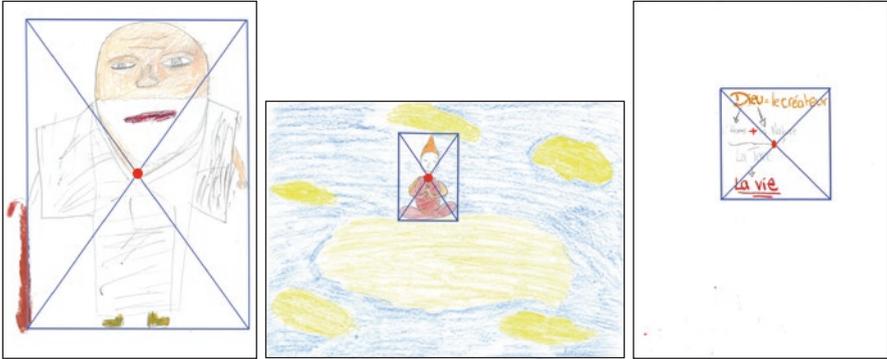


Fig. 7.3 Annotation and god's localization on the y-axis (http://ark.dasch.swiss/ark:/72163/1/0105/bd2yeyX7T_W8qkVci3iBVAV.20200318T140231899891Z, <http://ark.dasch.swiss/ark:/72163/1/0105/FlrLQV2BTU6m6MEfiYyp.20180702T1917032Z>, <http://ark.dasch.swiss/ark:/72163/1/0105/umgDtZLPTxqB26CVnIDluQj.20201008T122453226966Z>)

As predicted, the means of middle points of the annotated representations were located significantly higher than the page's midline (value equal to 0.5) in all samples (see Table 7.2): $t(134) = 5.67$, $p < .001$, for the Japanese sample; $t(218) = 7.11$, $p < .001$, for the Russian-Buryat sample; $t(291) = 9.17$, $p < .001$, for the Russian-Slavic sample; $t(509) = 3.88$, $p < .001$, for the Swiss sample.

Predictors of an Up-Location of the God Figure

We conducted logistic regression analyses in order to identify significant predictors of the vertical location of the god figure on the drawing sheet. To do this the area of the sheet was divided into fifths, vertically, and then determined for each drawing whether the middle point of the god figure was positioned in the upper part (upper 2/5) or not. See Fig. 7.5 for a graphic representation of the division and examples of drawings according to this division.

As for the potential predictors of position, age, gender, type of schooling, drawing format (portrait or landscape), and type of composition were used in analyses. Separate analyses for each sample (Japanese, Russian-Buryat, Russian-Slavic and Swiss) were carried out because all of the groups were not equal with regard to potential predictors. For example, the distinction between religious and regular schooling was not relevant for all samples.

Results were statistically significant for all groups except the Russian-Buryat sample, where none of the identified predictors played a significant role. We found that gender served consistently as significant predictors for the other three groups of participants. Age also served as a significant predictor in the Japanese and Russian-Slavic samples. In the Swiss group, age was not a significant predictor but the type of composition was (see below).

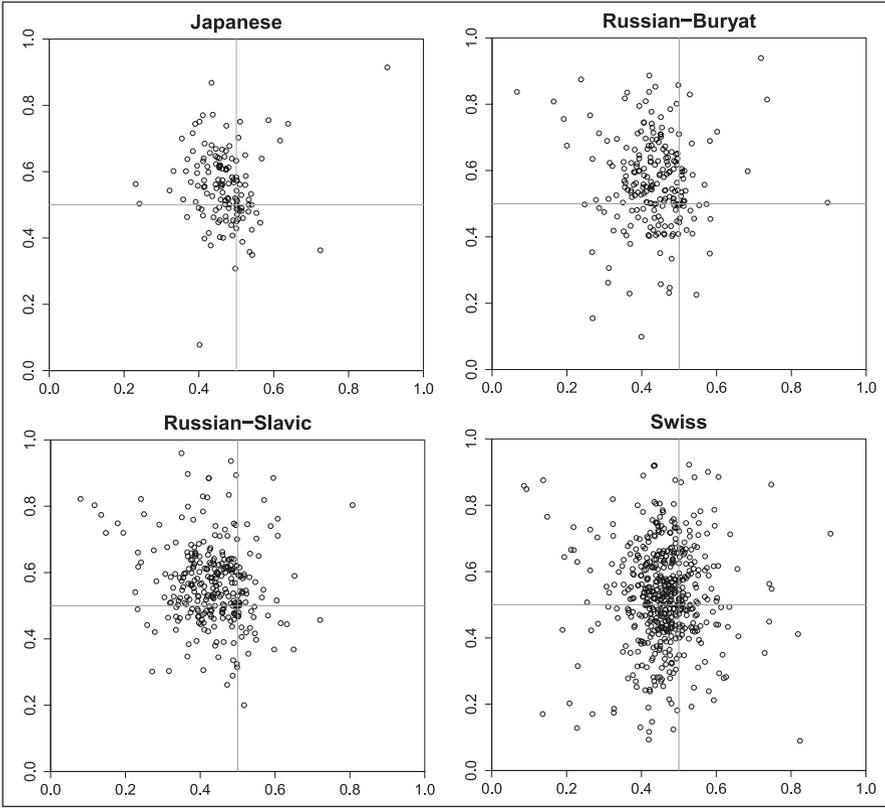


Fig. 7.4 Middle points of the annotated representations of god by the culture or religion groups

Japanese sample—The model explained 14.2% (Nagelkerke R^2) of the variance in the location of god and correctly classified 66.7% of cases ($\chi^2(5) = 14.59$, $p = .012$). Only age and gender of participants were statistically significant predictors ($p = .046$ and $p = .004$, respectively). Age and male gender were associated with an increased likelihood to draw the god figure high up on the page.

Russian-Slavic sample—The model explained 8.6% (Nagelkerke R^2) of the variance in the location of god and correctly classified 68.5% of cases ($\chi^2(5) = 18.89$, $p = .002$). Only age and gender of participants were statistically significant predictors ($p = .013$ and $p = .01$, respectively). The type of composition reached near-significance ($p = .052$). Age and male gender (as well as the use of a two-dimensional type of composition) were associated with an increased likelihood to draw the god figure high up on the page.

Swiss sample—The model explained 3.3% (Nagelkerke R^2) of the variance in the location of god and correctly classified 69.2% of cases ($\chi^2(5) = 12.06$, $p = .034$). Only the type of composition (two-dimensional) and gender of participants were statistically significant predictors ($p = .017$ and $p = .040$, respectively). Utilizing a

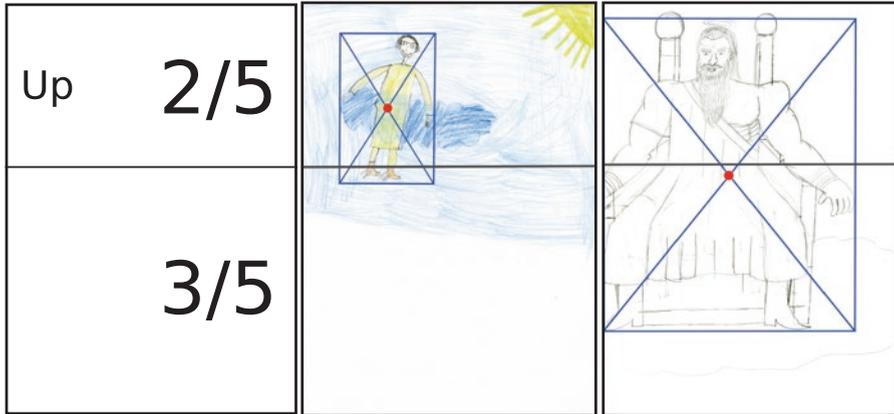


Fig. 7.5 Division of the sheet for the predictors of an up-location of the god figure (<http://ark.dasch.swiss/ark:/72163/1/0105/joSAspHaQXqPxCohEcaZEQ3.20180702T190310106Z>, <http://ark.dasch.swiss/ark:/72163/1/0105/LBYby6ZZRYO=3KsYD0MhoQ3.20180702T195644194Z>)

two-dimensional type of composition and male gender were associated with and increased likelihood to draw the god figure high up on the page.

Distribution of God Figures Across Three Parts of the Page: Down, Middle, Up

In order to take our investigation further, we conducted additional analyses using a threefold subdivision of the page, as presented in Fig. 7.6. This analysis allowed us to find out how many children depicted god in each of the three sections of the page: lower (Down), central (Middle), and upper (Up) (see examples of drawings, Fig. 7.6). Chi-square tests were performed to analyse the distribution of drawings according to these three-divisions of the space.

Results showed significant dependency between country and the placement of the god figure: $\chi^2(6) = 31.96, p < .001$ (Table 7.3). Most often participants depicted god in the middle part of the sheet. The percentage varied from 52.2% in the Swiss sample, through 55.7% in the Russian-Buryat sample, to 57.9% in the Russian-Slavic sample, and 60% in the Japanese sample. A third of the children in each sample depicted god in the upper part of their drawings: 30.8% of the Swiss children, 34.1% of the Japanese children, 34.9% of the Russian-Slavic children, and 37.9% of the Russian-Buryat children. We observe that few children drew god in the lower part (down) of the sheet. The Swiss sample contained the greatest amount of such drawings (17.1%), while the percentage of god figures in the down position remained rather low in the other three samples: Japanese (5.9%), Russian-Buryat (6.4%), and Russian-Slavic (7.2%).

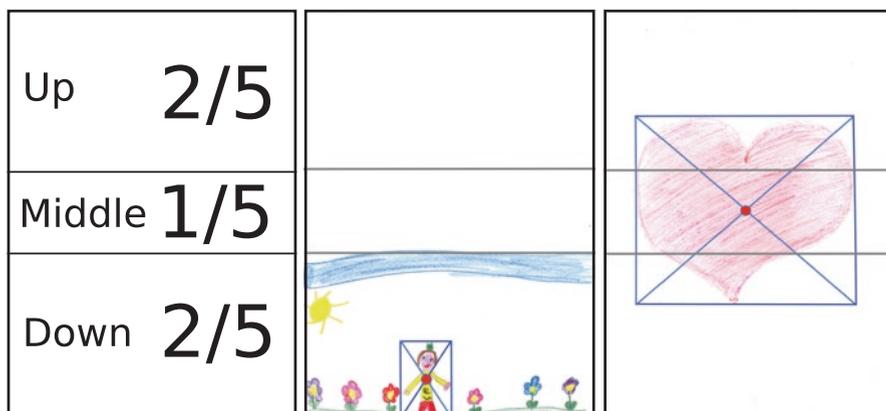


Fig. 7.6 Division of the sheet for the distribution of drawings across three parts of the page (down, middle, up) (<http://ark.dasch.swiss/ark:/72163/1/0105/ETKelDqjQ8uXljNC8dTXIgo.20180702T16421404Z>, <http://ark.dasch.swiss/ark:/72163/1/0105/64WH4OkBQXywisbWX6tQ9wG.20180702T202318864Z>)

Table 7.3 Distribution of drawings across three parts of the page

Samples	N (%)	Distribution of drawings across three parts		
		Down	Middle	Up
Japan	135 (100%)	5.9%	60.0%	34.1%
Russian-Buryat	219 (100%)	6.4%	55.7%	37.9%
Russian-Slavic	292 (100%)	7.2%	57.9%	34.9%
Switzerland	510 (100%)	17.1%	52.2%	30.8%
Total	1156 (100%)	11.4%	55.2%	33.6%

Discussion

Over the past few decades, theories of embodied and grounded cognition have demonstrated that abstract concepts can be understood and learned through embodied experience and interaction with the environment. Consistent with these approaches, recent empirical investigations suggest that abstract concepts rely largely on spatial representations. Experimental studies have showed that activating internal representations of abstract concepts of the divine shifts the attention in external space to the higher regions of the visual field (Meier et al., 2007a; Chasteen et al., 2010). Inspired by findings of these experimental studies and following the embodied and grounded theories, we advanced the hypothesis that children would demonstrate a tendency to place god representations in the upper part of their drawings. Three differently designed analyses were performed: (1) a comparison of the means of the middle point of annotated representations of god with the midline of the page, (2) a distribution of drawings according to a twofold (up- not up) subdivision, including an examination of potential predictors, (3) a distribution of drawings across a threefold

(down-middle-up) subdivision of the page. The results of this exploratory study globally confirmed our main hypothesis. Results from both analyses suggest that children's representations of the divine incorporate spatial characteristics and are associated with higher space on the page.

Furthermore, our study demonstrates that children associate similar spatial characteristics with representations of the divine across culturally and religiously diverse contexts. A general tendency to position god figures in the upper half of pictorial representations was found in all of our samples. However, when using a threefold subdivision of the page, we observed that a majority of children drew god in the middle of the page. Following this system, drawing god high on the page came in second position, still underlying the importance of representing the divine upward. From a cross-cultural perspective, this pattern appeared across all samples, with the caveat that Swiss children were showing a greater tendency, comparatively, to draw god lower down the page. However, down, middle, and up locations on the page were similar in all samples pointing to the following order of preference: middle, up, and down, respectively.

Results also revealed that the location of god representations in the upper part of the sheet (in a threefold subdivision system) could be a function of participant's age. We expected that the youngest group (6–8 year-olds) would depict god in the lower part/and the centre of the page more often than older children would. Some children of this age, especially those who are not religiously socialized, often have little idea of what god is. Later, growing up in society, they get to know more about the meaning of the word "god" and various religious beliefs and practices that are linked to it. Our assumption was confirmed in the Japanese and the Russian-Slavic samples but not in the Swiss or the Russian-Buryat samples. A more precise qualitative investigation of drawings is needed to better understand why these last two samples did not confirm our assumption.

Another finding concerns the impact of a participant's gender on the position of god figures. Results showed that boys from all samples, except the Russian-Buryat sample, were more inclined to draw god in the upper part of drawings than girls were. One possible explanation is the confounding effect of the impact of size of the drawn representation. It is possible that the god figures drawn by girls were larger in size than the figures drawn by boys. Consequently, the centres of annotated representations would tend to be situated closer to the middle of the page. In turn, possible variations in the size of god representations could be related to the more positive attitude of girls toward the divine figure or to the degree of perceived closeness to god. A more positive attitude could be connected with female individuals generally showing greater religiosity (Donahue & Benson, 1995; Francis, 1997; Francis & Wilcox, 1996). Girls also tend to draw happy god representations more often than boys do (Ray & Kay, 2004). It has also been shown that when children feel more positive about the topic being drawn or character in their drawing, they tend to draw it larger (Burkitt & Barnett, 2006). While this is very speculative, future research could serve to verify this assumption.

In this work, we controlled for the possible impact of the type of composition (content) on the location of god representations within the pictorial space. We found that it had little effect. Only the Swiss sample showed significant effect from composition (the two-dimensional type of drawing was associated with and increased likelihood for the god figure to be positioned high up on the page). This brings further support to the idea that god is a grounded or embodied concept with mere spatial properties. That is, regardless of the specifics surrounding god's dwelling place, it is conceptualized as high, or as being above. The group of Swiss drawings appears to be at odds with the three other groups, both due to this impact of the content of composition on the location of god representations and due to a tendency to draw god representations lower down on the page compared to the other groups. Further investigation should help identify what features in the content of the drawings leads to such differences.

Unfortunately, we had no opportunity to compare the children's drawings of gods with other kinds of drawings they had made. Current evidence indicates that children usually situate figures in their drawings on a horizontal ground line that is located in the lower part of the page. According to a few studies, children aged 5–6 years introduce a horizontal ground line in their drawings that often runs parallel to the bottom of the drawing paper or they use the bottom edge of the paper as a baseline on which they place drawn figures and objects (Dalton & Burton, 1995; Golomb & Farmer, 1983; Toku, 2001).⁵ As Golomb points out: two distinct areas qualified as *up* and *down* are defined in drawings done by 5-year-olds. The open space in the upper section represents the air or the sky, and gravity is generally respected (Golomb, 2004). There is empirical evidence suggesting that it is indeed rare for children to draw human figures high up on the page. Golomb and Farmer (1983) have shown that this is true for different themes (i.e., family, children playing, birthday party, garden with trees flowers and a pond), in the drawings of children aged 3–7 years. This should indirectly substantiate our claim that observations from the present research apply to god representations as a form of topic specificity (this being potentially true for other abstract concepts that involve an idea of power or authority, for example). There is, however, a major caveat to making such connections: Our participants age range was much wider, some of our participants were considerably older than those of Golomb et al. Unfortunately Golomb et al.'s studies did not examine how older children drew with regard to a vertical axis. In addition, some researchers report that with increasing age children's drawing composition becomes more complex and multiple baselines can appear, as well as no baseline at all (Dalton & Burton, 1995; Toku, 2001).

In summary, it is quite plausible that the present findings are specific not only to god representations, but also to other abstract concepts sharing similar characteristics that are embodied or grounded in perceptual experience. Findings from this study moved our investigation beyond Study I (Chap. 6, this volume) by showing

⁵Until the ages 5–6, children draw figures and objects in an arbitrary fashion guided primarily by the availability of space (Golomb & Farmer, 1983). In our research, we have drawings from children beginning the age of 6 years old.

that children seem to conceive of god being located high up, independent of the particular place they image god's dwelling to be. This brings support to the theoretical frameworks of both embodied cognition and grounded metaphor, and makes a unique contribution to the religious domain, as well as to visual and developmental research.

Conclusion

A question that has received much attention within the field of the psychology of religion is how the concept of god is represented in human minds. Two of our studies (Chaps. 6 and 7, this volume) have shown that spatiality is both explicitly and implicitly involved in the way individuals conceive of the divine. In the first study (Part I), a systematic examination of the backgrounds in children's drawings of god revealed that children from all groups (Japanese, Buryat-Russian, Slavic-Russian, and French-speaking Swiss) most often drew god in the sky or with no background at all. The present research (Part II) provides a novel insight into how we conceptualize the divine according to space. Consistent with embodied cognition and grounded metaphor approaches, postulating that abstract concepts depend on physical modalities even if they do not have a direct physical character, the present research revealed that children in all four groups generally depict god in the upper part of their drawings. Participants' socio-demographics had an influence on where on the page they would tend to draw god. Age was generally positively associated with an upward position and other contributors (e.g., gender, schooling) had contrasted roles. Further testing indicated that the type of composition was not a major influence on the positioning of god. This is substantial evidence because it demonstrates that conceiving of god as placed higher above things is likely to be based on our own perceptual experiences. For example, someone who prays to God using gestures can visualize him above. Therefore, conceptualizing god as being above seems to go beyond the mere content of the dwelling where the divine is often depicted, such as in the sky.

Results are generally consistent with the religious iconographies representing the divine, quite literally, on clouds in the sky or somewhere in a higher place. For instance, in Christian paintings, God and Jesus are often represented as being in the sky. In resurrection and ascension pictures, the hand of God is pictured as emerging from the cloud and taking Jesus by the right hand to receive him into heaven (Davies, 1994). In Buddhist art, one of the important features of Tibetan Buddhist paintings is their alignment on a vertical central axis, which roughly coincides with the axis of the principal deity who sits or stands higher than the surrounding figures (Brauen, 2009). In addition, the association between the divine and an upward position can subjectively be noticed in numerous visual artworks of a religious nature. God and other divine figures are often depicted in some elevated place (e.g., on a throne), dominating other characters in a pictorial scene. Although this aspect is more speculative, it is worth investigating alongside the content of composition.

Limits of the Present Research and Potential Directions of Future Research

Finally, there are limitations to the present research. First, no within-subject comparisons could be carried out based on different topics, for example, god and the human being. While such comparisons may have provided more nuanced results regarding topic specificity, god representations in children's drawings did not systematically take a human form. Second, other factors such as the level of religious commitment or the positive-negative attitude toward god figure were not treated in the present study. Consequently, it is difficult to determine whether for children from our sample to associate the divine with an up location was due to power attribution (as previous studies on abstract concepts have revealed) or other more personal aspects, such as goodness or moral authority. There has been animated debate in the scientific literature on god representations and whether children, as they grow older, would tend to perceive god as increasingly distant (Heller, 1986) or increasingly close (Eshleman et al., 1999). Without necessarily speaking for or against these positions, the present research suggests that there is more to spatial processing of the divine than relative proximity—although both aspects might interact—and this should be examined in the future.

Further research is thus needed to examine topic specificity, on the one hand, and the underlying mechanisms that could sustain more idiosyncratic relationships to divine figures, on the other hand. More generally, future research will be needed to explore how our perceptual experiences with the world may structure our conceptualization of the divine. In particular, possible universalism in spatial processing of the divine should be examined further.

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Part III
Focus on Material Features

Chapter 8

Automated Colour Identification and Quantification in Children's Drawings of God



Christelle Cocco , Zhargalma Dandarova-Robert ,
and Pierre-Yves Brandt 

Abstract Colour is still a relatively neglected aspect in the study both of religious art and of children's artistic expression of the divine. Our research addresses this important gap and adds to psychological research on religious representations and conceptualization of the divine. From drawings collected in four different cultural and religious environments: Japanese (Buddhism and Shinto), Russian-Buryat (Buddhism, Shamanism), Russian-Slavic (Christian Orthodoxy) and French-speaking Swiss (Catholic and reformed Christianity) we show that children often imagine and depict god using the same colours: primarily yellow and blue. Apparently, god is often imagined by children as light or in light (yellow) and dwelling in the sky (blue). These results parallel historical and religious studies showing that the light enjoys prominent and most powerful symbolism and association with the divine. Complementary analysis of possible effect of child's age, gender, and schooling (religious or regular) did not affect the main result. This research also introduced a novel approach to data analysis by using computer vision in psychological studies of children's drawings. The automated colour identification method was developed to extract colours from scans of drawings. Despite some difficulties, this new methodology opens an interesting avenue for future research in children's drawings and visual art.

Keywords Colour · Children drawings · Religion · God · Cross-cultural

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Colour in Religion

Colour is a prominent perceptual feature in our natural and human-made environments. It has also a special place in the visual art creating forms and rendering picture lifelike. A significant role for colour in making an image vital was evident even in early writing of Christian theologians. St. John Chrysostom (347–407), biblical interpreter and early Church Father, wrote, “As long as somebody traces the outline as in a drawing, there remains a sort of shadow; but when he paints over it brilliant tints and lays on colours then an image emerges” (as cited in James, 2003). As for symbolic and aesthetic values of particular colours, apparently, no universal rules exist. According to art historian John Gage, colours, like all formal characteristics, are ideologically neutral. Historical studies reveal that the same colours have held quite antithetical connotations in different periods and cultures, and even at the same time and in the same place (Gage, 1990). For instance, in Christianity the colour blue is often associated with heaven or the dwelling place of God¹ because of its direct association with the sky. In religious art of the Renaissance, blue signifies heavenly love, truth, and fidelity; it was common to depict Christ and the Virgin Mary wearing mantles of blue (Jacobs & Jacobs, 1958). At the same time, historical analysis shows that in earlier centuries, other colours were used; the Virgin was depicted wearing black or other dark colours in the eleventh century and red in the twelfth century. In the nineteenth century, after the adoption of the dogma of the Immaculate Conception, the Virgin was often shown wearing white (Pastoreau, 1990). Other factors also affected the symbolic value of various colours. The availability of dyes and pigments, their values, and their capacity for conservation largely influenced the use of colours in religious art, and consequently, influenced the symbolic value of the colours, as well (Gage 1999). For instance, the cost of lapis lazuli, which was used in production of ultramarine blue pigment, rivalled the price of gold in the Renaissance period and, when used in art, it consequently influenced the colour’s symbolic value (Gage 1999; Zuiddam, 2018). This symbolic and aesthetic complexity of colour in art and religion seems explain why colour studies in this domain are rather sporadic and most often concern the historical analysis of a particular religious object or a special colour symbolism used for a particular religious ritual.

This brief review of colours in religious art demonstrates the complexity of the question of colour in this domain. In the current project, we address this subject with regard to children’s artistic expression of the divine. Are children likely to associate particular colours with the divine? To date, there have been no studies on this topic. Thus, the present research addresses this important gap and seeks to add to the body of research on religious representations and conceptualization of the divine. Moreover, colour receives relatively little research attention in general studies of children’s drawings when compared to other aspects such as content,

¹Why the term *god* begins sometimes with an uppercase letter G, sometimes with a lowercase letter g, and why it appears sometimes in the singular and sometimes in the plural, is explained in the introductory chapter of this book (Chap. 1, this volume).

composition, and size or spatial location of drawn objects (Burkitt, 2008). This low degree of attention seems particularly surprising when we acknowledge that children consider colour to be one of the main criteria to consider when judging drawings of other children or professional artworks (Milbrath, 2008; Lin & Thomas, 2002). We expect that the present study will further contribute to this domain through the analysis of a large cross-cultural data set and new methodological approach to treat it.

Colour in General Children's Drawings Research

To achieve a better understanding of the implications of colour in children's representation of the divine, we begin by reviewing general research on children's drawings.

Until now, most of the existing research in this domain has focussed on the expressive quality of colour and its possible association with feelings and mood states (see Burkitt, 2008, for a review of the literature). Existing research also revealed colour usage trends related to development and gender, and identified specific colour preferences of children. According these studies, young children primarily seek to create recognizable forms and figures; they use colours idiosyncratically without much regard for their realistic value (Richards & Ross, 1967; Golomb, 2004). For instance, Golomb and Farmer (1983) found that the great majority of 3-year-olds in their study used only a single colour, picked at random, for any given task (e.g., when asked to draw a family; children playing; a birthday party, or a garden with trees, flowers, and a pond). Moreover, the children used all of the colours with comparable frequency, with one exception: they rarely used the colour black. Pictures by 4-year old children become richer in colour, but children continue using colour without much concern for the representational value of any particular colour. The use of colour becomes more theme-dependent among 5-year-olds, as the principle of realism starts to guide their colour choices: the sun is depicted in yellow, grass in green, water and sky in blue. This trend toward a more naturalistic use of colour reaches near perfection in the group of 6–8-year-olds. With age, colour becomes a major determining force of the picture, and is no longer subservient to form. Older children (12–13 years old) attempt to vary the brightness value of a specific colour, for example, to suggest a distance or to unify a composition. At the same time, some older children prefer monochromatic drawings, usually drawn in pencil (Golomb, 2004).

Gender differences on the frequency of colours used in drawings were reported in some studies. Generally, research shows that girls used more colours than boys did (Richards & Ross, 1967; Tuman, 1999). Girls also blended their colours to a greater extent, and tended to use more harmonious colour combinations than boys did (Tuman, 1999). Girls generally used all colours except black, which they used only rarely (Wright & Black, 2013). In turn, boys were more likely to use contrasting colour combinations and tended to apply colour locally (Tuman, 1999). Boys' drawings were the least likely to contain pink and purple (Wright & Black, 2013);

pink was the colour least preferred by boys (Jonauškaite et al., 2019). In some studies boys chose achromatic colours more frequently than girls did (Tuman, 1999; Boyatzis & Albertini, 2000). It is important to note that such gender differences exist beyond a Western context. Alter-Muri and Vazzano (2014) invited 6–12 year old children to draw “a person in an environment”. The children were from 13 countries in Africa, Asia, Europe, North America, and Central America ($n = 700$ drawings). Whatever the country, boys were more likely to use graphite pencil (achromatic colours) in their drawings and girls were more likely to use equal amounts of warm and cool colours in their drawings. Iijima et al. (2001) asked 5–6 year-old Japanese girls and boys to draw what came to their mind. Overall, girls used more colours per drawing than boys did, and they used pink and flesh colours in particular. Boys, by contrast, used only two colours, grey and blue, more frequently than girls did (Iijima et al., 2001).

Colour in Children’s Drawings of Gods

As we mentioned above, colour has not yet been studied with the aim of enhancing our understanding of how children imagine and draw god. Dandarova (2013) reported a partial analysis that referenced the percentage of achromatic representations of god in her study of Buryat children in Russia ($N = 179$, 6–15 years old). This study showed that adolescents from the older age group (13–15) considerably more often depicted god achromatically, using only a pencil, than did two younger age groups (6–8 and 10–11).

With regard to previous studies on children’s drawings of god, researchers have focussed primarily on developmental changes as reflected in the content of pictures. This could certainly be useful to help us better understand the colour palette children use. Overall, the studies showed that children, especially when younger, produced largely an anthropomorphic or quasi-anthropomorphic drawing of god, often depicted in the sky (Harms, 1944; Hanisch, 1996; Ladd et al., 1998; Brandt et al., 2009; Dandarova, 2013). Such representations could vary from a very ordinary human figure to a quasi-human shape, sometimes including special religious or other attributes (e.g., a halo and/or light emanating from the god figure, wings, crown, etc.) (see Dessart, Chap. 3, this volume). Another large category identified by researchers represented non-anthropomorphic, symbolic representations of god. Here, children drew religious symbols and constructions, pictures of nature, the sun, a light, etc. (Harms, 1944; Hanisch, 1996; Brandt et al., 2009; Dandarova, 2013).

Taken together, this review of research shows that little has been done to study general developmental, as well as cross-cultural, patterns of colour use in children’s drawings. Moreover, no systematic research has been done on colour use in children’s pictorial representations of the divine.

Hypotheses and Aims

The overall aim of the present study was to investigate children's colour use in drawings of gods. Of key interest was the association of some particular colours with the divine (god's representation and drawn background taken together) in different religious traditions and cultural contexts. We designed the study to explore two key questions: (1) How many colours do children use? (2) What main colours do children use when depicting god? The pioneering and exploratory nature of this study permitted us to include only one directional hypothesis concerning two main colours, yellow and blue. We hypothesized that the colours yellow and blue would be used for a larger proportion of coloured surface in the drawings from all samples. We based this prediction on two previously described colour associations. With regard to the colour yellow, bright colours, such white and yellow, are often used to depict the divine radiance and the light in religious iconographies. As for the colour blue, we anticipated that blue would often be used because of its association with the sky. Actually, existing studies of children's drawings of god show that children often imagine god's dwelling place to be in the sky (see the review in Dandarova-Robert et al. Chap. 6, this volume).

Method

*Drawing Task*²

Researchers provided participants with paper (size A4), a graphite drawing pencil, a set of wax pastels, and coloured pencils. The following instruction was used in all countries:

Have you ever heard the word "god"? Close your eyes and try to imagine it. Now draw it. Do not look at your classmates, because I would like to know how you imagine it.

After completing this task, the participants were asked to describe their drawings and to answer a questionnaire about their religious environment. Researchers arranged to meet with small groups of participants (10–12); participants worked individually on the drawing task. Time for drawing was not limited and the full session lasted 40 min on average.

²For more detail about the procedure see the introduction of the present volume (Chap. 1, this volume).

Sample

The study is based on a dataset³ of 1205 children's and teenagers' drawings of god (Table 8.1) collected in three countries: Japan ($N = 142$), Russia ($N = 536$) and Switzerland ($N = 527$). We further divided the Russian data set into two samples, Russian-Slavic ($N = 304$) and Russian-Buryat ($N = 232$), because of important cultural and religious differences. Orthodox Christianity is the main religion in Russian-Slavic ethnic group while Tibetan Buddhism and Shamanism are the main religions in Russian-Buryat ethnic group. Drawings were collected in two different contexts: religious schools and regular schools. In Japan, drawings were collected in Buddhist and regular schools in four prefectures: Tokyo, Kyoto, Fukushima and Chiba. All drawings in the Russian-Buryat sample were collected in regular schools because there are no religious schools in this region of Russia. For the Russian-Slavic sample, drawings were collected in Sunday schools in Orthodox churches in Saint Petersburg and in regular schools in Saint-Petersburg and Buryatia. In Switzerland, data was collected in a religious schooling context (Catholic or Protestant) or in a regular school (non-confessional) context. All drawings in the Swiss sample come from the French speaking part of Switzerland.

Automated Colour Identification

The automated colour identification method was developed for the present research (see for more detail, Cocco et al., 2019). It analyses a scan of each drawing and associated each pixel with one of ten colours (red, orange, yellow, green, cyan, blue, purple, pink, white, and achromatic colours (grey and black)). Depending on the studied aspect (see below), a 3×3 median filter was applied in order to reduce the amount of noise. Unfortunately, the method does not allow us to distinguish between the white colour of the paper and some parts of the drawings left uncoloured by the

Table 8.1 Participants' socio-demographics

Sample	Number of females	Age range	Age mean	Age SD	Number of drawings in religious context
Japanese (n = 142)	60 (42.3%)	7–15	10.80	2.29	83 (58.5%)
Russian-Buryat (n = 231)	116 (50.2%)	7–16	10.98	2.70	0
Russian-Slavic (n = 302)	158 (52.3%)	6–16	10.92	2.18	102 (33.8%)
Swiss (n = 516)	269 (52.1%)	7–16	11.00	2.41	291 (56.4%)

³Some children refused to draw god or they wrote that they could not imagine it and submitted blank sheets. Consequently these blank sheets were removed from the dataset (11 from Switzerland and 3 from Russia).

children. For instance, some children did not use colours when drawing clothes and some body parts (e.g., face, arms and wings). Moreover, some other elements of decoration such as clouds were also not coloured in the majority of drawings. Consequently, we excluded white pixels for all subsequent analyses and considered only nine colours.

Data Analysis

Information about the children's country/culture group, age, and gender, as well as the context of the data collection (type of schooling) were used as independent variables. To study the developmental changes, we divided the samples into three age groups: the young group with children younger than 9 years, 6 months; the middle group with children between 9 years, 6 months and 12 years, 5 months; and the old group with teenagers older than 12 years, 5 months.

We conducted three analyses in order to explore the data:

1. **Analysis of the Number of Colours in Each Drawing.** Using on the colour identification method, we determined the number of colours in each drawing using the 3×3 median filter in order to remove noise. The number of colours ranged between one (since blank sheets were removed) and nine (since the algorithm detects ten colours and we did not include white in our analysis). We compared of the number of colours among the samples using a non-parametric Kruskal-Wallis test because the number of colours did not follow a normal distribution.
2. **Analysis of the Three Most-Used Colours in the Whole Dataset.** We analysed the colours used most frequently across the whole dataset. In order to do this, we computed the proportion of each colour in each drawing (according to the number of coloured pixels in the drawing) without applying a median filter. Then, we calculated the means of the proportions for each colour for the whole dataset. Further, based on the proportions of each colour in each drawing, the nine colours were ranked for each drawing (rank = 1 for the colour with the highest proportion and rank = 9 for the colour with the lowest proportion). Then, we computed the means of these ranks for each colour for the whole dataset. Based on these two means (colour proportion and colour ranking), we determined the three most used colours for the whole dataset on which the third part of the analyses was focused.
3. **The Most-Used Colours by Country, Gender, Age, and Type of Schooling.** We determined most frequently used colours by country, gender, age, and type of schooling. For this third part of analyses, we considered the correspondence between the main colours of the whole dataset (the three colours determined in the second part) and the main colour of each drawing as a binary relation (presence or absence). More precisely, for each of these three colours, we counted the number of drawings in which these colours were used as the main colour

(rank = 1). After that, we compared the proportions of drawings with one of these colours as the main colour, according to the independent variables. We compared the proportion of drawings with one defined colour (of the three main colours) as a main colour (rank = 1) according to the independent variables with a Chi-square test.⁴

Results

Number of Colours Used in Drawings

Country and/or Culture

We observed significant differences in the number of colours used by the children (see Table 8.2) although the median number of colours was the same and the mean number of colours was almost the same in all samples. This difference might stem from the difference between the Swiss sample and others. The Swiss children tended to use less colours in their drawings than the other children did.

Gender

As shown in Table 8.3, there was a significant difference between boys and girls with regard to the number of colours used the whole dataset. This tendency was confirmed when we observed the gender differences in each of the four main cultural samples: girls used significantly more colours in all samples (see Table 8.4).

Table 8.2 Number of colours by main samples

Sample	N	Median	Interquartile range	Mean	SD	Min	Max	Kruskal-Wallis
Japanese	142	5	3	5.15	1.72	1	9	$\chi^2[3] = 14.2$, p = .003
Russian-Buryat	231	5	3	5.18	2.01	1	9	
Russian-Slavic	302	5	3	5.05	2.01	1	9	
Swiss	516	5	3	4.69	1.97	1	9	

Table 8.3 Number of colours used in drawings according to gender for the whole dataset

Gender	N	Median	Interquartile range	Mean	SD	Min	Max	Kruskal-Wallis
Girls	603	6	3	5.23	1.89	1	9	$\chi^2[1] = 29.8$, p < .001
Boys	588	5	3	4.62	2.01	1	9	

⁴Since three colours were tested according to each variable, a Bonferroni correction was applied to the p-values, based on three multiple tests.

Table 8.4 Number of colours used in drawings according to gender for each sample

Sample	Gender	N	Median	Interquartile range	Mean	SD	Min	Max	Kruskal-Wallis
Japanese	Girls	60	6	3	5.53	1.63	2	8	$\chi^2[1] = 5.4,$ $p = .020$
	Boys	82	5	2	4.87	1.74	1	9	
Russian-Buryat	Girls	116	6	3	5.58	1.78	1	9	$\chi^2[1] = 7.6,$ $p = .006$
	Boys	115	5	4	4.77	2.14	1	9	
Russian-Slavic	Girls	158	6	3	5.27	1.91	1	9	$\chi^2[1] = 4.5,$ $p = .033$
	Boys	144	5	3	4.81	2.09	1	9	
Swiss	Girls	269	5	2	4.99	1.94	1	9	$\chi^2[1] = 13.7,$ $p < .001$
	Boys	247	5	3	4.36	1.95	1	9	

Age

There was a significant difference between the numbers of colours used by each age group, with a tendency for older children to use less colours than younger ones did (Table 8.5). We observed the same significant results inside country and/or culture samples, except in the Japanese sample (see Table 8.6).

Type of Schooling

We found no significant difference between drawings collected in regular schools and drawings collected in religious schools with regard to the number of colours used. This was true across all three samples that were examined for this variable (see Table 8.7). Nevertheless, across all samples, the tendency to use more colours was evident across in drawings collected in religious schools.

The Most Used Colours in the Whole Dataset

When computing the means of the proportions of each colour according to the number of coloured pixels in all of the samples, we find that achromatism (41.3%), yellow (19.3%) and blue (14.2%) were the most used colour choices, followed by orange (9.0%), red (8.0%), green (4.2%), cyan (3.2%), purple (0.5%) and pink (0.4%).

As a second step, we ranked the colours for the whole dataset of drawings. We present the results of this step in Table 8.8. Again, achromatic colour (shades of grey and black) was the most widely used colour with a mean rank of 1.96, directly followed by yellow (mean rank: 3.42). Then orange, blue, and red ranked, in average, between four and five. Pink and purple are clearly less common in the children’s drawings of gods.

Figures 8.1, 8.2, 8.3, and 8.4 present examples of drawings where, achromatism, yellow, orange, or blue, respectively, were used most often, (i.e. the rank was equal

Table 8.5 Number of colours according to age groups for the whole dataset

Age groups	N	Median	Interquartile range	Mean	SD	Min	Max	Kruskal-Wallis
Young	396	6	3	5.39	1.80	1	9	$\chi^2[2] = 31.7, p < .001$
Middle	391	5	2	4.84	1.92	1	9	
Old	404	5	3	4.57	2.09	1	9	

Table 8.6 Number of colours according to age groups for each sample

Sample	Age groups	N	Median	Interquartile range	Mean	SD	Min	Max	Kruskal-Wallis
Japanese	Young	49	5	2	5.12	1.68	1	9	$\chi^2[2] = 0.1, p = .934$
	Middle	50	5	3	5.20	1.75	1	9	
	Old	43	5	3	5.12	1.78	2	8	
Russian-Buryat	Young	81	6	2	5.81	1.59	3	9	$\chi^2[2] = 11.2, p = .004$
	Middle	67	6	3	5.15	1.88	1	8	
	Old	83	5	3	4.58	2.28	1	9	
Russian-Slavic	Young	95	6	2	5.84	1.56	1	9	$\chi^2[2] = 18.9, p < .001$
	Middle	112	5	3	4.88	1.94	1	8	
	Old	95	4	4	4.47	2.25	1	9	
Swiss	Young	171	5	2	5.01	1.96	1	8	$\chi^2[2] = 8.9, p = .012$
	Middle	162	5	3	4.57	1.94	1	9	
	Old	183	5	3	4.48	1.98	1	8	

to one for the selected colour). As we can see in these examples, achromatism, yellow, and blue were identified by the algorithm just as we would expect them to be; to the eye, the yellow looks yellow and the blue looks blue. The shades identified by the algorithm as orange, however, were not necessarily those that humans would identify as orange (Fig. 8.3). In fact, the algorithm also includes brown (for instance to depict a beard or the cross) in the orange category. It does this (correctly) because brown actually is a shade of orange; but this does not correspond to our human expectation. Taking these limitations into consideration, we treated only three main colours, namely, achromatism, yellow, and blue, in further analysis.

The Most Used Colours by Country, Gender, Age, and Type of Schooling

Country and/or Culture

As detailed in Table 8.9, there is a significant difference between samples with regard to the use of achromatism (grey and black) as the main colour ($\chi^2[3] = 30.5, p < .001$). In descending order, there were 55.2% of such drawings in the Swiss sample, and 53.5% in the Japanese sample. In the two Russian samples their number was less: 39.1% in the Russian-Slavic sample and 38.5% in the Russian-Buryat sample.

Table 8.7 Number of colours according to the schooling context for each sample

Sample	Context	N	Median	Interquartile range	Mean	SD	Min	Max	Kruskal-Wallis
Japanese	Regular	59	5	2	5.07	1.59	2	8	$\chi^2[1] = 0.2,$ $p = .618$
	Religious	83	5	3	5.20	1.82	1	9	
Russian-Buryat	Regular	–	–	–	–	–	–	–	–
	Religious	–	–	–	–	–	–	–	
Russian-Slavic	Regular	200	5	3	4.95	1.95	1	9	$\chi^2[1] = 2.2,$ $p = 0.134$
	Religious	102	6	3	5.25	2.12	1	9	
Swiss	Regular	225	5	3	4.48	2.06	1	9	$\chi^2[1] = 3.5,$ $p = .061$
	Religious	291	5	2	4.85	1.89	1	9	

Table 8.8 Means of colour ranking for all drawings, ordered from 1 (*most used*) to 9 (*least used*)

	Achromatism	Yellow	Orange	Blue	Red	Green	Cyan	Pink	Purple
Mean	1.96	3.42	4.08	4.53	4.59	5.37	6.06	7.44	7.55
SD	1.20	1.94	1.69	2.40	1.90	1.77	1.84	1.27	1.27

For drawings where yellow was the prominent colour, the difference between samples was also statistically significant ($\chi^2[3] = 14.9, p = .006$): 25.8% of the Russian-Slavic children used yellow as the prominent colour in their drawings; followed by 22.9% of the Russian-Buryat children, 19.0% of the Japanese children and 15.3% of the Swiss children.

Finally, for drawings where blue was the prominent colour, the difference between the samples was not significant ($\chi^2[3] = 13.1, p = .013$).

Gender

When considering the whole dataset (Table 8.10), we observed a significant difference between girls and boys for achromatic prominence ($\chi^2[1] = 21.6, p < .001$) and blue prominence ($\chi^2[1] = 6.9, p = .026$) but not for yellow prominence ($\chi^2[1] = 14.9, p = .284$).

When we look into the details of gender by country and/or culture sample (Table 8.11), we observed a statistically significant difference only in Swiss sample for achromatism, although boys in all cultural groups elected to use an achromatic colour scheme in their drawings than girls did. The same result was found for the use of blue colour: only the Swiss sample demonstrated, statistically, that more girls (in proportion) used this colour than boys did. Thus, the difference found for achromatism and blue was due primarily to the Swiss sample. As for yellow, there was no significant difference between boys and girls in each of samples. This result is consistent with that found in the full dataset (Table 8.10).



Fig. 8.1 Six drawings randomly selected from those showing achromatism as the most used colour (first colour) (http://ark.dasch.swiss/ark:/72163/1/0105/1C9498fITMacuoPz8s_GkQH.20180702T195844365Z, <http://ark.dasch.swiss/ark:/72163/1/0105/9WNXqqOORsC0iKaJ9wFmFAc.20180702T193121815Z>, <http://ark.dasch.swiss/ark:/72163/1/0105/Gy9MGxK0RD OcQd=23eDs=Ae.20180702T191824085Z>, <http://ark.dasch.swiss/ark:/72163/1/0105/a1IJM5iST MyU=HSdZr3CDAq.20200325T144023936086Z>, http://ark.dasch.swiss/ark:/72163/1/0105/ua3RlhCDR_GJATuEJTjimQH.20180702T160731797Z, http://ark.dasch.swiss/ark:/72163/1/0105/l6S=JjYiT2Gews_4zYWPPwU.20201108T084925701198Z)

Age

Regarding age, impact results are significantly different for all three colours across the whole dataset (Table 8.12). The proportion of children using mainly achromatism or yellow as the first colour increases with age, at the same time the proportion of children using mainly blue decreases with age.

When looking within each sample (Table 8.13) we observed significant differences for achromatic colour only in the Russian-Buryat sample. The Russian-Slavic and Swiss samples displayed the tendency to use more achromatism as age increased. This runs contrary to findings in the Japanese sample. Regarding yellow as the main colour choice, we observed this trend across all of the samples: but the trend is supported specifically in the Japanese, Russian-Buryat, and Russian-Slavic samples (not in the Swiss sample). However, the proportions are not significantly different. Finally, as participant age increases, we observe a decrease in the proportions of children using mainly blue in their drawings across all samples with the exception of the Japanese sample. Again, across all samples, the proportions are not significantly different.



Fig. 8.2 Six drawings randomly selected from those showing yellow as the most used colour (first colour) (<http://ark.dasch.swiss/ark:/72163/1/0105/Gb3VP=5zS=2X=6CdtJeMLQn.20180702T163908277Z>, <http://ark.dasch.swiss/ark:/72163/1/0105/wUT9e0NbTeiUErJOTE2MEQp.20200415T114805688233Z>, http://ark.dasch.swiss/ark:/72163/1/0105/duba83_9RFWEs1bTbJgvGAs.20180702T192115319Z, <http://ark.dasch.swiss/ark:/72163/1/0105/faW3u0jpR6qXKYmgf0ae2Aq.20180702T193537348Z>, <http://ark.dasch.swiss/ark:/72163/1/0105/AEJs5pXURRmIAOaNzfhIrAZ.20180702T184940719Z>, <http://ark.dasch.swiss/ark:/72163/1/0105/wqqNxLCETW6GT0GNfHSHawq.20180702T155913317Z>)

Type of Schooling

As for the relation between the drawn background and religious or regular schooling context, we examined the data from three samples. In these three samples (Japanese, Russian-Slavic, and Swiss), drawings were collected in two distinct settings: (1) in the context of religious schooling, and (2) in the context of regular (not religious) schooling. (As noted previously, all of the drawings from the Russian-Buryat sample were collected in regular schools, so we did not analyse the drawings from this sample for the impact this variable). For the three main colours that we examined, we found no significant difference between drawings collected in religious schooling context and those collected in a regular school context (Table 8.14). While the results did not qualify as significant, they did indicate that the achromatic colour scheme was used less often as the main choice of colouration in the religious context (for all three samples) than yellow was. Participants in the religious setting (all three samples) used yellow more often as the main colour. As for the blue colour, although our results they did not qualify as significant, we note that participants in



Fig. 8.3 Six drawings randomly selected from those showing orange as the most used colour (first colour) (<http://ark.dasch.swiss/ark:/72163/1/0105/fL0E98zRQHqJ7RwZuQa1zgj.20200407T134513775776Z>, <http://ark.dasch.swiss/ark:/72163/1/0105/NCsAzDTpQ0qPIEL1VkJ6AQ.20180702T185445084Z>, <http://ark.dasch.swiss/ark:/72163/1/0105/CjMDUzWCQHSFhGvfzW87YAp.20180702T190536819Z>, http://ark.dasch.swiss/ark:/72163/1/0105/2O7_NopZTye_R8vr5XS_oQz.20201009T113024420355Z, <http://ark.dasch.swiss/ark:/72163/1/0105/iAruZWuOTcOLYBLqPgzzigI.20200415T110229178117Z>, <http://ark.dasch.swiss/ark:/72163/1/0105/BtFPA2DnS2K=S9ePHep28gv.20180702T190734383Z>)

the religious setting in two of the three samples (Japanese and Swiss, but not Russian-Slavic) used more blue in their drawings.

General Discussion

The aim of the present research was to investigate colour in children's drawings of god collected in four groups of participants characterized by different cultural and religious environments: Japanese (Buddhism and Shinto), Russian-Buryat (Buddhism, Shamanism), Russian Slavic (Christian Orthodoxy) and French-speaking Swiss (Catholic and reformed Christianity). We hypothesized that the topic of the drawing would have a strong influence on the way the children would



Fig. 8.4 Six drawings randomly selected from those showing blue as the most used colour (first colour) (<http://ark.dasch.swiss/ark:/72163/1/0105/4cC4qKkXQLW8oSPAT6aADwp.20200906T105031714076Z>, <http://ark.dasch.swiss/ark:/72163/1/0105/J0S5IzJdT1m=4qiYkq=oyAm.20201018T102738211445Z>, http://ark.dasch.swiss/ark:/72163/1/0105/_BiJTMcGQAOG97ZI=cgGmQm.20201025T133709338444Z, http://ark.dasch.swiss/ark:/72163/1/0105/xC5uYo4MQm6v4eGFF4I_FgW.20180702T155057937Z, http://ark.dasch.swiss/ark:/72163/1/0105/A_4Sv4cyQoGHuAGEEEEdK7Qd.20201010T084817145761Z, <http://ark.dasch.swiss/ark:/72163/1/0105/=dbCBGWWSNmiRmtdtMJ5AAq.20200906T081020386126Z>)

Table 8.9 Proportion analysis for most used colours (achromatism, yellow, and blue) by country and/or culture

Colour	Japan	Russian-Buryat	Russian-Slavic	Switzerland	χ^2
Achromatism	76 (53.5%)	89 (38.5%)	118 (39.1%)	285 (55.2%)	$\chi^2[3] = 30.5, p < .001$
Yellow	27 (19.0%)	53 (22.9%)	78 (25.8%)	79 (15.3%)	$\chi^2[3] = 14.9, p = .006$
Blue	11 (07.8%)	33 (14.3%)	63 (20.9%)	88 (17.1%)	$\chi^2[3] = 13.1, p = .013$

select colours. Specifically, we hypothesized that yellow and blue would be the main colours used by the children. We hypothesized the yellow because bright colours, such white and yellow, are often used to depict the divine radiance and light

Table 8.10 Proportion analysis for achromatism, yellow, and blue by gender, for the whole dataset

Colour	Females	Males	χ^2
Achromatism	247 (41.0%)	231 (54.6%)	$\chi^2[1] = 21.6, p < .001$
Yellow	132 (21.9%)	105 (17.9%)	$\chi^2[1] = 14.9, p = .284$
Blue	116 (19.2%)	79 (13.4%)	$\chi^2[1] = 06.9, p = .026$

Table 8.11 Proportion analysis for achromatism, yellow, and blue used as the first colour by gender and country and/or culture

Colour	Sample	Females	Males	χ^2
Achromatism	Japanese	27 (45.0%)	49 (59.8%)	$\chi^2[1] = 2.5, p = 0.348$
	Russian-Buryat	36 (31.0%)	53 (46.1%)	$\chi^2[1] = 4.9, p = 0.080$
	Russian-Slavic	53 (33.5%)	65 (45.1%)	$\chi^2[1] = 3.8, p = 0.155$
	Swiss	131 (48.7%)	154 (62.4%)	$\chi^2[1] = 9.2, p = 0.007$
Yellow	Japanese	12 (20.0%)	15 (18.3%)	$\chi^2[1] = 0.0, p = 1.000$
	Russian-Buryat	27 (23.3%)	26 (22.6%)	$\chi^2[1] = 0.0, p = 1.000$
	Russian-Slavic	45 (28.5%)	33 (22.9%)	$\chi^2[1] = 0.9, p = 0.993$
	Swiss	48 (17.8%)	31 (12.6%)	$\chi^2[1] = 2.4, p = 0.367$
Blue	Japanese	7 (11.7%)	4 (04.9%)	$\chi^2[1] = 1.4, p = 0.718$
	Russian-Buryat	18 (15.5%)	15 (13.0%)	$\chi^2[1] = 0.1, p = 1.000$
	Russian-Slavic	34 (21.5%)	29 (20.1%)	$\chi^2[1] = 0.0, p = 1.000$
	Swiss	57 (21.2%)	31 (12.6%)	$\chi^2[1] = 6.2, p = 0.038$

in religious iconographies; we hypothesized the blue because of its association with the sky, a place in which children often depict god to be.

As predicted, the results of the present study largely support this hypothesis, although the achromatic colour scheme (black and shades of grey) was most widely used, followed directly by yellow, orange, blue, and red. This mean that after drawing contours in achromatic colours,⁵ children in all samples used yellow and blue to depict god and the background in which they place it. Actually, children commonly used yellow to express light: light as a representation of god itself, or light as emanating from the god, (orange and red were used less often for depiction of the light, and if they were used, they were usually mixed with yellow). This result is largely consistent with historical and religious studies that elucidate the symbolic value of the light across a great variety of religions. From earliest times, light was perceived as the indication of a transcendent realm or as a manifestation of the gods themselves (Herrstrom, 2017). Further, Kapstein (2004, preface, ix) states, “images of light must hold pride of place” between themes suggesting a universal basis for religious intuition and experience. In this sense, results of the present study, using a large cross-cultural dataset, corroborate the view that light imagery and light symbolism have a very special place in religion. Why is light so essentially associated with the divine? One of possible explanation comes to us by way of recent studies inspired by the theory of conceptual metaphor (Lakoff & Johnson, 1980). They showed that light is used pervasively to represent positive concepts, while darkness

⁵It should be noted here that many children (7.9%), especially older, made their drawings using only graphite pencil.

Table 8.12 Proportion analysis for achromatism, yellow, and blue used as the first colour by age groups for the whole dataset

Colour	Young	Middle	Old	χ^2
Achromatism	162 (40.9%)	194 (49.6%)	212 (52.5%)	$\chi^2[2] = 11.6, p = .009$
Yellow	59 (14.9%)	74 (18.9%)	104 (25.7%)	$\chi^2[2] = 15.1, p = .002$
Blue	83 (21.0%)	65 (16.6%)	47 (11.6%)	$\chi^2[2] = 12.7, p = .005$

Table 8.13 Proportion analysis for achromatism, yellow, and blue used as the first colour by age groups and country and/or culture

Colour	Sample	Young	Middle	Old	χ^2
Achromatism	Japanese	27 (55.1%)	28 (56.0%)	21 (48.8%)	$\chi^2[2] = 0.6, p = 1.000$
	Russian-Buryat	20 (24.7%)	26 (38.8%)	43 (51.8%)	$\chi^2[2] = 12.7, p = 0.005$
	Russian-Slavic	27 (28.4%)	47 (42.0%)	44 (46.3%)	$\chi^2[2] = 7.0, p = 0.090$
	Swiss	88 (51.5%)	93 (57.4%)	104 (56.8%)	$\chi^2[2] = 1.5, p = 1.000$
Yellow	Japanese	5 (10.2%)	11 (22.0%)	11 (25.6%)	$\chi^2[2] = 4.0, p = 0.413$
	Russian-Buryat	12 (14.8%)	16 (23.9%)	25 (30.1%)	$\chi^2[2] = 5.5, p = 0.194$
	Russian-Slavic	21 (22.1%)	28 (25.0%)	29 (30.5%)	$\chi^2[2] = 1.8, p = 1.000$
	Swiss	21 (12.3%)	19 (11.7%)	39 (21.3%)	$\chi^2[2] = 7.9, p = 0.058$
Blue	Japanese	4 (08.2%)	3 (06.0%)	4 (09.3%)	$\chi^2[2] = 0.4, p = 1.000$
	Russian-Buryat	17 (21.0%)	10 (14.9%)	6 (07.2%)	$\chi^2[2] = 6.4, p = 0.124$
	Russian-Slavic	28 (29.5%)	23 (20.5%)	12 (12.6%)	$\chi^2[2] = 8.2, p = 0.050$
	Swiss	34 (19.9%)	29 (17.9%)	25 (13.7%)	$\chi^2[2] = 2.5, p = 0.843$

is associated with negative concepts (Lakens et al., 2013; Sherman & Clore, 2009; Chiou & Cheng, 2013). This apparently common association is generally interpreted physiologically (by the fact that humans are diurnal animals) and psychologically (thus, they do not feel safe in the dark) (Lakens et al., 2013). Parallel to these studies, research on the affective valence of specific colours and the emotional content of children’s drawings revealed that overall children use lighter colours to depict figures they regard positively, and they use darker colours to depict figures that they regard negatively (Golomb, 2004; Burkitt, 2008). As an example from research where children were limited the choice of only one colour per drawing, children often selected the colour yellow when drawing a happy figure; they chose brown or black when drawing a sad figure (Burkitt & Newell, 2005; Burkitt & Sheppard, 2014). However, this explication for our results is rather speculative because this study did not account for the level of religious commitment or the positive or negative attitude toward a god figure. As for the colour blue, we could explain the common choice of this colour in representations of god by noting that participants frequently used blue to draw the sky. Actually, using the same data as the present study, Dandarova-Robert et al. (Chaps. 6 and 7, this volume) found that across all sample groups, children who included a background in their picture, most frequently positioned god’s dwelling place in the sky. We note that more detailed research is needed in order to distinguish between colours used to depict god figures and those used to depict background features. For instance, many children depict blue-robed god figures.

Table 8.14 Proportion analysis for achromatism, yellow, and blue used as the first colour according to the schooling context

Colour	Sample	Regular	Religious	χ^2
Achromatism	Japanese	38 (64.4%)	38 (45.8%)	$\chi^2[1] = 4.1, p = 0.130$
	Russian-Buryat	–	–	–
	Russian-Slavic	80 (40.0%)	38 (37.3%)	$\chi^2[1] = 0.1, p = 1.000$
	Swiss	126 (56.0%)	159 (54.6%)	$\chi^2[1] = 0.0, p = 1.000$
Yellow	Japanese	8 (13.6%)	19 (22.9%)	$\chi^2[1] = 1.4, p = 0.714$
	Russian-Buryat	–	–	–
	Russian-Slavic	51 (25.5%)	27 (26.5%)	$\chi^2[1] = 0.0, p = 1.000$
	Swiss	29 (12.9%)	50 (17.2%)	$\chi^2[1] = 1.5, p = 0.668$
Blue	Japanese	4 (06.8%)	7 (08.4%)	$\chi^2[1] = 0.0, p = 1.000$
	Russian-Buryat	–	–	–
	Russian-Slavic	45 (22.5%)	18 (17.7%)	$\chi^2[1] = 0.7, p = 1.000$
	Swiss	35 (15.6%)	53 (18.2%)	$\chi^2[1] = 0.5, p = 1.000$

Despite the similarities between samples with regard to the use of what we have identified as main colours (achromatism, yellow, and blue), the current study found that colour choices could also vary by culture. Thus, more of the Russian children from both samples (Russian-Slavic and Russian-Buryat) used yellow as their main colour. The Japanese and the Swiss children used the choice of achromatic colour more often than the children in the two Russian samples did. More Russian-Slavic and Swiss children used blue as their first choice than did Russian-Buryat or Japanese children. This last finding could be due to the higher percentage of self-identified Christians in these samples. Christian iconography often depicts the figure of god in the sky; past exposure to this iconography may have led children to use the colour blue in a similar way.

Regarding the effects of age and gender, our research revealed significant differences in the use of some colours. While the use of achromatism or yellow as main colour increased with age, the use of blue decreased with age. We could speculate that older children paid more attention to making clear outlines of the figures. They often used achromatic colours to achieve this goal. Our observation here is consistent with earlier studies, which found that older children make more choices about colours, or they choose to draw with only a pencil in order to obtain monochromatic drawings (Richards & Ross, 1967; Golomb, 2004; Dandarova, 2013). Older children used yellow as their first colour choice significantly more often than younger children did. We could thus presume that older children use light as one of god's attributes or they associate god representations with light to a greater extent than the children in the middle and in the young age groups do. Finally, the age difference seen in the use of the colour blue could be explained by the fact that younger children include a blue sky as a background feature in their representations more often than older children do. With regard to gender-related differences, we found no significant effects related to the use of yellow as the main colour. We did find that significantly more boys used achromatism as the main colour than girls did, which is consistent with previous studies (Tuman, 1999; Boyatzis & Albertini, 2000).

Additionally, we found that in the Swiss sample, more girls used blue as the main colour than boys did.

With regard to the context of schooling, we found no significant differences between drawings collected in religious schools and those collected in regular schools. We did note, however, that although the results did not qualify as significant, achromatism was used less frequently as the main colour in religious settings (across all three samples: Japanese, Russian-Slavic, and Swiss) than in regular schools. By contrast, we found that yellow appeared more frequently as the main colour choice in religious settings (again, across all three samples). Additionally we found that in the religious schools of Japan and Switzerland, children chose blue as the main colour most often. Our findings of our present study do not reflect either a measure a level of religious commitment or a positive/negative attitude toward god. Consequently participants the regular school context might be also—or even more—aware of certain religious symbols and beliefs as the children from the religious school context. We need more detailed research that uses the complementary metadata in order to study the impact of the level of religious commitment and the positive/negative attitude toward god on colour use in drawings of the divine.

Finally, regarding the number of colours used by the participants, the mean number of colours (from 4.69 to 5.18) was almost the same across all of the cultural samples. Results also revealed that number of colours used could be a function of participant's age and gender. There was a significant difference between the numbers of colours used in each age group, with a tendency for older children to use less colours than younger ones, except in the Japanese sample. We also found significant gender differences: girls used more colours than boys did, across all samples. Our results show consistency with previous studies; girls choose to use more colours, while boys choose to use more achromatism (Richards & Ross, 1967; Tuman, 1999; Boyatzis & Albertini, 2000; Wright & Black, 2013; Iijima et al., 2001; Alter-Muri & Vazzano, 2014).

Conclusion

Colour remains a neglected aspect in the history of religious art as well as in of the study of children's artistic expression in this domain. The present research addressed this important gap and provides a unique contribution to expanding psychological research on religious representations and conceptualization of the divine. We showed that, when drawing god, children from different cultural and religious environments: Japanese (Buddhism and Shinto), Russian-Buryat (Buddhism, shamanism), Russian Slavic (Christian Orthodoxy) and French-speaking Swiss (Catholic and reformed Christianity), often imagine and depict god using the same colours: primarily yellow and blue. Apparently, yellow often supplies a connection to light; children often represented god in light or as light using yellow to communicate these concepts. The very few differences found between samples according the variables of age, gender, and religious or regular type of schooling further highlight

similarities across cultures and religions. This finding largely corroborates existing studies showing the special role and religious meaning of light in representations of the divine (Weightman, 1996). In fact, light in general and sun-light in particular serve as prominent and powerful symbols in many cultures and religions (Giannakis, 2001). Light could be considered as one of the physical attributes of the divine and it also could be directly associated with god. In some religions, the direct association of light with god is a consistent pattern. For instance, light often symbolizes the essence of God throughout the Old and New Testament (Zuiddam, 2018). Moreover, we find a vast array of solar deities and their worship throughout the humanity history: Ra, the ancient Egyptian deity of the sun; Amaterasu, the goddess of Sun in Shinto; Dazhbog, the god of Sun in the earliest Slavic religions, etc. In many religious iconographies from ancient Egyptian religions to modern day Christianity, Islam, and Buddhism, artists traditionally depict the light and the divine radiance by using materials such as gold and silver (Zorach & Phillips, 2016). When gold or silver were (or are) not available, artists used yellow or white to depict the light and the divine radiance (Kenna, 1985). In our research we see that children follow the same strategy: They use yellow (less so white because in these studies the paper itself is white) to draw light around god's heads or around the whole body to indicate its divine or sacred status.

The present research also contributes to the growing body of evidence found in studies that have been done using the embodied or grounded cognition approach. Our findings support an association of the metaphors of light and brightness with positive concepts such as goodness, morality, intelligence, knowledge, purity, and cleanliness, although further research is needed to deepen our knowledge of colours used in representing the divine and the eventual association of bright colours (yellow and white) with a positive or negative attitude toward god.

Limitations

Some limitations should be noted. First, the automated method of colour identification that we developed does not allow us to separate the white color of drawn elements (body parts, clothes or some elements of background like clouds) from the white color of the sheet of paper. Consequently, we have no information about the factual use of the colour white in children's drawings of god. This is especially regrettable when consider that white is often used to depict divine radiance or to represent divine beings like angels. Future research is needed to remedy this problem. One possibility solution would be to use the computerized annotation tool, which would allow us to analyse only the colours within the annotated zone. This could allow us to better distinguish between the representation of god and any drawn background features or portions of blank paper.

Another limitation that became evident to us during the course of research is that we did not take into consideration the impact of the children's level of religiosity and their positive or negative attitude toward the god figure. It is evident that the

division of the samples according to the type of schooling did not permit us to distinguish between believers and non-believers, between children who intentionally practice religion and those who affiliate (formally) with a particular confessional group, but do not actively practice their religion. Moreover, a positive or negative attitude toward the god figure could influence the children's choice of colours. It is possible that the use of yellow could be dependent upon these factors.

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Chapter 9

Computer Vision and Mathematical Methods Used to Analyse Children's Drawings of God(s)



Christelle Cocco  and Raphaël Ceré 

Abstract In contrast to mainstream research methods in psychology, the project *Children's Drawings of Gods* encompasses computer vision and mathematical methods to analyse the data (drawings and drawing annotations). The first part of the present work describes a set of methods designed to extract measures, namely features, directly from the drawings and from annotations of the images. Then, the dissimilarities between the drawings are computed based on particular features (such as the gravity centre of the smallest image unit, namely pixel, or the annotated position of god) and combined in order to measure numerically the differences between the drawings. In the second part, we conduct an exploratory data analysis based on these dissimilarities, including multidimensional scaling and clustering, in order to determine whether the chosen features permit us to distinguish the different strategies that the children used to draw god.

Keywords Computer vision · Children's drawings · Mathematical methods · K-means clustering · Squared Euclidean dissimilarities · (Semi-)automatic analysis of drawings

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A crucial and original point of the project *Children's Drawings of Gods*¹ is its intercultural and interfaith nature. In order to accomplish intercultural and interfaith comparisons, it is necessary to have a large number of drawings. However, it becomes difficult to analyse each drawing using methods that are standard to psychological research because the standard methods are very resource-intensive, especially if an interrater is needed. In the latter case, moreover, the results could sometimes be subjective, because they depend, to some extent, on the raters. This project makes an original contribution by encompassing computer vision and mathematical methods to analyse the drawings and furnish (semi-)automatic methods to treat large numbers of drawings.

While computer vision methods are well developed to analyse natural images (see, e.g., Szeliski, 2011), such as aerial photography, human portraits, or natural landscapes, they are less developed for artistic work, such as paintings or drawings, with a few exceptions (see, e.g., Stork, 2009; Manovich, 2012; Romero et al., 2018). As for psychological studies of drawings, there are only a few works using computer vision (see, e.g., Kim et al., 2007; Kim et al., 2012; Ahi, 2017). Ahi (2017) uses the ImageJ program, a tool largely used in the area of biological imaging and fully discussed in Schneider et al. (2012). Regarding annotation tools, they are often developed for specific purposes, but with a usage either too restrictive or too permissive according to the aims of the project (Cocco et al., 2018).

Therefore, we developed specific methods to answer various research questions (see Table 9.1 for the relation between the research questions, the methods, and the chapters of this volume). In a nutshell, we developed two main method types in this project in order to extract features from the drawings: methods based on annotations and methods of computer vision. Both methods enable the extraction of counts and measurements (namely of features) from the drawings.

First, regarding the methods based on annotations, we created a specific annotation tool, dubbed Gauntlet, for this project (Dessart et al., 2016).² This tool proposes a fixed list of items that can be annotated (with a box or a point depending on the items). The output provides a list of the annotated items with the coordinates of the boxes or points. Two types of annotations were produced with this tool in the present project and its sequel: annotations for anthropomorphism and annotations for position. Regarding annotations for anthropomorphism, we annotated all anthropomorphic items in the drawings.³ Only the names of the items were used here. For position annotations, we placed a rectangular box around the god⁴

¹The international project, *Drawings of Gods: A Multicultural and Interdisciplinary Approach to Children's Representations of Supernatural Agents*, is also known in French as *Dessins de dieux* (DDD), and referred to in this volume simply as *Children's Drawings of Gods*.

²The annotation tool has now been replaced by another annotation tool, based on VIA <https://www.robots.ox.ac.uk/~vgg/software/via>

³This annotation process included several other types of annotations. However, there were not used in the sequel and so not described here.

⁴Why the term *god* begins sometimes with an uppercase letter G, sometimes with a lowercase letter g, and why it appears sometimes in the singular and sometimes in the plural, is explained in the introductory chapter of this book (Chap. 1, this volume).

Table 9.1 Summary of research questions treated in this chapter with regard to the related chapters in this book, the considered features, and the type of features

Research question	Feature(s)	Type(s) of features	Dissimilarity	Related chapter(s)
Do children draw anthropomorphic figures to represent god or not? If yes, do they draw a complete human or do they remove or add features to show that god is not an ordinary human?	Anthropomorphism	Annotation	D^{ANT}	Chapters 3 and 4
In what part of the sheet children draw god? In the upper part or not?	God’s position	Annotation	D^{POS}	Chapters 6 and 7
	Gravity	Computer vision	D^{GRAV}	
Which colours and how many colours do children use to draw god?	Colours	Computer vision	D^{COL}	Chapter 8
Are all the colours distributed in the same way on the page? Do children use more blue and yellow in the upper part to represent the sky and the sun, and greener in the lower part?	Colours + Gravity	Computer vision	–	
Do children use the whole sheet to do their drawings or do they draw a lonely figure with no background?	Colour variety	Computer vision	D^{VAR}	

representations in the drawings, in accordance with instructions found and detailed earlier (Chaps. 6 and 7, this volume). Based on this box position, we extracted features, namely the vertical and the horizontal position of god.

Second, we developed various methods of computer vision, enabling us to directly extract features from the drawings. Three general features are discussed in this segment: the gravity, which mainly consists of the positional mean of coloured pixels; the colour frequencies; and the colour organisation (both of which are based on the RGB (red, green and blue) colour space representation of the drawings).

Although we developed these types of methods to answer a variety of questions (see Table 9.1), they can sometimes serve more than one purpose; more than one method can aid us in answering a single question. For instance, to understand where children draw god on the page, we can: (1) consider the complete composition of the drawing with the mean position of coloured pixels (gravity features); or (2) focus on the annotated position of the figure of god (position features).

The aim of this work is to go further in the automated processes to see if expected patterns can be seen and new patterns discovered by using clustering methods that have not been used in other segments of analysis, as well as to add new features and to combine them. In the first part, we present the method: first, the feature extractions; second the transformation of features into dissimilarities; and third, the

clustering method, namely the K-means. The next part provides results (illustrations) of applied clustering in combination with previously defined features. Finally, we discuss the contribution of this method to the psychological research questions.

Method

In this section, we first describe the dataset of drawings and drawing annotations. Then we present various features that characterise the drawings (gravity, colour frequencies, colour organisation, god position, and anthropomorphism), features that have been extracted from the drawings and/or from the annotations. We explain how those features are used in computations to measure the dissimilarities between each pair of drawings (dissimilarities based on features). Finally, the clustering technique is described (clustering based on dissimilarities).

Dataset

Each $i = 1, \dots, N$ drawing from the dataset of size $N = 1211$ has different origins, as summarised in Table 9.2. The drawings in this dataset were collected between 2003 and 2016 in small groups of compulsory school aged children.

Not all drawings were annotated for position. In drawings with multiple figures it was difficult, or even impossible, to identify which or how many of the figures represented god. Although we were not able to annotate all drawings for the position, we were able to annotate all drawings for anthropomorphism (with the exception of Russia, for this subset of drawings our work is still in progress). To date, we have been able to annotate 745 drawings for anthropomorphic characteristics and 1162 for the position of the god figure.

Each i drawing is defined here as a mathematical object consisting of a $d = 3$ dimensional matrix or array of size $n \times m \times d$, coding the vertical position on the Y-axis, the horizontal position on the X-axis and the colour, respectively (think about a regular 3D grid). With $y = 1, \dots, n$ and $x = 1, \dots, m$, each p_{yx} element represents the colour value or the pixel at the (x, y) coordinates. More precisely, p_{yx} is defined by a triplet of values in the RGB colour space.

Table 9.2 Count of the drawings in the dataset

Country	Drawings	Annotated for position	Annotated for anthropomorphism
Japan	142	135	142
Russia	538	513	72
Switzerland	531	514	531
Total	1211	1162	745

Features

We extracted two types of features from the drawings in the dataset. There are features extracted from manually executed annotations (god's position and anthropomorphism) and features automatically computed from the drawings (gravity, colour frequencies, and colour organisation) according to computer vision approach.

Gravity

The disjunctive configuration of the coloured pixels (absence or presence), permits us to extract their so-called mean position, based on the weighted mean of the gravity computation proposed by Konyushkova et al. (2015). First, the pixels colour space is converted from RGB \rightarrow HSV (Hue, Saturation and Value) and the retained p_{yx}^b coloured pixel follows

$$p_{yx}^b := \begin{cases} 1 & \text{if } p_{yx} \in [H, S > 0.05, V < 0.95] \\ 0 & \text{otherwise} \end{cases}$$

Then, the standardised $(\bar{x}^b, \bar{y}^b) \in [0,1]$ mean position coordinates of the coloured pixels are obtained with

$$\bar{x}^b = \frac{f^b \sum_x (\sum_y p_{yx}^b (x-0.5))}{m} \quad \bar{y}^b = \frac{f^b \sum_y (\sum_x p_{yx}^b (y-0.5))}{n} \quad (9.1)$$

where the normalisation factor $f^b = 1 / \sum_{xy} p_{yx}^b$ is the inverse number of coloured pixels.⁵

Moreover, the inertia Δ^b , measuring the dispersion of the coloured pixels inertia, is computed as:

$$\Delta^b = \begin{cases} \text{var}(x^b) + \left(\frac{n}{m}\right)^2 \text{var}(y^b) & \text{if } m < n \\ \text{var}(y^b) + \left(\frac{m}{n}\right)^2 \text{var}(x^b) & \text{otherwise} \end{cases} \quad (9.2)$$

where $\text{var}(x^b)$ and $\text{var}(y^b)$ are defined as:

$$\text{var}(x^b) = f^b \sum_x \left(\frac{\sum_y p_{yx}^b (x-0.5)}{m} - \bar{x}^b \right)^2$$

⁵The center of the pixel is considered as the reference point, thus we subtract 0.5.

and

$$\text{var}(y^b) = f^b \sum_y \left(\frac{\sum_x p_{yx}^b (y - 0.5)}{n} - \overline{y^b} \right)^2.$$

Thus, both the weighted mean of gravity and the inertia, called together *gravity features* in the sequel, are computed based on coloured pixels. This means that if pixels are not coloured, for example if a child left a part in white, it influences these features. The next step in this work will be to find a way to consider these cases, using a method such as the one developed by Seong-in Kim et al. (2012).

In order to keep the process completely automatic, the whole dataset was included in the analysis for these gravity features. While we expected that some drawings (such as those left as blank sheets) would be automatically removed from this portion of the analysis, they were not, because there is always at least one coloured pixel, sometimes due to the scan or to noise.

Colour Frequencies

On a finer level, the colour frequencies (in pixel count) can be extracted automatically for each drawing with the method proposed by Cocco et al. (2019). This method uses a two-step procedure that assigns all pixels p_{yx} first to a set of 117 micro-colours, and second to a set of a defined palette of $G = 10$ colours: gray-black scale (achromatic), blue, cyan, green, orange, pink, purple, red, white, and yellow.⁶ Finally, a binary matrix of the same dimension as the considered drawing is obtained, b_{yx}^g , for each colour $g = 1, \dots, G$, whose components are 1 if the pixel has the colour g . Thus, for each drawing, $c^g = \sum_{yx} b_{yx}^g$ is the number of pixels per image for each colour. This allowed us to create a contingency table, V^{COL} where images are the rows; and colours, the columns.

Colour Organization

Looking deeper, each drawing expresses a particular organisation of colours, which can be quantified by a measure of entropy (Parker, 2011): the higher the entropy, the more dispersed or “random” the corresponding colour distribution will be. Conversely, a lower measure of entropy corresponds to the use of less colours, and may indicate a more organised state of colours.

The triplet value defining the colour of a pixel in the RGB space is first linearly converted to the so-called grey level \tilde{p} defined as $\tilde{p} = 0.2125p_R + 0.7154p_G + 0.0721p_B$ which results in 256 discrete grey levels in

⁶For these features, the images were resized in such fashion that the length of the drawing’s longest size is normalized to $n = 320$.

$t = 0, \dots, T = 1$. Then, for each drawing, the relative frequency of each level of grey t occurs at

$$p(t) = \frac{\sum_{y=1}^n \sum_{x=1}^m \mathbf{1}(\tilde{p}_{yx} = t)}{P}$$

with $P = n \times m$ the pixel number of the drawing. Thus, the entropy (in bits) associated with the drawing of the 256 colours is

$$H(T) = -\sum_{t=1}^T p(t) \log_2 p(t)$$

and obeys $0 \leq H(T) \leq \log_2(256) = 8 \text{ bits}$.

God Position

We annotated drawings in order to locate the god figure's position in the pictorial space (god position in the image). At this stage, only drawings with a single god figure have been analysed (see Chap. 7, this volume). For each drawing, god's representation is delimited by a box defined as two points x_{min}, y_{min} , in the upper left corner, and x_{max}, y_{max} , in the bottom right corner. The position is defined by the centroid-standardized coordinates $(x^c, y^c) \in [0, 1]$ such as:

$$x^c = \frac{(x_{max} - x_{min})/2}{m} \quad y^c = \frac{(y_{max} - y_{min})/2}{n} \quad (9.3)$$

Anthropomorphism

We annotated drawings with various labels and positions related to anthropomorphism.⁷ For this task, we kept only the labels (position was not used) and only those directly connected to anthropomorphism. A contingency table $V^{ANT} = (v_{il})$ was obtained, where v_{il} counts the number of occurrences of the l^{th} anthropomorphic feature in the i^{th} drawing. We considered 13 labels, namely:

- heads,
- eyes,
- noses,

⁷It is important to note that the whole drawing was annotated for anthropomorphism. Therefore, the anthropomorphic features refer to the whole drawing, including angels, bishops, etc., and not only to the god character.

- mouths,
- ears,
- hair,
- beard,
- clothes,
- arms,
- hands,
- legs,
- feet and
- no anthropomorphic item.

The last label ($l =$ “no anthropomorphic item”) was used when no other label applied to the drawing i ($v_{il} = 1$), in order to avoid drawings without labels and to be therefore able to include all drawings in the dissimilarity computation detailed in the section below.

Dissimilarities Based on Features

When each drawing has been characterized by uni- or multi-variate features, computing the dissimilarities between each pair of i, j drawings constitutes a natural way to reveal their contrast within a large dataset.

We computed two types of dissimilarities regarding the quotient of the features. The numerical measure yields the $n \times n$ symmetric dissimilarity matrix $D = (d_{ij})$ with $d_{ij}^2 = \|\vec{x}_i - \vec{x}_j\|^2$ representing the squared Euclidean distances. Otherwise, the categorical feature with m modalities yields a contingency table $V = (q_{il})$ of size $n \times m$, a matrix counting the number of occurrences of modality l in drawing i . From the latter, a chi-squared dissimilarity denoted here χ^2 can be computed. However, the categorical features under investigation include various modalities that are over-represented and hide other subtle yet relevant modalities that are less frequently represented (think about a distribution count of white pixels in front of the distribution counts of pink or yellow pixels). The generalized χ^2 defined below (Ceré & Egloff, 2018) provides a parameter $\theta \geq 0$ to adapt the sensitivity of the measure to the high or low frequencies in the distribution of each l modality, respectively $\theta > 1$ or $\theta < 1$ whereas $\theta = 1$ provides the usual χ^2 . Then $d_{ij}^{\chi^2} = \sum_l v_l (\rho_{il}^\theta - \rho_{jl}^\theta)^2$ where $v_l = \frac{q_{\bullet l}}{q_{\bullet \bullet}}$ is the modality weight and $\rho_{il} = \frac{q_{il} q_{\bullet \bullet}}{q_{i \bullet} q_{\bullet l}}$ the independence quotient.

In both cases, those dissimilarities are squared Euclidean, and so are their p -variate mixtures $D'_{ij} = \sum_{k=1}^p \alpha_k D_{ij}^{(k)}$, where $D^{(k)}$ is the k -th dissimilarity D_{ij}/Δ standardized by the corresponding inertia Δ for the k -variable, and the free coefficient $\alpha_k \geq 0$ with $\sum_k \alpha_k = 1$ permits us to tune the relative weight of each contribution.

Therefore, for the five dissimilarity matrices of Table 9.1, three are straightforward squared Euclidean dissimilarities:

- $D^{VAR} = (\|H(t)_i - H(t)_j\|^2)$ from the colour variety feature,
- $D^{GRAV} = \left(\| \overline{x}_i^b - \overline{x}_j^b \|^2 + \| \overline{y}_i^b - \overline{y}_j^b \|^2 + \| \Delta_i^b - \Delta_j^b \|^2 \right)$ from the gravity features,
- $D^{POS} = \left(\| x_i^c - x_j^c \|^2 + \| y_i^c - y_j^c \|^2 \right)$ from the position features; and two are chi-squared dissimilarities:
- D^{COL} from the colour frequencies features and
- D^{ANT} from the anthropomorphism features.

Clustering Based on Dissimilarities

As the dataset is large enough (a large n that will increase drastically in the near future of the project) a clustering method is needed to identify possible homogeneous drawings aggregations. From among many other methods, the well-known iterative K-means approach has been adapted here according to Cocco (2014) for the formalism $D = (d_{ij})$ and performed to attribute each drawing in $c < N$ clusters.⁸ We consider a uniform weight for each i drawing, such as $f_i = 1/N$ and $\sum_i f_i = 1$.

In contrast with the current practice of this method,⁹ we first define a uniformly random binary partition matrix $Z = (z_{ik})$ where $\sum_k z_{ik} = 1$. Each drawing is then attributed to the cluster k with the probability z_{ik} .

Iteratively, the distance between the drawings and the intermediate k -centroids D_i^k is

$$D_i^k = \sum_j f_j^k D_{ij} - \Delta_k \quad \text{with} \quad \Delta_k = \frac{1}{2} \sum_{ij} f_i^k f_j^k D_{ij}$$

where $f_j^k = f_j z_{jk} / \rho_k$ is the distribution of the drawing j within cluster k and obeys $\sum_i f_i^k = 1$, where $\rho_k = \sum_i f_i z_{ik}$ is the relative weight of cluster k . At each iteration, the drawing i is attributed to the nearest k th cluster, $k_i = \arg \min_{k=0}^c D_i^k$ that is $z_{ik} = 1$ if $k = k_i$, and $z_{ik} = 0$ otherwise, and the process is continued until the partition Z converges.

The number of c clusters is chosen accordingly to the heuristic rule of Hartigan (Chiang & Mirkin, 2010; Hartigan, 1975; Sablatnig et al., 1998) which defines the optimal number of clusters c^* as the minimal c for which the Hartigan index

⁸Our choice of this method is motivated mainly by the goal of providing, as far as possible, an automatic and reproducible procedure that will facilitate further research upon similar datasets.

⁹Current practice deals directly with the features rather than the dissimilarities.

$HK = \left(\frac{w_c}{w_{c+1}} - 1 \right) (n - c - 1)$ satisfies $HK(c) \leq 10$, where $w_c = \sum_{ik} D_i^k$ is the sum of the within-cluster distances to the c centroids. Such a criterion seeks to minimize the variation of w_c while increasing c . If the value $HK(c) \leq 10$ is never reached, the number of clusters is chosen as $c^* = \arg \min_{c=2}^{c=10} |w_c - w_{c+1}|$ (de Amorim & Hennig, 2015).

The above yields various distinct and homogeneous clusters of the drawings, whereas the Multi-Dimensional Scaling (MDS) permits to explore the dissimilarities between drawings by representing and visualizing the dataset in a lower number of dimensions. Although the dimension reduction implies a loss of information,¹⁰ the combination of the labelled drawings and dissimilarities in a 2-dimensional plot constitutes a particularly intuitive way to understand patterns of two aspects in a large dataset. This is useful when analysing two aspects such as:

1. The similarities between drawings within a given cluster and between differing clusters,
2. The identification of the uni- or multivariate profile most contributing to the distinction between drawings, or groups of drawings.

To perform the MDS, the matrix of scalar products weighted B are computed from the dissimilarity matrix (Bavaud, 2011; Cocco, 2014) as:

$$B = -\frac{1}{2} HDH' \quad \text{with} \quad H = I - \mathbf{1} f'$$

which permits us to define the matrix of weighted scalar products $K_{ij} = \sqrt{f_i f_j} B_{ij}$ whose trace is equal to the inertia Δ of the configuration. The spectral decomposition $K = U\Lambda U'$ (where Λ is diagonal and U orthogonal) finally defines the factor coordinates of each i drawing upon the new α^{th} dimension as

$$x_{i\alpha} = \frac{\sqrt{\lambda_\alpha}}{\sqrt{f_i}} u_i$$

where the eigen value λ_α represents the inertia explained by the α^{th} dimension. Ideally, the first dimensions express an important part of the inertia, thus justifying the 2-dimensional plots, as illustrated in the section below.

Results

In this section, we propose some possible answers to questions mentioned in Table 9.1. For each feature or combination of features, a MDS and a K-means were computed, as described in the “Method” section, and the MDS served to plot the

¹⁰The proportion of variance explained by each dimension is indicated directly on the plot.

results.¹¹ For each cluster obtained with the K-means, four types of proportions were additionally computed, according to the metadata (country, sex, age and context) of the drawings:

- The proportion of children from each country;
- The proportion of males and females;
- The proportion of children in each age group:
 - Group “young”: until 9 years and 5 months,
 - Group “middle”: between 9 years and 6 months and 12 years and 5 months,
 - Group “old”: at least 12 years and 6 months; and
- The proportion of children met in a religious or in a public context.

Because the number of drawings varies in each sample based on the metadata, we computed a sample adjustment for these proportions. Indeed, each illustration of frequencies by clusters below shows the relative group proportion, which balances the number of subjects for each metadata group. For instance, we re-weighted the number of children in each country so that, for the calculations, the three countries contain the same number of children.

Anthropomorphism

In order to understand if children represent god(s) as human, we computed a K-means on the χ^2 dissimilarities D^{ANT} , with the free parameter $\theta = 0.5$,¹² produced with the anthropomorphism contingency table and the results are detailed in Figs. 9.1, 9.2, and 9.3. As explained before, these results cannot be used to answer the research questions directly, because features include the anthropomorphic items of the whole drawing and not only of the god figure. However, they do permit us to distinguish some patterns that characterize the available dataset.

For instance, the most remarkable cluster (the third one) includes drawings without human items (Fig. 9.2). As expected, this cluster is highly distant from others (Fig. 9.1). Moreover, there is a majority of Swiss children, males, older children and/or of drawings collected in a religious context (Fig. 9.3). Cluster 2 is also different enough from the others, containing drawings with an average of more than 10 heads, 20 arms and legs, but less than five noses or mouths on average (Fig. 9.2). It contains drawings with many small anthropomorphic figures that lack details, namely mouths and noses. All the drawings in Cluster 2 come from Switzerland and were produced primarily by females and older children in a religious context

¹¹ Recall that the initial partition in the K-means algorithm is chosen randomly. Thus, the results below correspond to one start and could differ (although not much, presumably) if another point was chosen for the initial partition.

¹² The free parameter θ has been determined by numerical experiments under the heuristic rule of Hartigan.

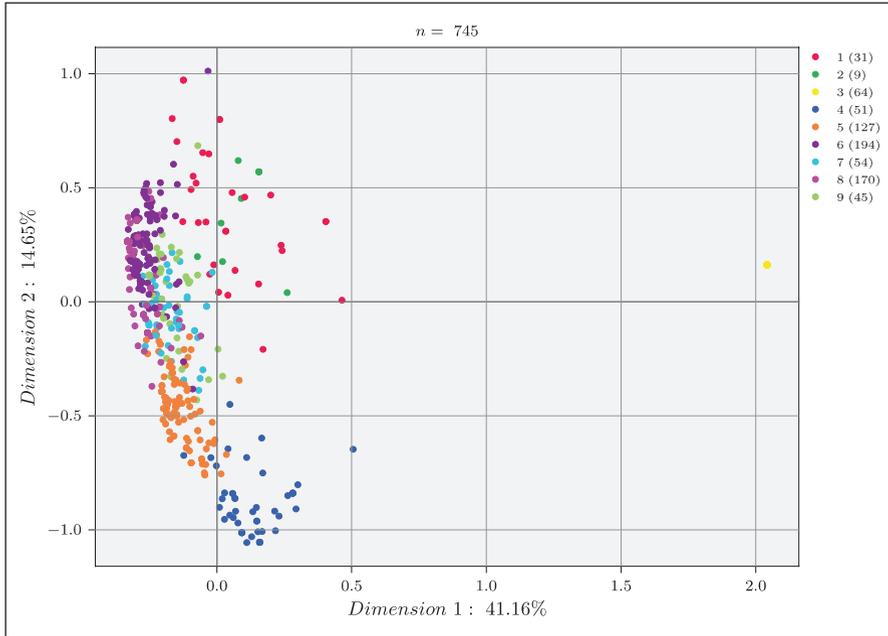


Fig. 9.1 Representation of the nine clusters obtained with the K-means and plotted on the MDS for anthropomorphic features

(Fig. 9.3). Figure 9.2 also demonstrates that Cluster 9 contains drawings with anthropomorphic figures without hands; Cluster 4, more heads than arms or legs; Cluster 7, more than two heads on average; Cluster 5, 6, and 8, one head on average; and Cluster less than one head on average. Therefore, the first cluster is composed of drawings with one main anthropomorphic figure, without eyes, as seen in the drawing by a Japanese boy presented in Fig. 9.4. Children from Japan, the religious context, and the older group drew most of the representations in this cluster.

Position and Gravity

To understand the position of children's god representation on the page, we developed two techniques. The first one is based on the position of coloured pixels and takes into account the whole drawing (gravity). The second one is based on an annotation that delimits only the figure of god (position). As explained in the method, the K-means can be applied to a single set of features, such as position or gravity, or to a combination of feature sets, such as position and gravity.

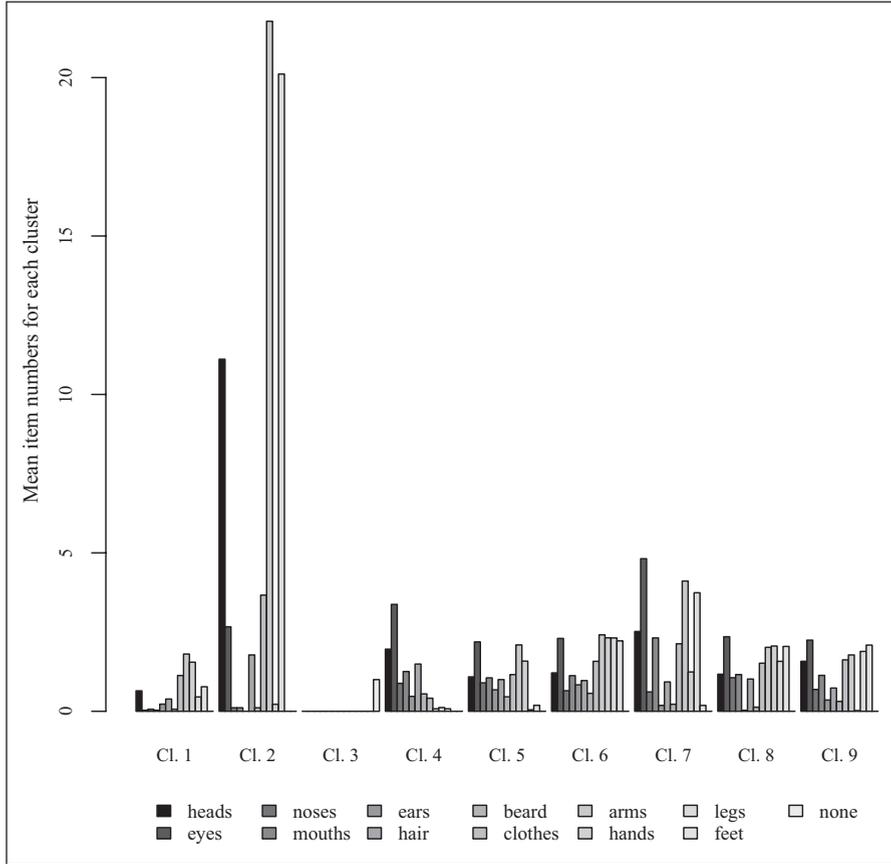


Fig. 9.2 The mean of each anthropomorphic item for each cluster

Position

As this feature has only two components, x^c and, y^c the MDS plots exactly the position, with the exception of the direction and thus, the sum of the variances explained by the two first dimensions is equal to 100% (see Fig. 9.5).

The first quadrant of Fig. 9.5 (top-right) corresponds to the fourth quadrant of the drawing (bottom-right), the second quadrant of the Fig. 9.5 (top-left) to the first quadrant of the drawing (top-right), and so on. Thus, it is a 90° counter-clockwise rotation and Cluster 5 represents drawings where god’s representation is in the upper-left position of the drawing, while in Cluster 7, god is represented in the lower part of the drawing. It is important to note that this rotation is due to the fact that the vertical position of god, represented by the first dimension, explains 71% of the variance, compared to only 29% for the horizontal dimension: the vertical position of god turns out to be more efficient to differentiate between drawings than the horizontal position.

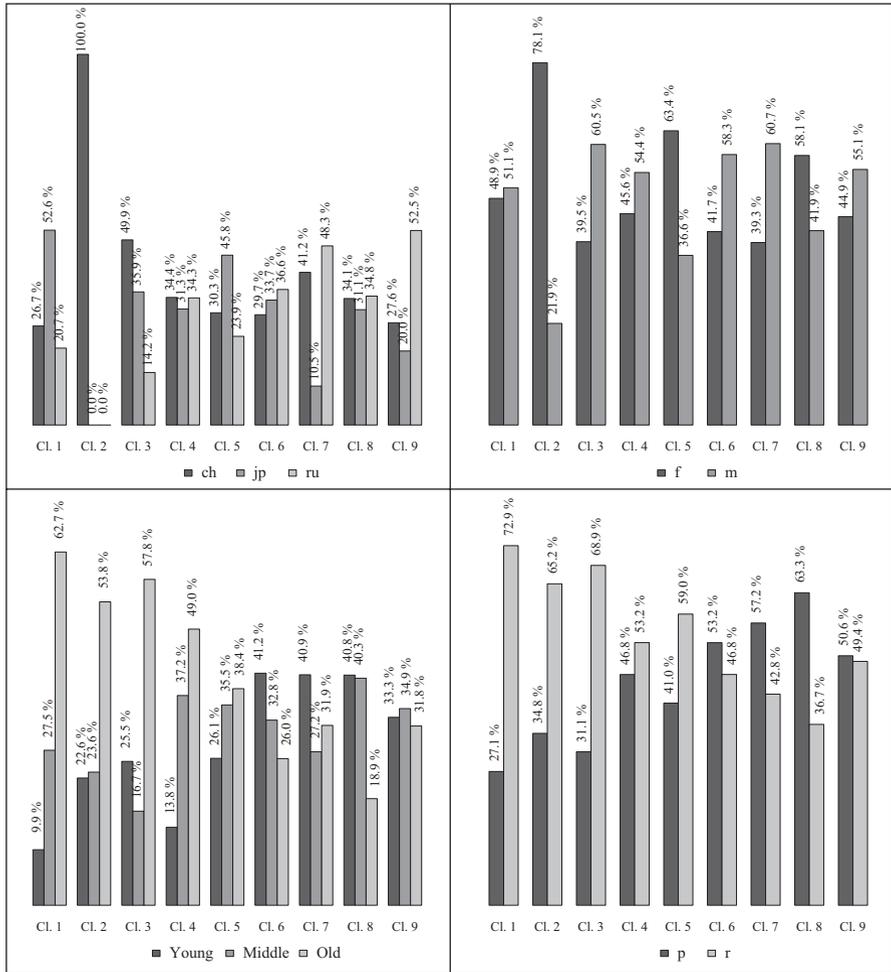


Fig. 9.3 For each cluster obtained with the K-means applied to anthropomorphic features, this figure shows relative group proportions of children from each country (top left), of males and females (top right), of children in each age group (bottom left), and of children from religious or public school contexts (bottom right)

As shown in the Fig. 9.6, the majority of drawings in Cluster 5 (god is at the upper-left position of the drawing) were drawn by Russian children, boys and children aged between 10 and 12 years old and/or met in a public context. Cluster 4 represents drawings where god was drawn on the right part of the page, near the bottom, mainly produced by Swiss children and children met in the religious context. Drawings in Cluster 7 represent drawings where god was drawn at the bottom. As for Cluster 4, the majority of these representations were drawn by Swiss children. Moreover, these drawing were mainly produced by young children. As in the case of Cluster 5, the Clusters 8 and 9, with god drawn at the left middle portion of

Fig. 9.4 Drawing by a Japanese boy of 13 years and 11 months old in 2003 in a public school context, part of Cluster 1 in the anthropomorphic clustering (see Fig. 9.1) http://ark.dasch.swiss/ark:/72163/1/0105/MIRjVt_RRZuLjX5gHR6rgY.20200318T123648872549Z



the page, contain mainly Russian drawings. Moreover, representations in Cluster 8, where god is depicted slightly lower than the centre, were mainly drawn by girls; and those of Cluster 9, where the representation of god is situated higher than the centre, were drawn mainly by children of middle age group.

Gravity

In contrast to the position features, gravity features include not only the $(\overline{x^b}, \overline{y^b})$ coordinates on the X- and Y-axis, Eq. (9.1), but also the inertia Δ^b , Eq. (9.2). Therefore, the sum of the variance explained by the two first dimensions is no longer equal to 100% (see Fig. 9.7). It is therefore more complicated to interpret the axes. However, Cluster 1 contains drawings in which the coloured pixels are, on average, found at the bottom of the page. These were produced mainly by Swiss

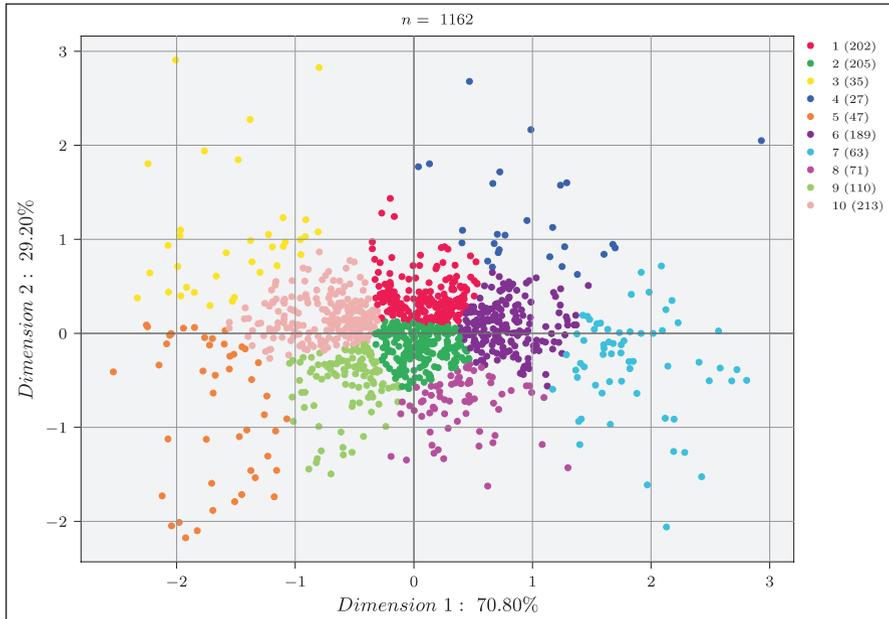


Fig. 9.5 Representation of the ten clusters obtained with the K-means and plotted on the MDS for the position features

children (relative group proportion of 50.2%) and young children (56%). In Cluster 3, drawings in which the coloured pixels are, on average, on the left, rather on the top of the page, were mainly drawn by boys (62.4%) and/or by children in a public school context (63.7%). Finally in Cluster 5, drawings in which the coloured pixels are, on average, at the top, were mainly produced by males (59%).

Combination of Position and Gravity

Even if the position and gravity features are obtained with completely different procedures (by the mean of annotations for the former and by computer vision for the latter, respectively), the illustrations above demonstrate that they help us to grasp the same type of information. Thus, we combined these two features, as $D' = 1/2 * D^{GRAV} + 1/2 * D^{POS}$, in order to see if they provide more information together.

The aspect of Fig. 9.8 is similar to the aspect of Figs. 9.5 and 9.7. This is consistent with the fact that x^c is positively correlated with $\overline{x^b}$, respectively y^c with $\overline{y^b}$ from Eqs. (9.1) and (9.3), as shown in Table 9.5. Moreover, it seems that the MDS grasps the position of god better than it grasps the gravity centre of the drawing. Indeed, we see again that the more the drawing appears on the right of the graph, the more the position of the representation of god is up (higher on the page). Likewise, the more the drawing appears on the left of the graph, the more the position of the

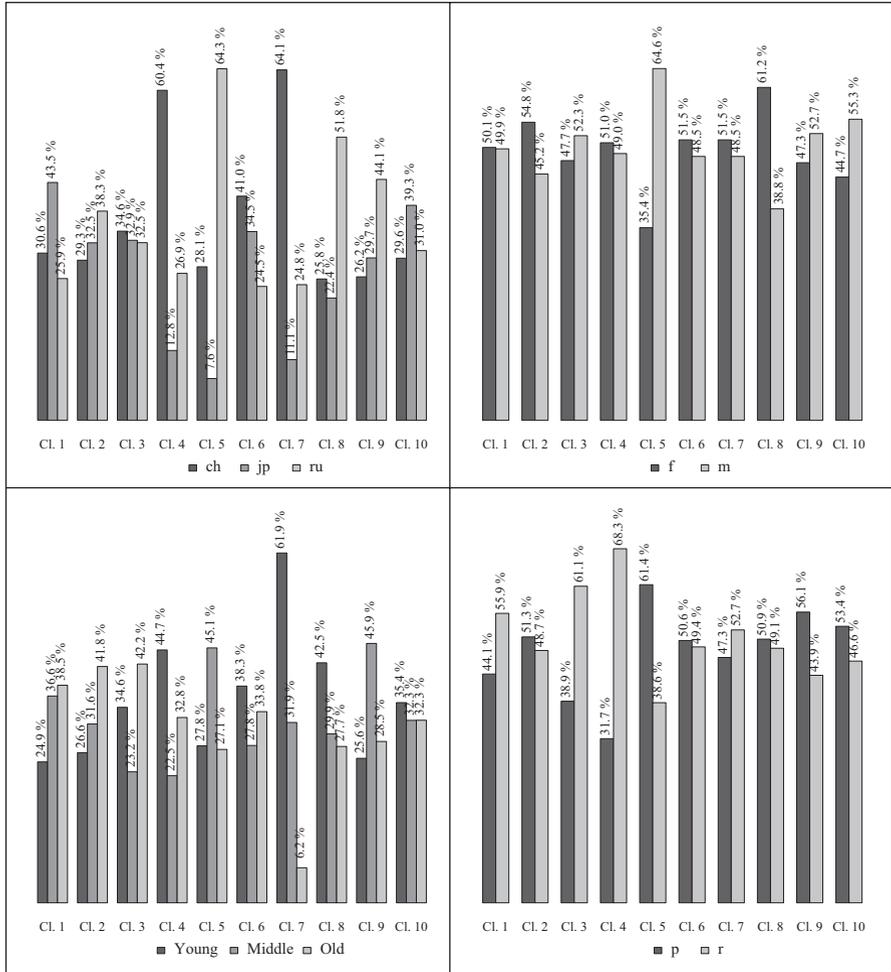


Fig. 9.6 For each cluster obtained with the K-means applied to position features, this figure shows relative group proportions of children from each country (top left), of males and females (top right), of children in each age group (bottom left), and of children from religious or public school contexts (bottom right)

representation is down (lower on the page). It seems that drawings in the upper part of the graph exhibit god on the left, but for drawings in the lower part of the graph, the god location of the representation is less clearly predictable.

Combining the features, clusters become less easy to interpret. However, in Clusters 1 and 7 (Fig. 9.8), there are drawings where god is depicted on the lower part of the page. More precisely, Cluster 7 contains drawings with god at the extreme bottom of the page, mainly produced by Swiss children and younger children (Fig. 9.9). This result is consistent with Cluster 7, obtained above using only the position features (Figs. 9.5 and 9.6). Cluster 1 (Fig. 9.8) is also made up of drawings

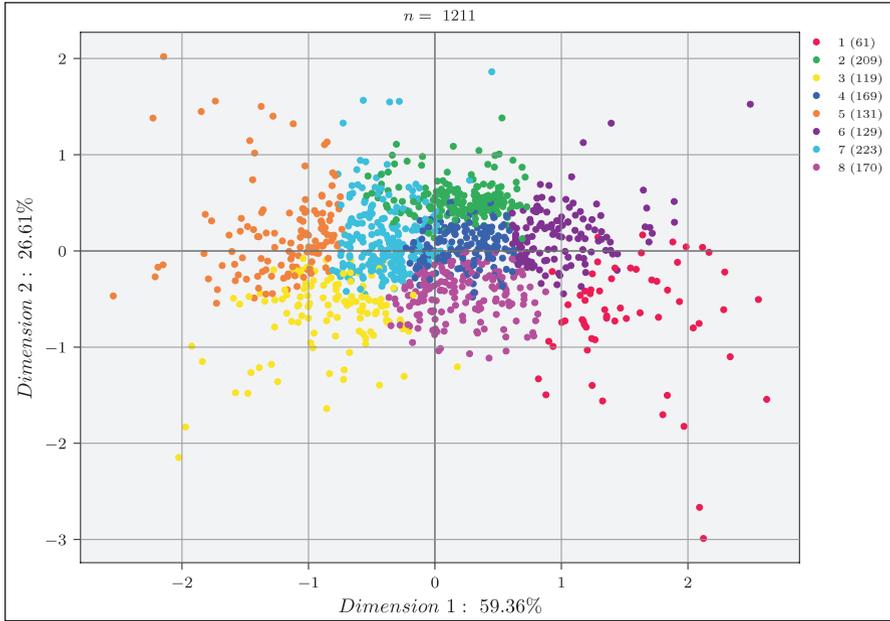


Fig. 9.7 Representation of the eight clusters obtained with the K-means and plotted on the MDS for the gravity features

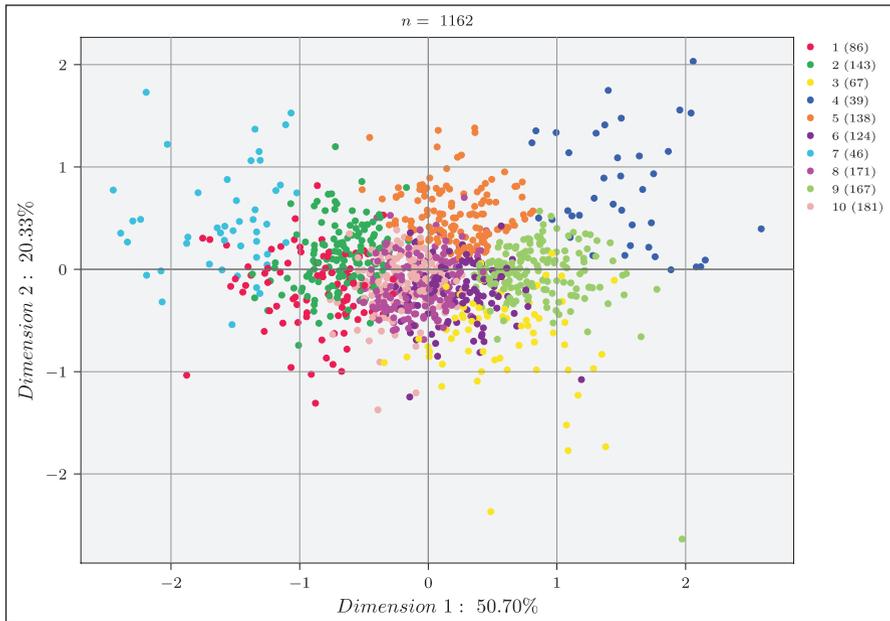


Fig. 9.8 Representation of the ten clusters obtained with the K-means and plotted on the MDS for the combination of the gravity and position features

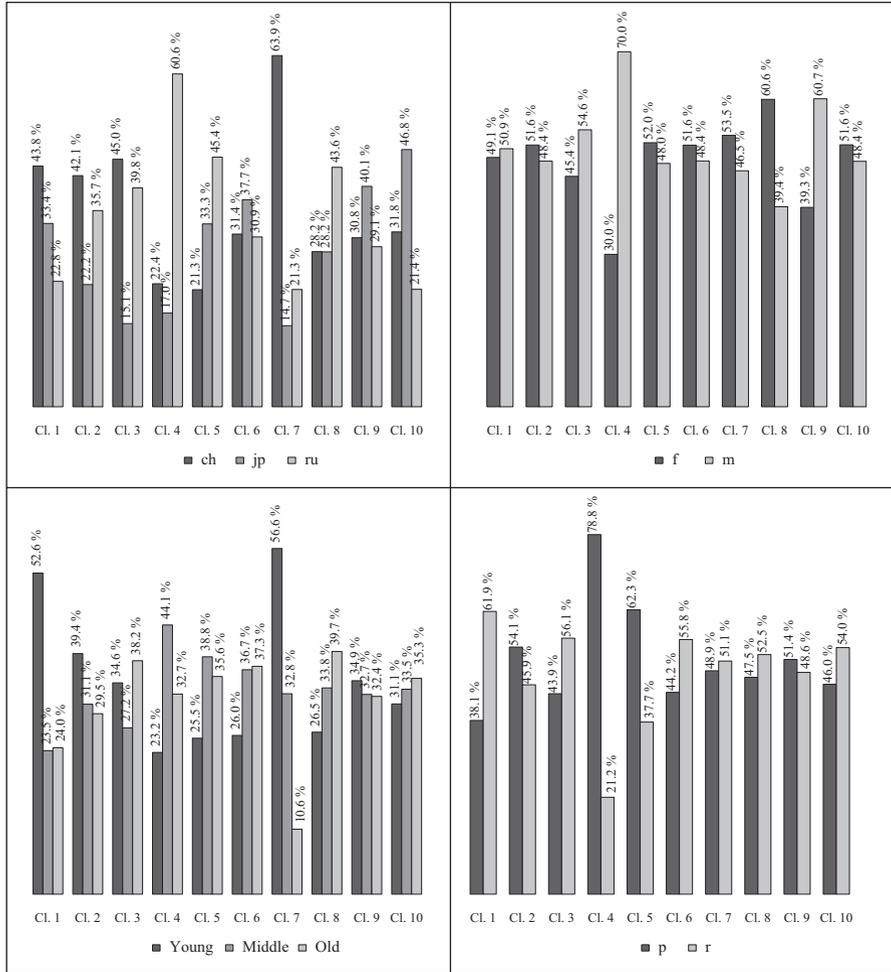


Fig. 9.9 For each cluster obtained with the K-means applied to the combination of position and gravity features, this figure shows relative group proportions of children from each country (top left), of males and females (top right), of children in each age group (bottom left), and of children from religious or public school contexts (bottom right)

where god is depicted farther from the bottom than in Cluster 7, again mainly produced by participants in the group of younger children, but also by children from the religious schooling context (Fig. 9.9).

Cluster 4 is particular and consists of 39 drawings where god is situated in the upper left part of the page (Fig. 9.8). The majority of these drawings were composed by Russian children, by boys and/or by children from a public school context (Fig. 9.9). Finally, god depicted between the centre and the upper part of the page for the drawings on the Cluster 5 (Fig. 9.8) were mainly produced by children from a public school context.

Colour

Colour Frequencies

To answer the question about the colours that children chose to use in their drawings (see more details in Chap. 8, this volume) the K-means was applied to the χ^2 distances D^{COL} , with the free parameter $\theta = 0.9$, obtained with the correspondence table for colours (Fig. 9.10).

In order to better understand the clusters obtained with the K-means, we computed the proportion of the number of pixels of each colours out of the number of coloured pixels for each cluster (all drawings of the cluster considered as a bag of pixels). Results are presented in Fig. 9.11.

As we can see, the first cluster is characterised by a high proportion of yellow in the drawings (Fig. 9.11), these were mainly drawn by females and/or collected in a religious context (Fig. 9.13). A sample of drawings from this cluster is presented in Fig. 9.12. In Cluster 4 (only 30 drawings), orange¹³ is the most important colour, even if it represents only a third of the coloured pixels (Fig. 9.11). Here, we find more Japanese drawings, mostly drawn by girls, by young children, and by children in a religious context (Fig. 9.13). Clusters 5 and 6 are characterised by a high proportion of blue. This is especially true for Cluster 5 where a blue background (the

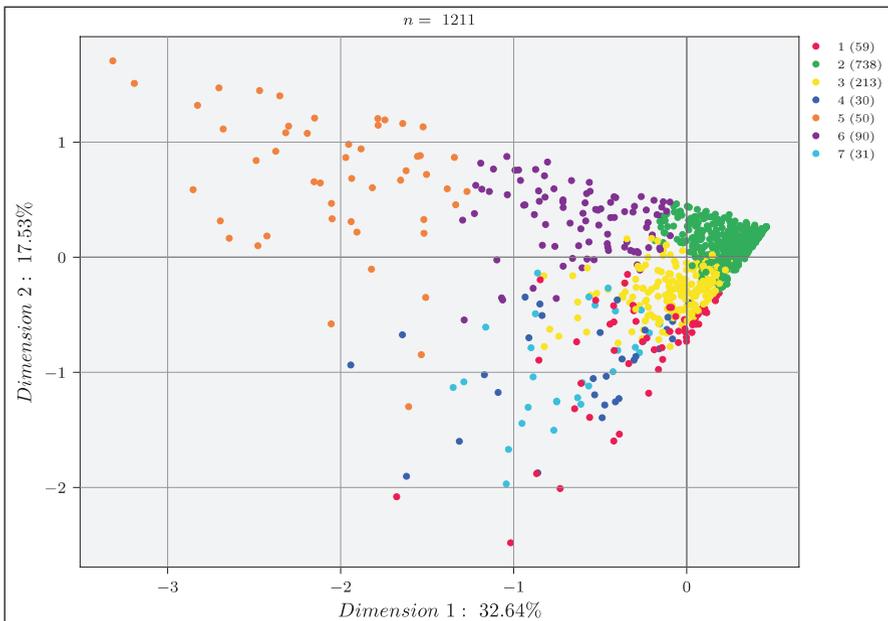


Fig. 9.10 Representation of the seven clusters obtained with the K-means and plotted on the MDS for the colour features

¹³As explained in Cocco et al. (2019), the orange can include brown and beige colours.

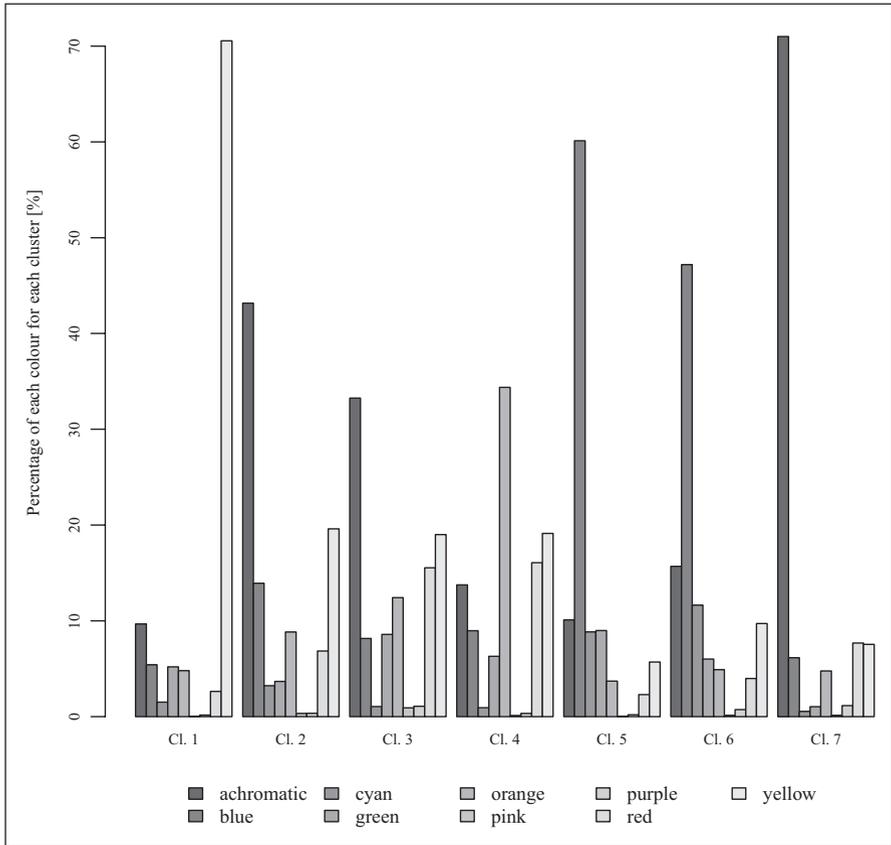


Fig. 9.11 Colour distribution for the seven clusters obtained with the K-means (Fig. 9.10). The color white is not represented on this graph, since it represents a large number of pixels in the majority of drawings, blurring the results for the other colours

sky) is drawn (Fig. 9.11). The drawings from both of these clusters were mainly produced by girls; those of Cluster 5 were produced primarily by young children and/or by children in the context of religious schooling (Fig. 9.13). Finally, Clusters 2, 3, and 7 are characterised by a higher proportion of achromatic colours. Cluster 7 has an especially high percentage (more than 70%) of achromatic colours for 31 drawings (Fig. 9.11). These drawings were mainly drawn by Swiss children, by boys and by children in the religious schooling context (Fig. 9.13).

Colour Gravity

While it is possible to combine distances to apply the K-means algorithm, it is also possible to mix the features creation methods to obtain new features. With the aim of seeing if the colours were all distributed in the same way on the page, we



Fig. 9.12 Examples of drawings included in the first cluster of the cluster groups on colours. This figure shows a drawing by a Swiss girl of 10 years and 3 months old in 2009 collected in a public school context (top left) <http://ark.dasch.swiss/ark:/72163/1/0105/3eerzOZERRY=S4hVKX5iRwN.20201008T081948966918Z>, a drawing by a Swiss boy of 12 years and 8 months old in 2016 collected in a religious context (top right) <http://ark.dasch.swiss/ark:/72163/1/0105/QW2PW3EASb=RYRO999KkxAu.20180702T163238646Z>, a drawing by a Japanese girl of 13 years and 9 months old in 2003 collected in a religious context (bottom left) <http://ark.dasch.swiss/ark:/72163/1/0105/2EguYRzfSc6KAJN5aEZ1=Q5.20200311T145859927809Z>, and a drawing by a Russian girl of 7 years and 1 month in 2009 collected in a religious context (bottom right) <http://ark.dasch.swiss/ark:/72163/1/0105/Y96k8K5HT3KUb8hwnq4Y0AU.20180702T194155712Z>

computed the gravity mean on the X- and Y-axes for each colour. The result is presented in the Fig. 9.14. First, some colours, such as purple or pink, appear in fewer drawings than other colours do, such as yellow or achromatic. Indeed, the gravity position for one colour is computed only if at least one pixel of the drawing was recognised as being of this colour and there are drawings that do not contain some colours. Second, there is no important difference between the mean positions of the

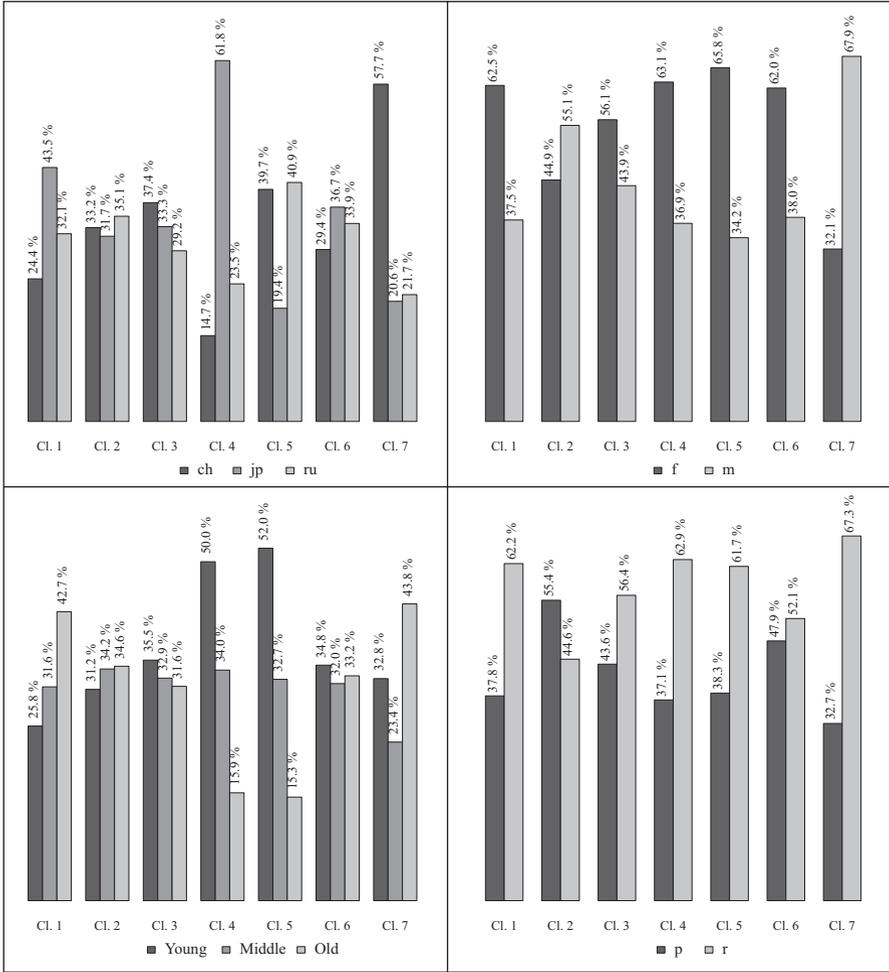


Fig. 9.13 For each cluster, this figure shows relative group proportions of children from each country (top left), of males and females (top right), of children in each age group (bottom left), and of children from religious or public school contexts (bottom right)

gravity position for each colour (diamond symbol in Fig. 9.14). Finally, while the gravity of position of white is fairly centred, which seems normal since children used blank sheets of paper, the gravity positions of the other colours are widely dispersed on the sheets.

Colour Organization

The last research question we aimed to answer with these automatic methods concerns the complete composition of the page: do children use the whole sheet to do their drawings or do they draw a lonely figure with no background (see Table 9.1)?

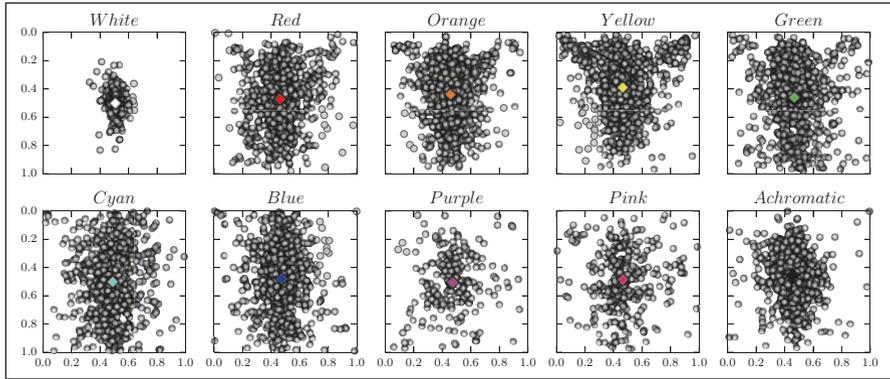


Fig. 9.14 The centre of gravity of each colour for each drawing (except when the drawing does not contain this colour). The diamond symbol on each graph indicates the mean of all the gravity centres of the colour

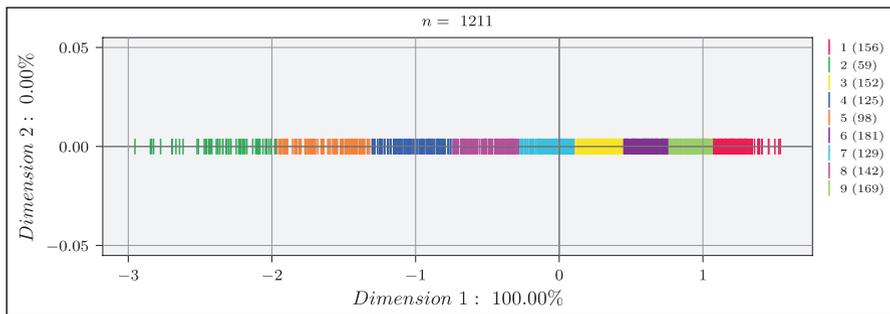


Fig. 9.15 Representation of the nine clusters obtained with the K-means and plotted on the MDS for the colour organisation feature

To answer this question, the colour variety features seem to be the most appropriate. Results of clustering for this feature obtained with the K-means are presented in Fig. 9.15. The first observation concerns the fact that almost 100% of the variance of these features is explained by the first dimension, since it is a unidimensional feature.

As shown in the Table 9.3, this first dimension represents the colour organisation and especially the proportion of coloured surface. Drawings with coloured background are on the left and drawings without background are on the right. In the middle, there are drawings with a background that is not completely coloured.

Clusters 2 and 5 contain drawings with coloured backgrounds, completely and partially coloured, respectively. The extreme Cluster 2 consists mainly of drawings produced by young children and by children in the religious schooling context (Fig. 9.16); in Cluster 5 there are drawings produced by Japanese children and/or by

Table 9.3 Three drawings randomly selected from the nine clusters obtained with the K-means applied to the colour organisation feature

Cluster 2	Cluster 5	Cluster 4	Cluster 8	Cluster 7	Cluster 3	Cluster 6	Cluster 9	Cluster 1

Note. We ordered the clusters in this table to be consistent with their presentation in Fig. 9.15

females. Unlike Clusters 2 and 5, the drawings in Cluster 1 do not have background (Fig. 9.15 and Table 9.3). They were mainly drawn by Swiss children, by males and by children from a public school context (Fig. 9.16).

Combination of Features Directly Extracted from the Drawing

We combined all of the features directly extracted from the drawings (and thus without direct human intervention) in order to see if this combination would enable us to cluster the drawings in a meaningful way. We obtained our results with the combination of three types of features either numeric or categorical, i.e. colour organisation, colour counts, and gravity features, such that the dissimilarities for this combination are: $D' = 1/3 * D^{VAR} + 1/3 * D^{COL} + 1/3 * D^{GRAV}$, with $\theta = 0.5$ for D^{COL} . As shown in Fig. 9.17, the percentage of variance explained by the first two dimensions is only equal to 56.65% and thus, the graphic is difficult to interpret. The same occurs for the clusters obtained with the K-means. Nevertheless, some clusters display clearer patterns than other clusters.

For instance, Clusters 1, 5, 6, and 8 contain drawings with a small surface area coloured, mostly in the centre. Apparently, in these drawings, the main elements, and some secondary elements, are coloured, but not the whole background. By contrast, the drawings in Cluster 9 have a large surface area coloured, often the entire sheet.

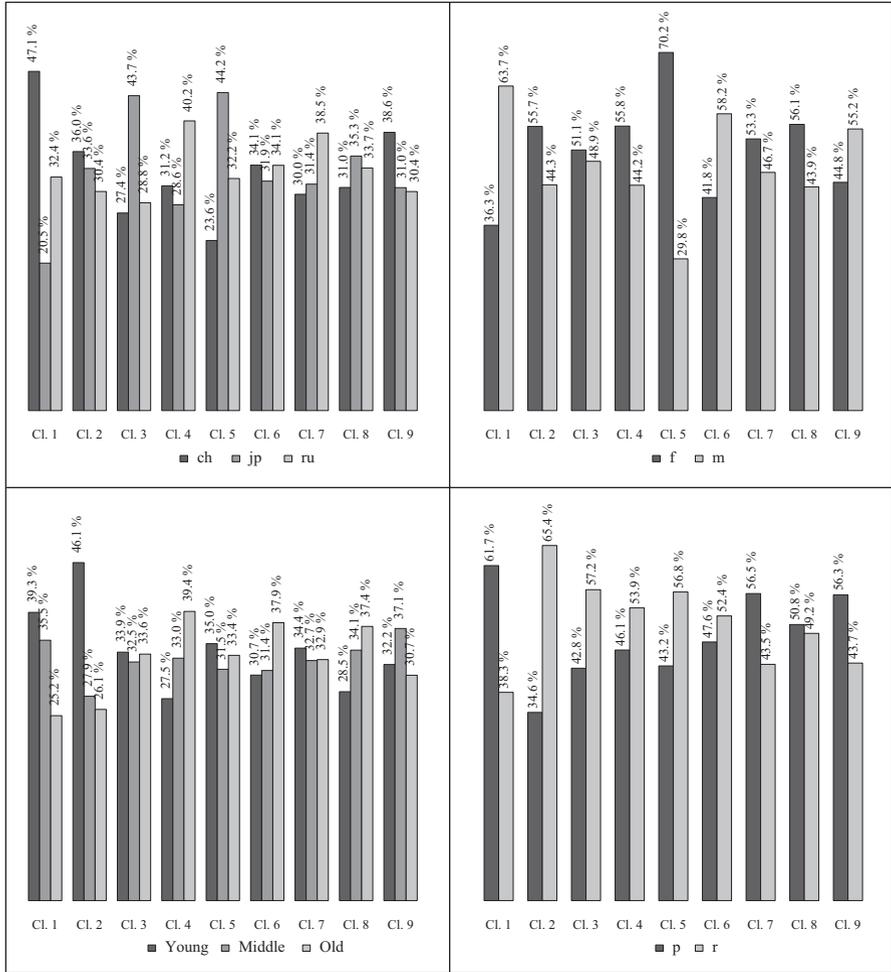


Fig. 9.16 For each cluster obtained with the K-means applied to the colour organisation feature, this figure shows relative group proportions of children from each country (top left), of males and females (top right), of children in each age group (bottom left) and of children from religious or public school contexts (bottom right)

While the position and gravity features, when treated separately, enabled us to distinguish types of drawings, the combination selected here does not seem to produce interesting patterns. As explained above, we chose two types of parameters, $\alpha_{k=1, \dots, 3} = 1/3$ and $\theta = 0.5$ for D^{COL} . A next step could be to modify these parameters in order to investigate if a more discriminative clustering could be obtained.

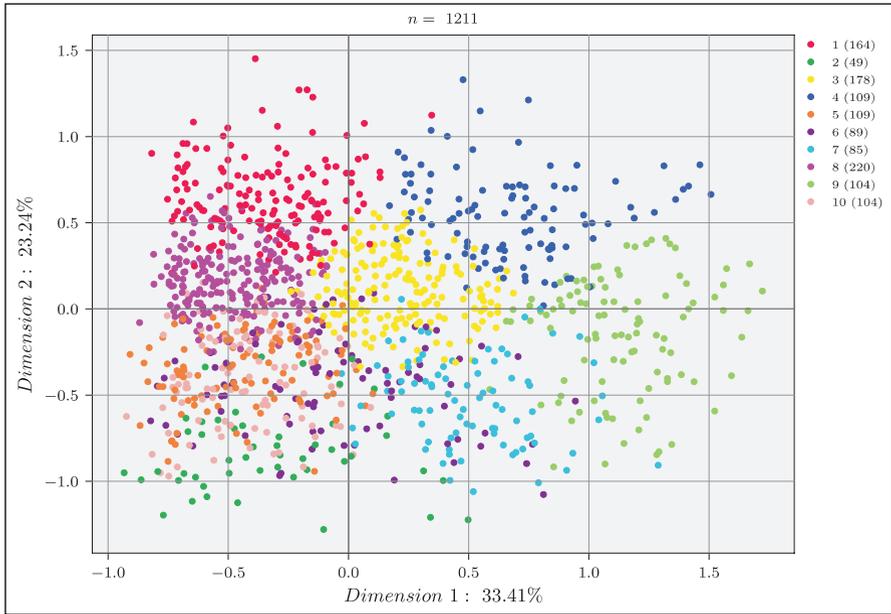


Fig. 9.17 Representation of the ten clusters obtained with the K-means and plotted on the MDS for the combination of all features directly extracted from the drawings

Combination of All Features

As a final step, all features (those obtained with annotations and those obtained directly from drawings) are combined with $\alpha_{k=1, \dots, 5} = 1/5$ and $\theta = 0.5$ for D^{COL} and D^{ANT} . Again, the aim is to determine if the combination of all the methods (those with and those without human intervention) permit us to cluster the drawings in a meaningful way. The number of drawings included in this analysis is lower than in the previous one because, as mentioned above, some of the drawings were not annotated for the position of the god’s representation and/or for the anthropomorphism.

The clustering resulted in the creation of nine clusters (Fig. 9.18) rather difficult to interpret (Table 9.4). Perhaps more salient results could be obtained by using high-dimensional embedding of the dissimilarities and done with the Schoenberg’s transformations (Schoenberg, 1938), more specifically: transforming squared Euclidean dissimilarities into other squared Euclidean dissimilarities (Bavaud, 2011). Yet, Schoenberg’s transformations constitute an infinite family of various parametric functional forms, and selecting a particularly relevant Schoenberg transformation adapted for our purpose is thus beyond the scope of this chapter.

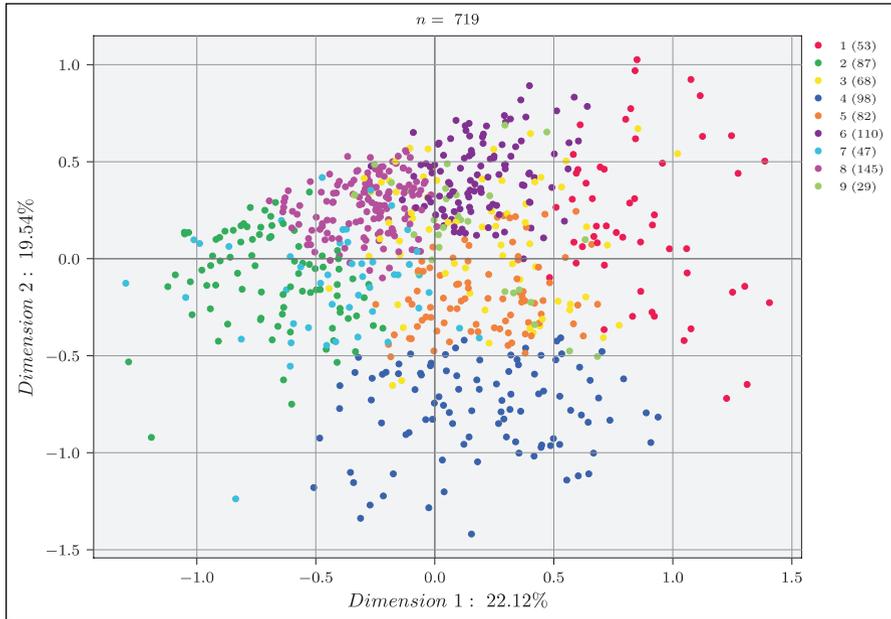


Fig. 9.18 Representation of the nine clusters obtained with the K-means and plotted on the MDS for the combination of all features

Correlation Between Numeric Features

From the perspective of clustering methods, it is interesting to combine features only if each feature provides supplementary information to distinguish between the elements. As seen above, including a great number of features in the analysis creates difficulties in the interpretation of results. In order to measure the usefulness of each numeric feature in the clustering, we computed their correlations (Table 9.5).¹⁴ As expected and already mentioned above, there is a high correlation between the horizontal gravity centre x^b and the horizontal position of god x^c , respectively between the vertical gravity centre y^b and the vertical position y^c . Thus, we can predict that the removal of either the gravity features or the position features would not significantly alter the type of results.

¹⁴The categorical features are not included in this analysis.

Table 9.4 Six drawings randomly selected from each of the nine clusters obtained with the K-means applied to the combination of all features



Table 9.5 Correlations between numeric features

	Δ^b	\bar{x}^b	\bar{y}^b	x^c	y^c	$H(T)$
Δ^b	1	0.318	0.257	0.150	0.115	0.002
\bar{x}^b	0.318	1	0.072	0.563	0.082	0.058
\bar{y}^b	0.257	0.072	1	0.089	0.536	0.022
x^c	0.150	0.563	0.089	1	0.069	0.032
y^c	0.115	0.082	0.536	0.069	1.	-0.002
$H(T)$	0.002	0.058	0.022	0.032	-0.002	1

Discussion

The present work has demonstrated the use of computer vision and mathematical methods to treat a large number of drawings in research on children's drawings of god. The results illustrated the use of these methods to answer specific psychological questions, questions that are treated with more detail using different methods and are presented in other chapters of this volume. While our methods result in consistent findings (the majority of conclusions obtained with our methods match the conclusions in the related chapters), our methods also allow us to go further and easily treat larger datasets, as described below.

Although a limited set of drawings have been annotated for anthropomorphism to date, and despite the fact that the whole drawing was considered (not only the god figure), we can identify various strategies at work. Moreover, we find that these strategies are related to the ones found in related writings on anthropomorphism: (see Chap. 4, this volume). For instance, a cluster of drawings without human features emerged. Dessart and Brandt (Chap. 3, this volume) found that the percentage of non-anthropomorphic drawings increases with age and religious context. Consistent with their conclusions, we found that this cluster of drawings (those lacking human figures) were composed mostly by children from the older age group and from the context of religious schooling. In contrast with results presented by Dessart and Brandt in their research about anthropomorphism, most of the drawings in this cluster were composed by boys. It should be noted that our work considers drawings from three countries; Dessart and Brandt were using only the Swiss dataset for their research on the anthropomorphism. Moreover, we did not employ statistical tests in the current chapter because they fell outside of the scope of our research focus. Another cluster corresponds to the *incomplete* strategy of de-anthropomorphization proposed by Dessart and Brandt in their chapter about anthropomorphism. This cluster is comprised of drawings that contain one main anthropomorphic figure, and they lack eyes. While the majority of the drawings in this cluster were drawn by older children, consistent with the conclusions of Dessart and Brandt, they were also mostly drawn by children in the context of religious schooling. Additional research is needed to improve the techniques of isolating and treating the god figure, separate from the drawn background that surrounds it. This can possibly be done by adapting the way researchers annotate the drawings.

Regarding the position and gravity features, we have showed the importance of the vertical axis (compared to the horizontal axis) to explain the variance of the position was shown. This finding explains why Dandarova-Robert et al. only studied the vertical position in their research on position (see Chap. 7, this volume). Also consistent with Dandarova-Robert et al., we found that it is quite rare for children to draw all the way to the edges of the paper, or to place a god figure at the very edge of the paper. Finally, without contradicting Dandarova-Robert et al.'s findings, we noted that representations of god (or the average pixels) located at the bottom were mainly drawn by young children, while those at the upper part of the page are mainly produced by boys.

The features involving colour frequencies were extracted in the same way that Cocco, et al. did it in their work on colours (Chap. 8, this volume). They, too, considered only coloured pixels (no the white pixels), but they did not use the clustering

technique. Although the method of analysis in Cocco, et al. is more detailed, we see, as expected the same general results. First, the discriminative colours for the clusters seem to be yellow, orange, blue, and achromatic. This is consistent with Cocco, et al.'s findings that the main colours found in all countries are, in the order of their rank, achromatic, yellow, orange, and blue. Second, the cluster with the highest proportion of orange contains more Japanese drawings, which corresponds to our observation during the research that orange is the third most used colour (based on the amount of colour) in children's drawings from Japan, but not in the drawings from other countries. While the colour organisation features cannot be directly related Cocco, et al.'s work, they permit us to detect, automatically, two different strategies children use in their drawings: coloured background or no background.

Results illustrated here are not only consistent with those found in other chapters of this volume; they also enable us to go further. For instance, the anthropomorphism clusters show us that there is a cluster of drawings with numerous representations of human figures; the position cluster shows us that some children choose to draw god more toward the left side of the paper. Moreover, these methods give us the opportunity to deal with a large amount of data, and, for the features that can be extracted directly from the drawings; the analysis can be accomplished without requiring additional human intervention.

In conclusion, there are a few ways to differentiate the drawings, depending on the research questions: with or without background, a high proportion of a specific colour, the number of humans in the drawing, the position of god, and so on. As explained above, this chapter presents an illustration of results that can be obtained with this type of method. As a next step, it could be possible to provide a more detailed analysis of the data, splitting the dataset by countries (as has been done in other chapters of this volume) if there are enough data, because sharper data-analytic patterns can be expected with larger amounts of data.

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Part IV
Focus on Emotional Features and
Attachment Style

Chapter 10

Emotional Expression in Children's Drawings of God



Richard P. Jolley and Grégory Dessart

Abstract Experimental psychological research on the expressive aspects of children's drawings has grown considerably in the last 40 years. It has reported consistently that children use the same expressive techniques as artists, despite varying opinions on how expressive drawing develops in childhood (e.g., U-shaped curve or age incremental patterns). The developmental findings have largely derived from drawing tasks that explicitly ask children to draw an emotion or mood (e.g. happy, sad, angry). Nevertheless, the pervasiveness of expression in children's drawings is such that we might expect children to spontaneously communicate expressively in drawing tasks that do not specifically request mood. "Drawing God" is such an example due to the potential emotive aspects of the subject, both in terms of the "God Figure" and the potential representation of other subject matter in the drawing. With this in mind, this chapter sets forth two sets of analyses of over 500 children's drawings from Switzerland, obtained from a sample of 6- to 16-year-olds. First, we report findings from a quantitative study based on artist ratings that the intensity (strength) and valence (negative to positive) of the emotional expression in the drawings varies according to gender and religiosity. Age was not a significant predictor of intensity and only weakly predicted valence. Second, we describe narrative themes derived from our own observations of the dataset, in which all themes consistently indicated the same expressive techniques reported in the psychological experimental literature. Furthermore, despite being asked only to "draw God", the drawings displayed a wide variety of themes which can be presented as a narrative story of the Christian Gospel.

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Keywords Children's drawings · Emotional expression · God representations · Narratives · Religious themes

The assessment and investigation of expressive drawing in children within psychology has taken two largely independent directions: clinical and developmental/aesthetic. The clinical approach assumes that children with a clinical diagnosis express characteristics of their maladjusted emotionality in features of their drawings. In particular, interpretations of an emotional nature contribute to an assessment of the child's personality (Hammer, 1958, 1997; Machover, 1949; Swenson, 1968), current emotional state (Catte & Cox, 1999, 1999; Koppitz, 1968, 1984) and the emotional significance of the topics drawn by the child (Burns & Kaufman, 1970; Thomas & Jolley, 1998). This body of work includes both clinical case studies, and experimental and review studies testing the claims made in clinical case study papers. Furthermore, a related field of experimental studies has compared drawings of children from special populations with drawings of both typically developing children and children with learning difficulties in order to investigate whether the former group's expressive drawings are developmentally delayed or qualitatively different. This question is particularly pertinent to disorders and syndromes presenting with emotional deficits, such as in autism (see, e.g., Jolley et al., 2013).

In contrast, the developmental/aesthetic approach has studied expressive drawing in experimental tasks administered to nonclinical populations of children (for review, see Jolley, 2010). Expression in this body of work is defined as the communication of moods, emotions, feelings, ideas and concepts. These are affective and cognitive responses applicable to humans generally, and therefore the assumption in this work is that emotional expression is a fundamental part of the psychology of the child, without necessitating a clinical interpretation. The majority of studies focus on children's drawings of emotions and mood (e.g., Bonoti & Misalidi, 2015; Davis, 1997; Jolley et al., 2016; Morra et al., 1994), although some further research in children's drawings has examined the depiction of emotionally-related abstract concepts, such as love and friendship (Brechet, 2015; Pinto et al., 1997).

The aim of this present chapter is to extend this body of work further to examine typically developing children's use of expression to communicate an abstract concept (God¹). God is a universal concept that has multilayered emotional connotations, and might be expected to provoke expressive communication in children's drawings. Nevertheless, despite the wealth of research on children's drawings of God (as evidenced by this book alone), the expressive aspects of the drawings have previously not been reported in the literature. As concepts of God are universally held, including by children, and are potentially depicted in their pictures with emotional communication, investigating the drawings from the developmental/aesthetic perspective was taken. Accordingly, the following section provides a brief overview

¹Why the term *god* begins sometimes with an uppercase letter G, sometimes with a lowercase letter g, and why it appears sometimes in the singular and sometimes in the plural, is explained in the introductory chapter of this book (Chap. 1, this volume).

of research on the psychology of children's expressive drawing to provide a developmental and aesthetic foundation for our own research we present.

The Development of Expressive Drawing and Individual Differences

In the literature of children's expressive drawings there is a consensus that children use three broad techniques: literal, content and abstract expression (Ives, 1984; Jolley, 2010; Jolley et al., 2004; Morra et al., 1994; Picard et al., 2007). In literal expression the emotion or mood is depicted in the facial expression of people, although it can be shown in animals, nature or even objects (where it is known as personification). In contrast, content and abstract expression are regarded as metaphorical techniques. Content expression is found in subject matter from real-world content, whereas abstract expression is expressive through formal properties such as line, colour and composition. For instance, in Fig. 10.1,² all three expressive techniques are present in a poignant depiction of the crucifixion scene. For literal expression, the sad face is clearly depicted in the downward mouth and the two streams of tears falling down from the eyes. Additional to the crucifix, content expression is conveyed principally through a weather theme (e.g. clouds, rain, lightning). Finally, abstract expression is communicated through colour (darkness of the cross and clouds), line (jagged lightning, drooping raindrops, heaviness and multidirectional lines in cloud), and composition (centrality of a cross placed against a somewhat barren background). All three techniques are employed to serve the same common purpose that might be interpreted as to communicate the starkness and magnitude of Jesus' crucifixion, in which even the weather takes a part (see Luke 23: 44–46). Although the techniques have been categorised in the literature as literal, content and abstract expression, and measured independently in some research studies, they should not be seen as completely independent. For instance, formal properties are necessary to produce both literal and content expression (e.g., line is necessary to produce a happy face and a countryside scene). In addition, people (displaying literal expression) are often depicted within a broader context of other expressive content.

Research studies commonly ask children to produce "mood" drawings (such as happy, sad, and angry), either in respect of a particular subject matter (e.g., person, tree, house, or simply lines) or "free" drawings where the child has the freedom on what to draw. In terms of the assessment of expressive drawings two distinct but complementary approaches have been used. The counting approach assesses the frequency in which the three techniques (literal, content and abstract) are used and developed with increasing age (e.g., see Ives, 1984; Picard & Gauthier, 2012;

²This drawing was produced by a British child in an expressive drawing research project supervised by the first author, and independent of the *Children's Drawings of Gods* project.

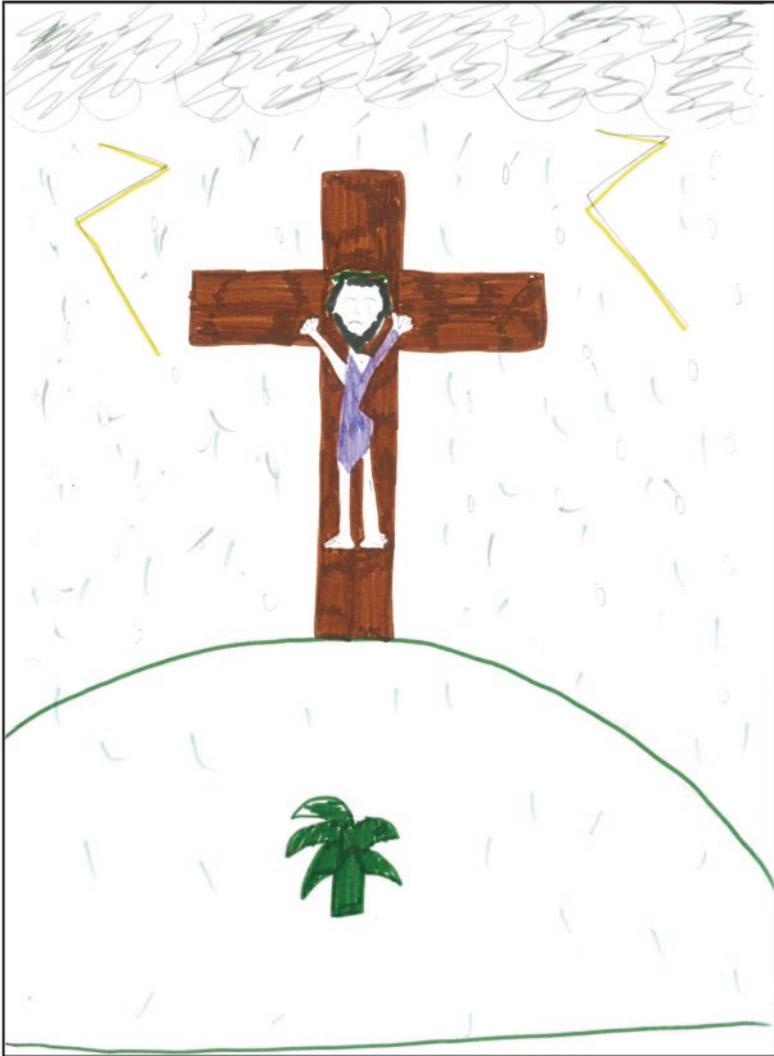


Fig. 10.1 Jesus crucifixion on a hill in a thunderstorm illustrating literal, content and abstract expression

Winston et al., 1995). Alternatively, children's expressive drawings are assessed (often using Likert-type scales) for the quality of how these techniques have been used (Davis, 1997; Jolley et al., 2004, 2016; Pariser & van den Berg, 1997, 2001; Pariser et al., 2008).

It is in the quality approach that the developmental question of progressive patterns has been most debated, in particular, whether it develops according to a U-shaped or age incremental pattern (for review, see Jolley, 2010). Initial

developmental interest in children's aesthetic drawings came from the Harvard Project Zero team, who claimed from their observations that the developmental pattern reflects a U-shaped curve (Gardner, 1980; Rosenblatt & Winner, 1988; Winner, 1982). That is, young (preschool) children's expressive drawings are of similar artistic merit to those produced by artistic adolescents or artists, each representing the elevated points of the "U", with the trough or dip occurring in middle childhood. In contrast, the age incremental approach argues that the expressive quality of children's drawings progresses upwardly with age, although not necessarily linearly. Both patterns have been found in experimental studies (Davis, 1997; Jolley et al., 2004, 2016; Pariser & van den Berg, 1997). The issue has also been debated theoretically (Duncum, 1986; Gardner, 2006; Jolley, 2010; Kindler, 2004; Wilson, 2004). One of the central issues from this debate is the extent to which the apparently inconsistent patterns are culturally determined, and dependent upon how and by whom the drawings are rated. As representational realism in pictures varies across cultures and in its prominence in the assessment criteria of expressive drawing tasks, Jolley et al. (2016) investigated the role of representational drawing ability in the expressive developmental patterns. They reported that a variety of expressive drawing assessments consistently converged to linear trends in expressive drawings made by preschoolers, children, adolescents and young adults. Nevertheless, when the expressive drawing scores were statistically adjusted for the participants' representational realism ability (assessed by separate drawing tasks) then the developmental trends followed patterns more akin to a U-shaped curve.

Finally, there is a growing body of work that has examined individual differences in expressive drawing. For instance, there is evidence that expressive drawing is stronger among girls (Picard & Boulhais, 2011; Picard & Gauthier, 2012). In addition, expressive drawing has found to be linked with higher levels of emotional comprehension (Brechet & Jolley, 2014), visual metaphor comprehension (Winston et al., 1995), divergent thinking (Picard & Boulhais, 2011), working memory (Morra et al., 1994) and representational drawing skill (Brechet & Jolley, 2014; Jolley et al., 2004; Picard et al., 2007). Such individual differences also provide an indication of the demographic and psychological factors that influence expressive drawing.

Despite the growing body of research in children's expressive drawing, it has taken a rather narrow focus on the drawing of emotions and moods. As stated above, expression also includes the communications of ideas and concepts. Although abstract in nature, ideas and concepts can be communicated through the metaphoric and symbolic use of real-world subject matter. Indeed, studies have shown that children can draw abstract notions such as romantic love (Brechet, 2015), death (Bonoti et al., 2013; Tamm & Granqvist, 1995) and the soul (Yamada & Kato, 2001). The concepts of death and the soul, in particular, are closely related to the concept of God. In the next section we shall argue that the subject of God is a particularly relevant topic to investigate how children may show emotion expression in their ideas.

The Case for Studying Emotional Expression in Children's Concept of God

Most of the worldwide population (86.2% in 2010) identify as religious adherents (Maoz & Henderson, 2013). God representations may play an essential role in religious individuals' worldviews, both for global and local aspects of their personal belief systems (Park, 2005). Furthermore, emotions and affects play a multitude of roles in people's concept and experiences of God. We argue that this occurs in at least two differing but related conceptual levels of God: experiential and attributional. In the case of the experiential, our emotional experiences and states can be closely related to our concept of the Divine (Corwin, 2012; Exline & Grubbs, 2011; Samuels & Lester, 1985), including trait mental health outcomes (Dezutter et al., 2010; Exline & Grubbs, 2011; Rizzuto, 1979; Schaap-Jonker et al., 2002). The way individuals conceive of God can be integrated into the religious and spiritual coping strategies they will use to face adverse life events, in general (Pargament et al., 1990) or in particular, such as chronic illness (Koenig, 2013). In the face of hardship or help, people also happen to either blame or praise God, who is thus perceived as the ultimate moral agent (Gray & Wegner, 2010).

In contrast, at the attributional conceptual level emotions are attributed directly to God. From a Christian perspective, special emotions characterize the Divine, such as *agape* love (Beck, 2008), a love that gives but requires nothing in return, as God's love for humanity (Romans 5: 5). In addition, on the basis of God's actions, a range of positive emotional characteristics may be attributed to God, such as supportive, nurturing, benevolent and guiding, and even intimate (Heller, 1986; Krejci, 1998; Maynard et al., 2001; Nelsen et al., 1985; Roberts, 1989). This can also be the case of a range of negative emotional characteristics, such as authoritarian, judgmental, vindictive, or punitive (Gorsuch, 1968; Hammersla et al., 1986; Johnson et al., 2015; Krejci, 1998; Kunkel et al., 1999; Nelsen & Kroliczak, 1984).

As children's drawings are expressive, and that our concepts of God include emotionality—both to explain our own emotional experiences but also the emotions of God—the next questions are to what extent do children's drawings of God communicate emotions and in what ways? The following section provides an overview of the research on children's drawings of God, and what information this research provides to us regarding the emotionality in the drawings.

Research on Children's Drawings of God

The main focus of the children's drawings of God literature has been on the extent to which God is depicted with human features and/or symbolically. It has been consistently reported that there is a developmental shift from anthropomorphic God figures to non-anthropomorphic or symbolic ones (Brandt et al., 2009; Dessart, Chap. 3, this volume; Dessart & Brandt, Chap. 4 this volume; Harms, 1944; Ladd

et al., 1998; Pitts, 1976, 1977; Tamm, 1996) or from figurative to non-figurative ones (Dandarova, 2013). Older children are generally more likely to draw God as a light, a heart, or other non-human or non-figurative entity. Besides age, other socio-demographic variables have been shown to play an important role in the way one would draw God, such as religious socialization and gender. Religious socialization makes children more likely to draw God in non-anthropomorphic ways (Brandt et al., 2009; Dessart, Chap. 3, this volume; Dessart & Brandt, Chap. 4, this volume; Hanisch, 1996), although there are differences between religious denominations (Ladd et al., 1998; Pitts, 1976). Girls tend to depict God more often as a mystery (Tamm, 1996) or as feminine (Brandt et al., 2009; Dandarova, 2013; Dessart et al., 2020; Kay & Ray, 2004).

To the best of our knowledge, emotional expression in children's drawings of God has never been examined in a systematic fashion. Nevertheless, a few authors have noticed and commented upon emotionally-relevant features of the drawings. In Harms's (1944) stage account based on observing thousands of children's drawings of God the final *individualistic* stage included a sub-group of drawings that were reported as demonstrating a high degree of emotional sensitivity for their originality and inventiveness of divine themes. Unfortunately, emotionality was not defined further and it could be argued that this sub-group was not exclusively characterized by emotional expression per se.

In other studies authors have made reference to the emotional aspects of the depiction of God through words such as *smiling* or *angry* (Brandt et al., 2009) or *happy* (Kay & Ray, 2004). In other instances, emotions were alluded to through terms that are emotionally connoted. Examples include God being attributed to categories such as *protector* or *guardian of morality* (Tamm, 1996) or similar terms (Hanisch, 1996), and reflect an attributional concept of God discussed above. In comments recorded by the children we can see instances of the child's own emotional experience of God. For instance, a boy from Brandt et al.'s (2009) study, conducted in Japan, provides a vivid example through his own written description of his drawing of God: "It is something that is deep in my heart and in anybody's heart." (p. 17).³ On occasions, authors refer to the expressive techniques that children use in their drawings of God, and it is noticeable that these concur with the three techniques in the general literature on children's expressive drawings: literal, content, and abstract. Identifying God as smiling (Brandt et al., 2009) directly underlines a literal aesthetic technique. Children happen to insert content that is very emotionally loaded by drawing God as a monster, for example (Brandt et al., 2009). As for abstract properties, one of the more consistent expressive representations of God found in children's drawings is the depiction of a yellow light (e.g., Dandarova-Robert et al., 2016).

Although none of the research on children's drawings of God has directly and systematically analysed the emotional expression in the drawings, it is nevertheless clear from the frequent observations of emotionality that expression is very evident

³Translated from French by the second author.

in the drawings to many authors. Furthermore, where expressive techniques are referred to, it appears that children are using the same expressive techniques that have been analysed in experimental studies using emotion/mood drawing tasks reported above. Accordingly, there is a strong case for systematically analysing how children use emotional expression in their drawings of God. For the remaining part of this chapter we present two lines of evidence of emotionality in children's drawings of God, based on a sample of around 500 Swiss 6- to 16-year-olds. First, we present a quantitative study on both the intensity and valence of emotion in these drawings, and ask whether either of these varies according to age, gender, and religiosity of the children. Second, we offer a narrative account of the diverse themes in which God and accompanying subject matter in the drawings were depicted, and how emotional expression serves to communicate these themes.

A Quantitative Examination on the Intensity and Valence of Emotional Expression in Children's Drawings of God

As valence and intensity are considered two central dimensions in the psychology of emotion literature (Cacioppo & Gardner, 1999; Davidson, 2000; Larsen et al., 1987; Russell, 2003; Scherer, 2005), we used those two dimensions to assess the Swiss sample of children's drawings of God. Valence may be considered to vary along a positive-negative or pleasure-displeasure dimension, whereas intensity refers to the strength of emotion, or arousal (cf. activation-deactivation range). Furthermore, we investigated the extent to which age, gender, and religiosity predict variations in both dimensions. A full scientific report of the study is currently being prepared (Dessart et al., 2021), but in the following, we provide a brief summary of the methodology and main findings.

Our data consisted of 407⁴ drawings of God composed by children aged 6–15 years of age. The sample was balance almost equally by gender (52% girls), and between regular schooling (48%) and religious schooling (52%). Participants' religious background was mainly Christian, and Roman Catholic or Protestant Reformed in particular.

Drawings were assessed on emotional intensity and emotional valence, respectively. The intensity scale ranged from 1 to 7, for example: 1 = unemotional, 4 = moderately emotional, 7 = very strongly emotional. The valence scale also ranged from 1 to 7 but was bidirectional, for example: 1 = strongly negative, 4 = of equal balance, 7 = strongly positive. Extensive discussions with two artists⁵ and the research team, using additional drawings extracted from the original dataset,

⁴More data were available in the initial sample but some drawings were removed from the dataset in order to construct both scales measuring emotionality, to train the two expert-artists in their use of the scales, and to ascertain good inter-rater agreement prior to the test phase.

⁵Both artists had already taken part in previous studies addressing emotional expression in children's drawings as expert judges. Therefore, they were familiar to the process and the tasks.

enabled a detailed description of each of the 7 labelled points on each scale. These descriptions were driven by the three techniques of literal, content, and abstract expression. Further drawings from the original dataset were used to ascertain and establish good reliability on the artists' independent application of each scale. The two artists were then given the 407 drawings to allocate to a specific point along both scales. This exercise was carried out twice: once to determine valence and once to determine intensity.

Potential predictors accounted for were age, gender, religious schooling, religious affiliation, and prayer practice. Multiple regression analyses were carried out separately for each of those two emotional dimensions. Gender and religious schooling were systematically found to be statistically significant predictors. Being female and receiving religious schooling were associated with greater intensity and more positive valence. Age was also a weak significant predictor for valence: the older the child the more positive the rating of the drawing.

These findings are important at several levels. First, they tone down to some extent the developmental hegemony typically found in past research on children's drawings of God, by showing that age was not a primary contributor. Second, they indicate that age-dependency for emotional expression in children's drawings might be specific to tasks that directly request "mood" drawings. In drawing tasks where expression may be relevant—but not explicitly requested—other factors may be more influential in the emotional expression deployed. In that respect, topic-related education (e.g., religious schooling) may play an important role, beyond the possible influence of more technical, aesthetic teaching. Third, they show consistency between girls producing more emotionality (in strength and positivity) and female superiority in expressive drawing tasks (Picard & Boulhais, 2011; Picard & Gauthier, 2012). Finally, we note that despite the weak positive association between age and positive valence, it nevertheless suggests that a positive association to God (either through attribution or experientially) does develop with age. Even though representations of Christ can be very poignant for the amount of suffering that is exhibited, for example, it can be argued that most depictions of the Christian God manifest positive valence of emotions.

Whereas the above investigation provided important insights into the valence and intensity of emotional expression in children's drawings of God, the analysis of these dimensions did not inform us of the range of themes in the drawings, nor how the expressive techniques were used to support the emotional expression of those themes. Therefore, we will now offer a new descriptive analysis of the main concepts of God and related theological themes in the same Swiss sample used by Dessart et al. (Chap. 4, this volume). In particular, we shall refer to the emotional expression in these themes, and the specific devices of literal, content, and abstract expression.

Narrative Account of God and Theological Themes

For the purposes of this narrative account, all of the drawings from the original dataset were used (i.e. including those drawings that had been removed for the intensity/valence analysis, see Footnote 3). Using this dataset of over 500 drawings the first author inspected each drawing to note down what message it appeared to be communicating, in terms of how God was depicted, but also considering any further subject matter. In addition, the first author noted what expressive devices (using the three broad categories of literal, content, and abstract) had been used for that purpose. The first author then generated themes to which the majority of the drawings could be attributed. This bottom-up process of theme generation was supplemented by two strands of top-down processing. First, a theme had to resonate with Judaeo-Christian theology, and be supported by biblical references. This theological perspective was chosen to be the most appropriate for this task, as Christianity (including its Jewish historical underpinnings) is the predominant religious belief system in Switzerland, further underpinned by approximately half of the sample attending religious schools. Second, consideration was given to the multidimensional concept of God from previous published research. The first author drew upon over 25 years' experience of analysing and publishing children's drawings, with a particular expertise in their expressive drawing, in addition to his personal study of both the Old and New Testaments over a number of decades. These themes were then presented to the second author for the purposes of verification. The second author had already gained intimate knowledge of the drawings as they represented the main dataset of his PhD work (Dessart, 2019), as well being very familiar with published research on children's understanding (including visual representations) of God. The second author confirmed the themes, and both authors worked together to source drawings from the dataset that illustrated most clearly the themes.

It became apparent that these themes not only told their own narrative story, but could be collated in such an order to tell a wider narrative story. This may be described as the story of the Bible, or more specifically the Christian gospel story (which includes its Jewish historical underpinnings). Therefore, the order in which we present the themes reflects that wider narrative:

- God is sovereign and ineffable;
- God the creator;
- God is love, peace, watching over us;
- God is angry and punishing;
- Jesus' crucifixion and/or sacrifice;
- God is our friend, our guide;
- Heaven and hell.

Finally, as each child was encouraged to make a written description of their drawing, we have provided an English translation in cases where the child's text supports our interpretation of the drawing.

God is Sovereign and Ineffable

In this theme God is shown as holy, other-worldly, somewhat impersonal, but nevertheless connected to our world and to us. God is frequently shown as an ethereal and heavenly Being, placed against a formless background of colourful shapes that emphasised His otherness from humanity (see Figs. 10.2 and 10.3). In some drawings the body of God is shown without colour (Fig. 10.2), the whiteness communicating his holiness (without blemish), or through a bright single colour (Fig. 10.3). Although God is frequently depicted in anthropomorphic form, facial features are often absent. Instead, the space where the head would be is filled in with a block of colour, or a question mark instead of a head (Fig. 10.2). As was the case when God presented Himself to Moses by the burning bush (Exodus 3: 1–6), the children who produced these drawings were seemingly unwilling to engage with God's face. The combination of a faceless God, suspended against a formless background, emphasise the distinctness and separateness of God. The typical posture of arms lifted or outstretched, indicates his supremacy and authority (i.e., God as sovereign). The colour yellow is a frequent feature of drawings in this theme, perhaps reflecting God as both the creator of light (Genesis 1:3) and bringing light to His people (John 1: 9). However, for a small handful of children, God was too ineffable to draw, they left the page as blank as it was when they were given it! In children's written descriptions this was differentially justified as either because no one knows what God looks like, or that they themselves were unable to grasp what God could look like.

The expressive techniques used in this theme, therefore, were largely content and abstract expression, with literal expression notably absent. Children drew a large God figure, often centrally placed, with uplifted arms, against a colourful but formless background. Yellow featured strongly in the drawings, perhaps symbolising the frequent theme of the light of God in the Bible.

God the Creator

The variety of elements in God's creative story is very evident in these drawings. For example, in content-strewn Fig. 10.4 we see many examples of nature as described in the first chapter of Genesis. A meteorological theme is communicated through a blazing red sun in the top left-hand corner, offset by raining clouds and (fittingly) a rainbow. On the Earth itself, we see water, terrain, and vegetation. Furthermore, the terrain is replete with life, perhaps most clearly seen in the blossom of the tree, but there is a vibrancy and dynamism in the red flowers and uplifting angles of the grass shapes that fill out the terrain. The creative story is extended in Fig. 10.5 to include both flighted and walking animals, as well as humans. While the drawing in Fig. 10.6 lacks the colour and range of creative content of some of the other drawings in this theme, it nevertheless illustrates nature and life through the beautifully adorned tree. It reminds us of the Tree of Life in the Garden of Eden



Fig. 10.2 Example drawing from the God-is-sovereign-and-ineffable theme. Note the faceless God, with a question mark in its place, a colourless body suspended against a formless background. This picture indicates the indescribability and separateness of God (<http://ark.dasch.swiss/ark:/72163/1/0105/Qch7bwMpT2e2bd1RnP=10A6.20180702T162653761Z>)

(Genesis 2:9), and the girl who drew it commented that she drew a tree because she saw God in nature and life.

In Fig. 10.7, we see directly the creative process, denoted through the analogy of God completing a jigsaw puzzle of the world, an ingenious and creative picture in itself. Finally, in Fig. 10.8, there is the indication of God's continual creative power



Fig. 10.3 Example drawing from the God-is-sovereign-and-ineffable theme. Note that God is presented with outstretched arms and yellow-blocked face against a formless background. This picture indicates the holy, ethereal and separateness of God (<http://ark.dasch.swiss/ark:/72163/1/0105/CITTjDU4QvGMqt6zkRbkvgc.20180702T162914268Z>)

in the sun, beaming down on earth from the sky, or God's light as the child commented (cf. theme above).

A plethora of content expression drives this theme of God's creation, with many examples of nature from the sky (heavens) and on earth depicted by the children. Bright colours are often used extensively, as is the whole page, indicating the

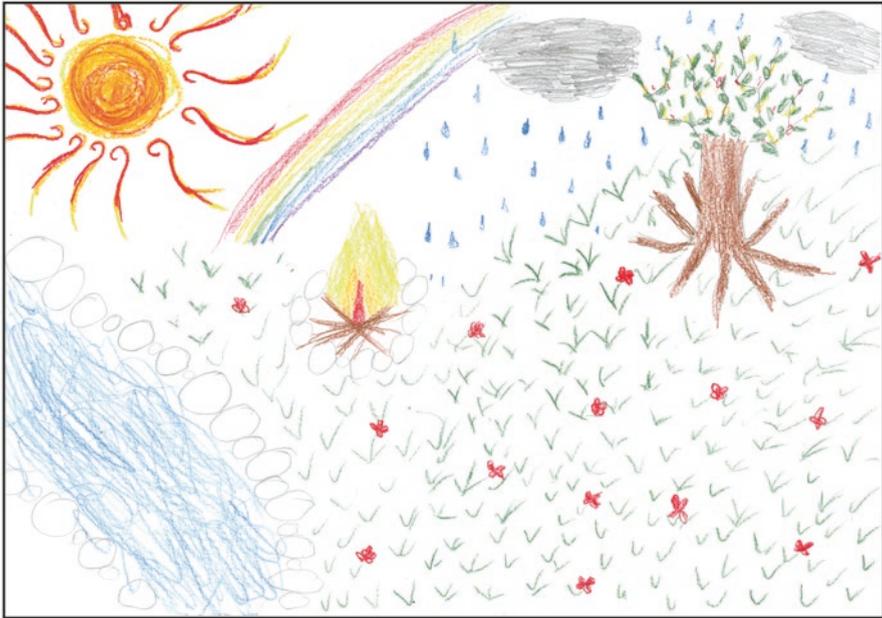


Fig. 10.4 Example drawing from the God-the-creator theme. In this content-rich drawing we see both meteorological aspects as well as an earth replete with life and colour (<http://ark.dasch.swiss/ark:/72163/1/0105/XR5EDuDXQ9OnQqmg5wLE3Qv.20180702T162528552Z>)

expansiveness of creation. If literal expression is used, either in God himself or in life that He has created, happiness is exclusively shown. At times literal expression is used on nonhuman topics, and is an example of children using personification (see Fig. 10.5).

God Is Love, Peace, Watching over Us

Whereas the children who produced drawings in the God-is-sovereign-and-ineffable theme may have been reluctant to express God's nature and character, drawings in the theme of God is love, peace, and watching over us showed no such reticence. Furthermore, drawings expressing these themes were plentiful. This theme was often expressed very directly, none more so in drawings in which these characteristics were stated in words just in case we miss the point (see Figs. 10.9 and 10.10)! Usually, God is depicted in these drawings, with outstretched arms, smiling face, coloured in yellow (Fig. 10.10), all of which facilitated the expression of an embracing warmth. Nevertheless, He is not usually presented on earth, but in the sky, heaven or against a formless background such as commonly seen in drawings in the God-is-sovereign-and-ineffable theme. In such cases the children often drew



Fig. 10.5 Example drawing from the God-the-creator theme. Many forms of life are illustrated including humans, flighted and walking animals, vegetation, with a God figure suspended in the air (<http://ark.dasch.swiss/ark:/72163/1/0105/vgvr=9XER6ObOzdeLlvHIAS.20180702T162741826Z>)

dazzling rays emanating from God, or even God himself emblazed with colour. As was typical of many of the drawings of God from the data set, yellow, orange, and red were prominent colours. Heart symbols were very common in drawings of this theme (see Figs. 10.9 and 10.10), utilising this ideograph that is conventionally used to express the centre of emotion, including affection and love.



Fig. 10.6 Example drawing from the God-the-creator theme. The beautifully adorned tree reminds us of the Tree of Life in the Garden of Eden (<http://ark.dasch.swiss/ark:/72163/1/0105/=oTu3YEaTf=Ra13ofXXhkqw.20180702T162557122Z>)

Although many of the drawings in these themes either placed God in an ethereal setting, or did not depict Him at all, it was not always the case that God was presented as distant from those for whom His love was intended. For example, in Fig. 10.11, we see God watching over the Earth, even seemingly praying for it.

In summary, the children presenting this theme in their drawings primarily depicted a bright yellow God, with smiling face and outstretched arms, and sometimes with blazing rays emanating from Him suggestive of the power of God's love. Text and a heart ideograph further underlined the clarity of this theme.

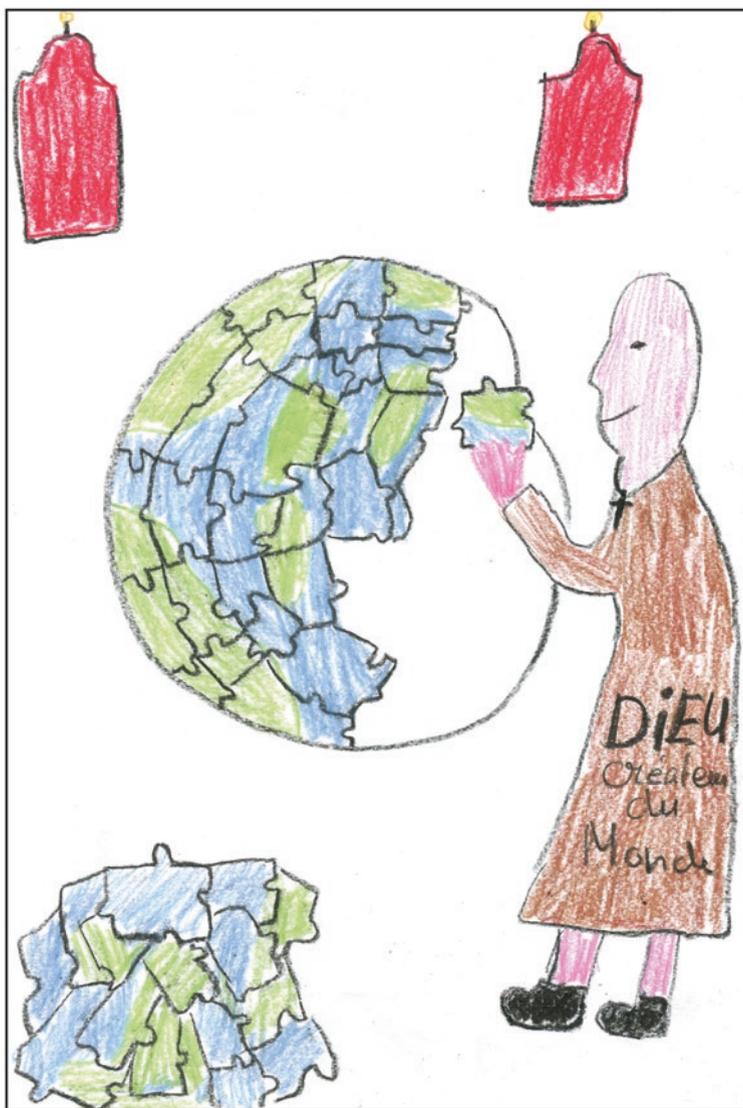


Fig. 10.7 Example drawing from the God-the-creator theme. The drawing expresses the process of creation through the analogy of God creating a jigsaw of the world (<http://ark.dasch.swiss/ark:/72163/1/0105/iiiJou2GVTMyQqjRS4X9BrAj.20201007T121639183078Z>)

God Is Angry and Punishing⁶

⁶For some of the drawings described here, permission was not granted to show them publicly, thus they are not provided in the figures reproduced in this work. In fact, the child and their parents were



Fig. 10.8 Example drawing from the God-the-creator theme. God's continual creative power and light is presented through the sun beaming down on earth (<http://ark.dasch.swiss/ark:/72163/1/0105/cQzHI6bhQGS9eCQeSMHTQgN.20201101T140657203708Z>)

In contrast to the theme of God as love and peace, drawings in this theme appear to show the opposite side of God's nature—his anger, judgement, and punishment. This is more than hinted at in one drawing in which God is presented in martial arts attire and stern expression, with a halo depicted over the head confirming that these characteristics are being assigned to God. In other drawings within this theme, God was shown acting out his anger on people. For instance, in one drawing the child presents God as holding two men in combat, apparently over the theft of money. The God figure has jagged teeth and slanting eyes, leaving the viewer in no doubt of His anger. In other drawings God was placed in the heavens overseeing bad weather (such as lightning) falling upon the earth. Although such drawings could be interpreted as God “watching the weather”, either an angry literal expression on God or the weather appearing to inflict itself on the earth, were suggestive of something more sinister than merely observing the weather. Indeed, the literal expression in Fig. 10.12, and particularly the slanting eyes, more than hint at an angry God.

The apparent negative connotations of God's character in these drawings need some theological explanation. In the bible God is sometimes portrayed as angry and punishing, particularly in the Old Testament. However, Christian doctrine explains

given the choice, prior to the drawing activity as to whether or not they would permit the child's drawing to be shown outside the group of researchers involved in the project.

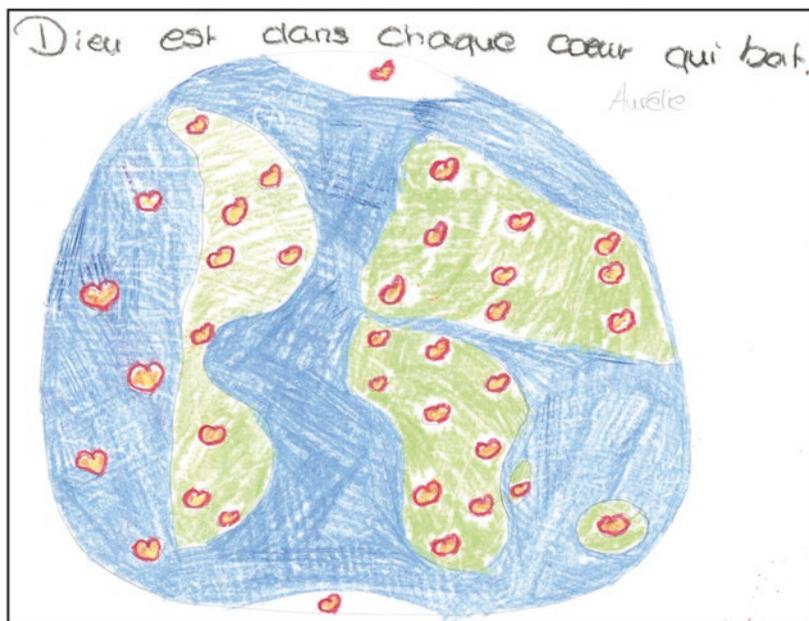


Fig. 10.9 Example drawing from the God-is-love-peace-watching-over-us theme. The loving nature of God is directly expressed in the words above the world, "God is in every heart that beats", emphasised further by the numerous heart-shaped ideographs placed within the world (<http://ark.dasch.swiss/ark:/72163/1/0105/bSqmQyMCTbOo31G5BTYn0wa.20201101T135405244484Z>)

that this is because of mankind's rebellion and wanting to be independent from God, which separates us from Him (Isaiah 59:2). The Bible tells us that God does not overlook this, and because he is a just God (Hebrews 10:30) there has to be a punishment. Therefore, drawings in this theme could be interpreted as God's judgement on mankind for its sin (Romans 3:23), which is said to apply to everyone (Romans 3: 10–12). The balance between angry versus loving concepts of God may be somewhat differently placed between Catholicism and Protestant Christianity, where the latter perhaps places more emphasis on justification by faith. It would be interesting for future research to examine any variability in themes between Catholic and non-Catholic samples of children. Nevertheless, we should not assume that all children who produced drawings in this theme were considering this theological complexity. Some may simply have conceived of God as an angry Being, derived from their knowledge of an all-powerful entity that is sometimes angry, as communicated in their cultural environment.

The expression of God as an angry judge in the drawings was very much communicated through literal (facial) expression, body posture, bold lines or fillings, and actions affecting people or the world.

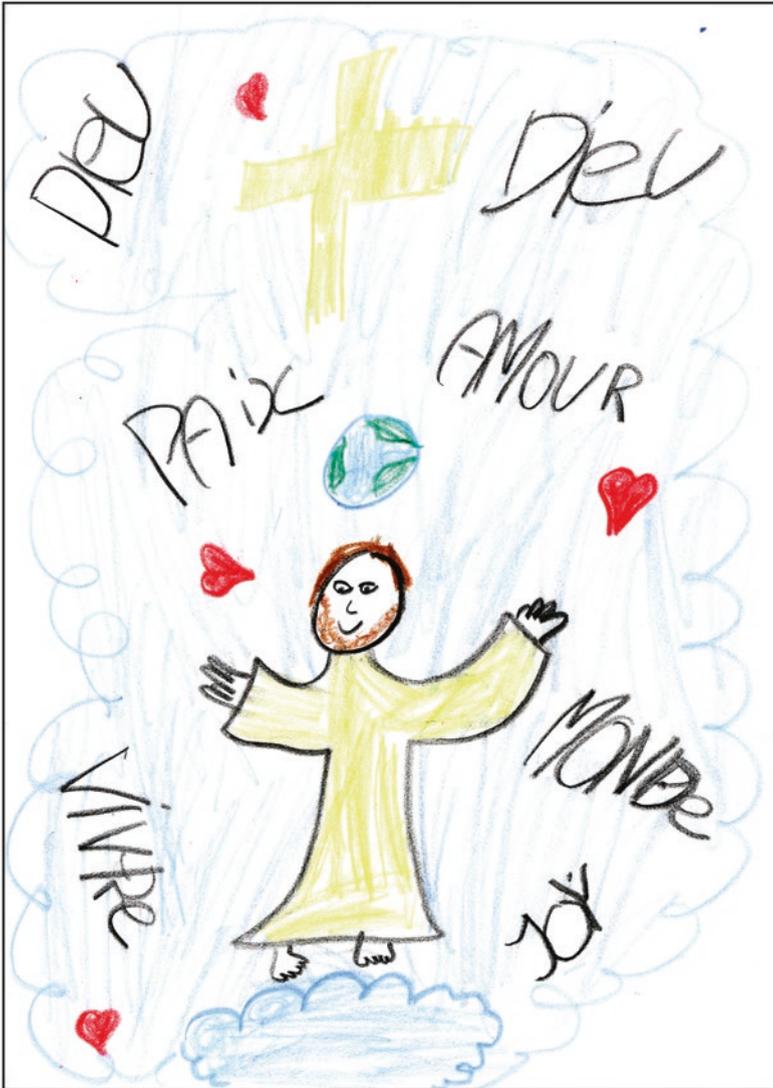


Fig. 10.10 Example drawing from the God-is-love-peace-watching-over-us theme. God is displayed with outstretched arms, coloured in yellow, embracing the warmth for the world further emphasised by the text “God, peace, love, living, the world”(<http://ark.dasch.swiss/ark:/72163/1/0105/Evv4BQPtRtq9jPz6L8OJ3QU.20201007T112010167072Z>)

Jesus’ Crucifixion and/or Sacrifice

The crucifixion of Jesus Christ, God’s son, was a notable theme in the children’s drawings. More than in any other theme the content was restricted in its subject

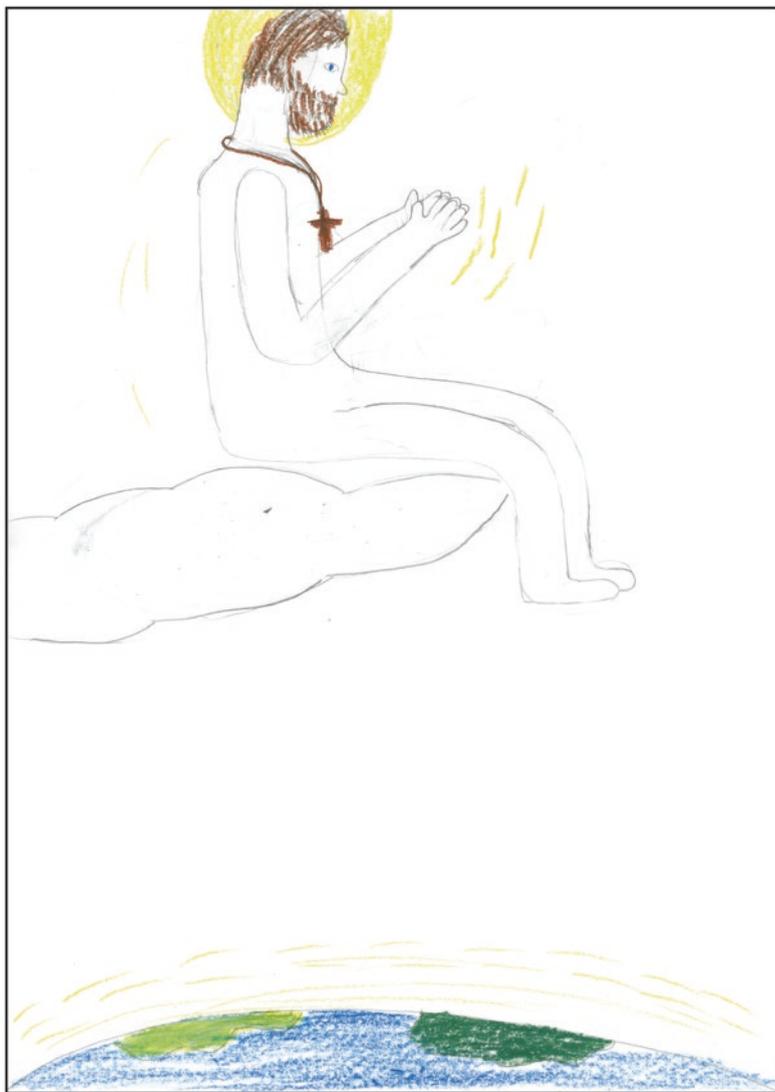


Fig. 10.11 Example drawing from the God-is-love-peace-watching-over-us theme. God is presented watching over the earth, seemingly praying for it (<https://ark.dasch.swiss/ark:/72163/1/0105/L1uzboLRrCkBEafrEeiNQG.20220602T043346838228322Z>)

matter: Jesus Christ being crucified on the cross (see Figs. 10.13, 10.14, 10.15, 10.16, and 10.17). However, this restricted subject matter in no way undermined the stark expressiveness of the pictures, as all three expressive techniques are used effectively. In respect of content expression, the crucifix in itself, with Jesus outstretched arms attached against the patibulum (horizontal element), served as a reminder that this was no ordinary death, and that it was public (Fig. 10.14). A sad

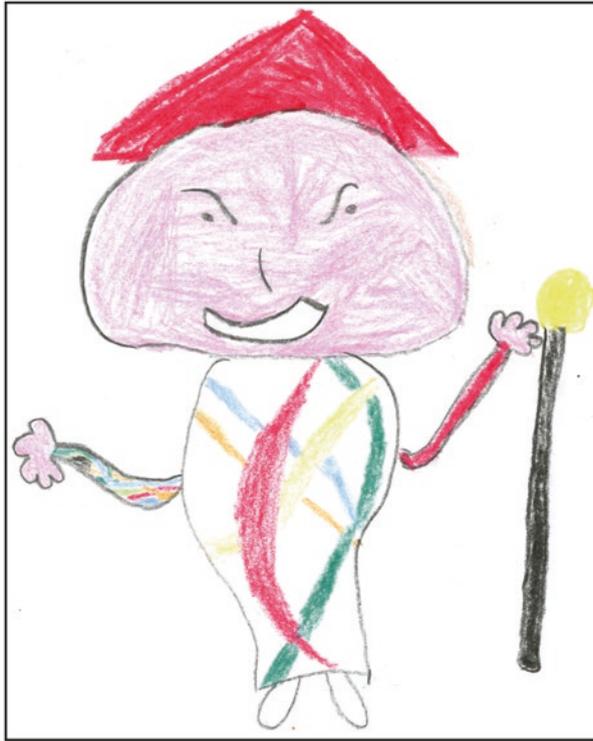
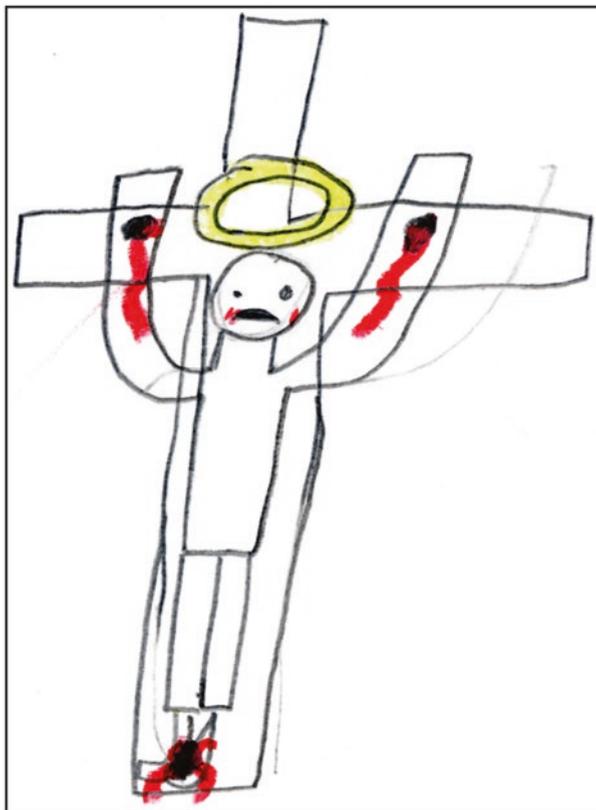


Fig. 10.12 Example drawing from the God-is-angry-and-punishing theme. While holding a stick, the literal expression (note the slanting eyes) suggest an angry God (<http://ark.dasch.swiss/ark:/72163/1/0105/pqkhNjFIRu6DMIURW6lpQw=.20201108T09340303442Z>)

or expressionless face was typical, sometimes accompanied by tears (Figs. 10.13, 10.15, and 10.17). Red was a frequent colour employed on the body of Jesus (Figs. 10.13, 10.15, and 10.16), literally depicting blood and scars expressing the physical pain he endured. In some drawings, the horror of the crucifixion was exemplified further by the use of dark colours (see Figs. 10.14 and 10.16). Although the sky was not shown dark in itself, such drawings nevertheless act as a reminder of that 3 h of darkness that immediately enveloped the sky after the death of Jesus, described in at least two of the Gospels (Mark 15:33; Matthew 27:45). In respect of composition, the figure of Jesus on the cross was often centrally placed (Figs. 10.15, 10.16, and 10.17), emphasising the significance of the event. Finally, the human pain Jesus suffered was offset in some pictures by symbolism of his holiness. For instance, the halo in Fig. 10.13 and the crown (as described by the child) in Fig. 10.15, express the Christian doctrine of Jesus being fully human and fully God.

In biblical terms we see very poignantly in these drawings the physical outcome of God sending his son Jesus to reconcile mankind to Him. But rather than a pointless death, it is explained in both the Old and New Testaments that Jesus is paying the debts of mankind's rebellion against God (Isaiah 53: 4–5; Mark 10:45) because

Fig. 10.13 Example drawing from the Jesus'-crucifixion-sacrifice theme. The sad and tearful face, bloodstained arms and feet, but with the Halo, exemplify the Christian doctrine of the devastating death of Jesus being fully human and fully God (<http://ark.dasch.swiss/ark:/72163/1/0105/5JQmFR7OQreOzNclhbQHOAJ.20201008T082615144928Z>)



the judgement of rebellion (mankind's sin) is death (Romans 6:23). According to this biblical interpretation, therefore, the drawings in this theme provide a resolution for the problem expressed in the drawings of the previous theme. However, it is not out of God's anger that his son died for mankind, but out of His love for mankind and to provide a means of reconciliation (John 3:16); which leads us to the next theme.

As with our commentary on all of the themes, we would not want to assume the children held or intended to demonstrate the biblical details and deeper meanings behind the crucifixion event. One plausible and simpler explanation is that children are exposed to pictorial cultural artefacts that they merely mimicked.

God Is Our Friend, Our Guide

The drawings in this theme communicate a relational message between God and people, particularly friendship and guidance. To this effect, roads and pathways were frequently drawn, in which a person was being led benevolently. In some of

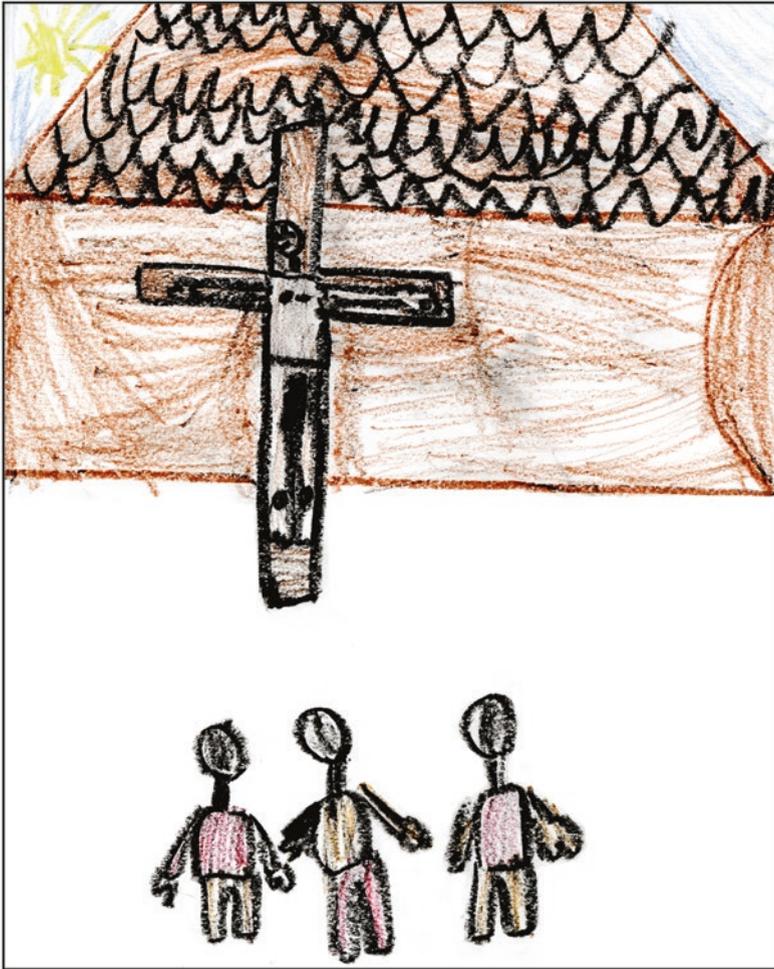


Fig. 10.14 Example drawing from the Jesus'-crucifixion-sacrifice theme. Jesus' death on a crucifix is a reminder that His was no ordinary death. According to Christian doctrine Jesus' death encapsulated the death of human sin (amplified by the dark colours), so people may live (the characters in the foreground act as if a reminder) (<http://ark.dasch.swiss/ark:/72163/1/0105/DjclREx3QrmFpSMfMXBE1gs.20201007T111507869393Z>)

these drawings God's guidance was evident. For instance, in Fig. 10.18, the child commented that a star (light) produces light to show the way. In contrast, Fig. 10.19 shows a more personal image of God's friendship and guidance, with the two figures labelled as God and us (humanity), respectively. The child described his drawing by referring to the forthcoming fork in the path, saying that the two paths go in different directions and that we (mankind) do not know where each goes. The boy further adds that the only person who does know is God, who shows us the way (further underlined in the drawing by the text "Jesus is the way"). This idea

Fig. 10.15 Example drawing from the Jesus'-crucifixion-sacrifice theme. Like many drawings in this theme red has been drawn on Jesus body, exemplifying the blood and scars from the physical pain He endured. As in Fig. 10.13, the humanness of the death is set against the Godliness of Jesus (see the halo). The prominent tears could stand not only for human pain but Jesus' crying for humanity (http://ark.dasch.swiss/ark:/72163/1/0105/HmSD8_OBRVC1YzFS7S GqDQP.2020101 8T101116154334Z)



resonates with Jesus own claims about Himself, “I am the light of the world” (John 8:12) and “I am the way and the truth and the life” (John 14:6). According to Christian theology, Christ’s resurrection from death on the cross presents to mankind an invitation to accept His offer to pay our debts (see previous theme), and the acceptance of Jesus’ offer by an individual then allows that person to grow in his/her relationship with God, which includes guidance and direction. In respect of abstract expression, colours tend to be used to functionally to reflect the actual colours of their referents in the world (perhaps because many of the pictures in this theme include terrain and paths). However, as we have seen throughout other themes, the colour yellow is used for God’s presence and His actions.

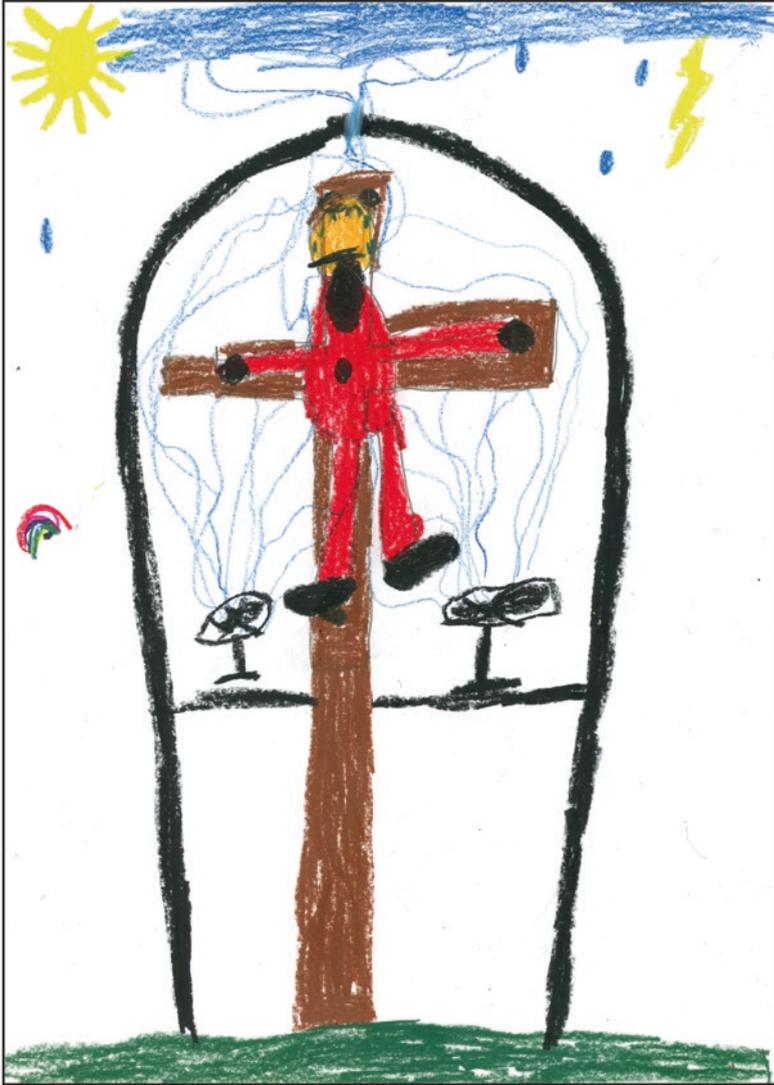


Fig. 10.16 Example drawing from the Jesus'-crucifixion-sacrifice theme. In this drawing red is prominently displayed throughout Jesus' body, perhaps emphasising the bloodshed, with the dark black boundary surrounding Jesus' crucifixion helping to focus our eyes upon it (http://ark.dasch.swiss/ark:/72163/1/0105/_hGXCE70QaZliOHn8Ni1A6.20190115T095629257Z)

Heaven and Hell

Although not a common theme in the dataset a few drawings depicted heaven (or paradise) and hell. For instance, in Fig. 10.20, the child explicitly referred to heaven and the clouds (see top of drawing), where God resides, and to earth and hell at the

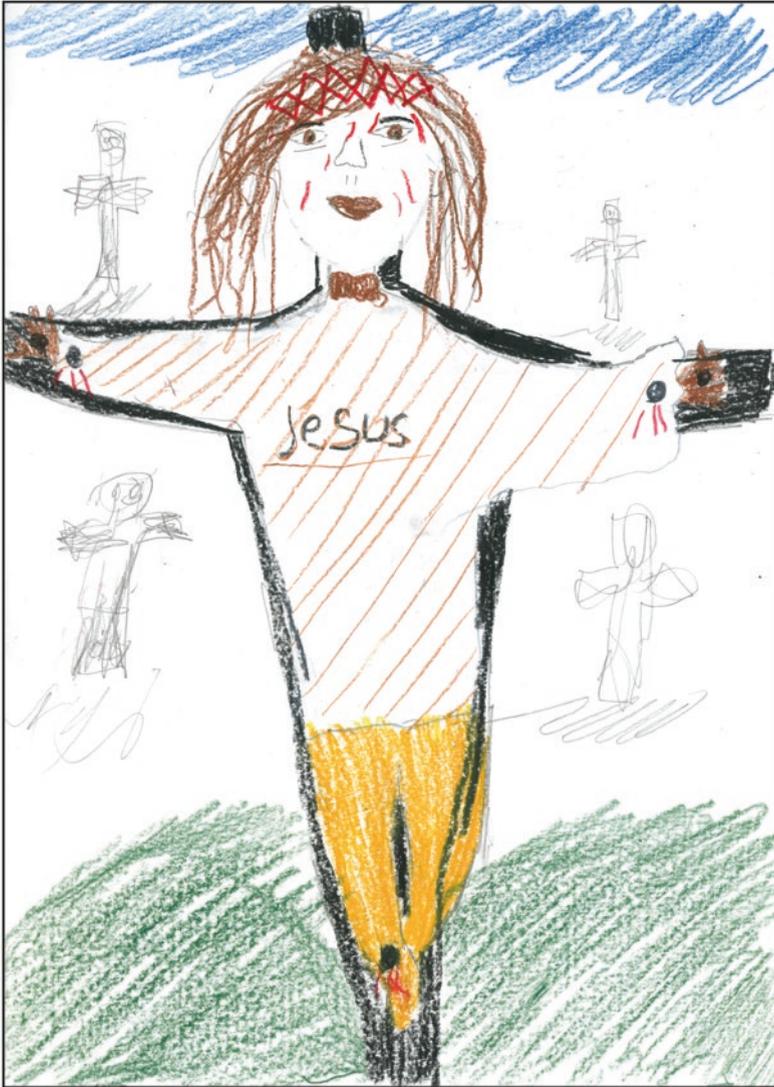


Fig. 10.17 Example drawing from the Jesus'-crucifixion-sacrifice theme. As in the composition of many drawings from this theme Jesus is drawn large and centrally placed emphasising the significance of the event, with red around his crown, wrists and ankles illustrating the places blood would have been shed (<http://ark.dasch.swiss/ark:/72163/1/0105/ORC5pQGASqqY=mzEfXoN7Ac.20180702T163940325Z>)

bottom of the drawing. This top/bottom composition of such pictures in this theme reflect the biblical interpretation of the clear and stark separation between the two (e.g., see Revelation 20:15).



Fig. 10.18 Example drawing from the God-is-our-friend-our-guide theme. As with many drawings in this theme a road is drawn to denote the path God is guiding us on, and in this picture the way is further enhanced by a light (the star) (<http://ark.dasch.swiss/ark:/72163/1/0105/YonUAYwwSAKVOgyZlsxuA3.20201025T131345597412Z>)

In other drawings only heaven is presented, or alternatively paradise (either written on the drawing or referred to in the children's written text supporting the drawing). Often these drawings filled out the whole page, and were replete with colour. This is best exemplified by the girl who drew Fig. 10.21, who said in her own words, "my drawing is the door of paradise; there is God and His faithful angel, birds, a tree, flower, and a mini rainbow". Many pictures in this theme displayed similar content as was represented in the God-the-creator theme. However, drawings of heaven or paradise were distinct in their ethereal background in that they gave a clear impression of an otherworldly place (or the new earth, see Revelation 21:1), rather than evidence of creation in our contemporary earth. Facial expressions, whether on God, angels or people, are always happy in this theme. Unsurprisingly,



Fig. 10.19 Example drawing from the God-is-our-friend-our-guide. The forked road illustrates the two different paths humans are faced with, a life full of sin or life in heaven, and Jesus is guiding and pointing the way to life (<http://ark.dasch.swiss/ark:/72163/1/0105/tTwJnR2kR2yGIwyPU1ZGQQc.20180702T163248651Z>)

the colours are bright, with blue as the predominant background colour (perhaps in some reference to a sky). Above all other themes, drawings showing heaven or paradise were perhaps the most beautiful and joyful in the data set.



Fig. 10.20 Example drawing from the heaven-and-hell theme. In this drawing the child explicitly denotes heaven (at the top) where God resides, and to earth and hell (coloured in red) at the bottom (<http://ark.dasch.swiss/ark:/72163/1/0105/=FW9=OOKTYCXy=M4h97GvwQ.20180702T163423324Z>)

Discussion

In this chapter we present what we believe is the first direct investigation for evidence of emotionality in children's drawings of God. We are able to make a number of important and clear conclusions. First, the drawings frequently displayed



Fig. 10.21 Example drawing from the heaven-and-hell theme. Only heaven (paradise) is presented in this drawing. The picture clearly demonstrates an ethereal and otherworldly place (showing God and his angel), but also presents subject matter of the biblical “new earth” once the current earth has passed away (http://ark.dasch.swiss/ark:/72163/1/0105/_BiJTMcGQAOG97ZI=cgGmQm.20201025T133709338444Z)

expression of both emotions and concepts. This is noteworthy, because the task instructions did not explicitly refer to expression, they merely requested that the children “draw God”. Second, children not only used a range of emotions and other affective reactions, but used the same expressive techniques (i.e., literal expression, subject matter, formal properties) found in the expressive drawing literature that employed more specific mood-based drawing tasks. Furthermore, these are the same aesthetic techniques used by professional artists, suggesting that individuals develop these graphic techniques throughout childhood into adulthood to communicate expressively both affective and cognitive messages. Third, despite instructions requesting only a drawing of God, the resulting drawing set communicated a wide range of religious themes beyond that simply depicted by the God figure. Consistent with the largely Christian background of the sample, the drawings reflected a wide range of Judaeo-Christian theological themes. The breadth (and indeed depth in many of the drawings) of these messages not only is a testament for the children’s awareness of these themes, but also a creative willingness to address them in a task even when instructions did not require them to do so. Furthermore, the resulting themes presented themselves very easily within a biblical narrative, and more specifically a Christian narrative, of God’s gospel story.

As these themes were often communicated with a diverse and rich array of subject matter, it is not surprising that content expression was the predominant expressive technique employed by the children. It is interesting to note that content rich and scene-based drawings were found across the entire developmental range. In contrast, in the expressive drawing literature where children are specifically instructed to draw moods (e.g. happy, sad, angry, etc) a developmental shift has been noted from younger children primarily using literal expression (e.g. a person with a smiling face), to older children using more varied subject matter to communicate scenes and events that invoke moods (see Jolley, 2010). It is possible that specific mood-laden tasks encourage younger children to focus more on literal depiction of human subject matter to meet what they perceive to be the demands of the task. In contrast, drawing tasks on emotionally relevant topics but ones that do not refer to emotion in the instructions may actually liberate children of all ages to use their range of expressive techniques through wider subject matter and themes.

In addition to expressive content other aesthetic techniques, based on literal expression (including posture) and formal properties (e.g., colours), were used frequently. In respect of literal expression, a happy expression was depicted predominantly, not only on God but also where people were depicted, and even on other animal life (i.e. personification). This was confirmed by the valence data showing an overwhelming bias of scores towards the positive end of the dimension. Consistent with this, the postural position of the God figure, often with outstretched arms which usually communicated a welcoming and giving God. Finally, a range of formal properties were employed to serve abstract expression. Red, orange, and yellow—notably one end of the colour spectrum—were commonly found in the drawings. These served a variety of positive messages in the themes, but perhaps the most frequently displayed in both the creation pictures and of heaven or paradise. In addition, specific colours seem to be used for specific purposes. The most clear example of this was the use of yellow for God, either within the depiction of a God form or symbolically (non-anthropomorphically) to denote the light of God. In contrast, dark colours were most likely featured in drawings showing the crucifixion scene. Here, these abstract expressive qualities were additionally contributed by a heavy use of line, particularly in the crucifixion pictures, perhaps for symbolic purposes. In other instances, colour was used more literally and/or functionally to denote the subject matter depicted. This was particularly notable in drawings with roads or pathways, pictures of God's guidance, where the intention of the child may have been on representational clarity of the subject matter as a foundation upon which to communicate the expressive concept of friendship and guidance. Finally, composition (the arrangement of elements on the page) was also at times used expressively. For instance, a large centrally placed God being, or Jesus in the crucifixion, emphasised their importance. Somewhat differently in other drawings, God was presented against a formless background, serving to communicate His distinctness from us (His otherworldliness).

We now make some brief conclusions to the quantitative element to this project: the valence and intensity data. First, a positive valence was the overwhelming dimension of emotion communicated in the dataset. God was clearly perceived as a

positive Being and force. This was particularly so for girls and those attending religious education schools who portrayed a positive message with increasing intensity. Where gender differences have been examined, drawings made by girls have consistently rated higher in terms of expressive quality (Picard & Boulhais, 2011; Picard & Gauthier, 2012). It is unclear whether this can be attributed specifically to a female advantage in artistry, or to the general thought that girls are more expressive. It is not surprising that we found religious schooling a strong predictor in emotionality associated with God, both with its association to high levels of positive valence and intensity. This may be for a number of reasons. Children attending faith schools may have a more developed faith, through both school and parental education, which is likely to express itself both positively and intensely in their drawings. In addition, the greater emphasis on religious education in the faith schools is likely to promote more knowledge of God characteristics, and events surrounding God. They may also be more exposed to cultural representations of God and theological themes. This may include not only biblical stories, but also concepts such as God being our friend and guide, as well as more complex ideas of destiny associated with heaven and hell. In turn, such knowledge provides a foundation for creativity in which they can utilise known religious themes to communicate their own imagination and self-expression. Indeed, it was striking to see the level of creativity and imagination being applied to theological and cultural religious themes. Clearly some of these explanations also may apply to the narrative themes of the drawings, and it would be interesting for future research to compare narrative themes between religious and mainstream (regular) schools.

Challenges are often present in any research, but when one combines analysis of children's drawings, visual aesthetics and theology there is inevitably a question of interpretation. These apply to all three disciplines, but is particularly noticeable in research that attempts to draw upon all three. One particular scenario the research team on this project needed to address was how to interpret the valence in drawings depicting the crucifixion of Jesus Christ. Namely, while this scene exhibits much suffering (which was sometimes emphasized by children with the depiction of a sad face supplemented by blood and tears), it can also be construed as the ultimate sign of salvation and atonement for the humankind—hence a stunningly positive message. Drawings do not only show short-lived actions but also timeless and complex properties that enter the conversation of interpretation and rating, most notably in this research in respect of perceived emotional valence. This particular conundrum raises the wider issue in such research of the extent to which researchers decide to focus more on the *emic* or on the *etic* sides of interpretation. That is, the child's point of view or the researcher's own understanding of the data using a more top-down approach. In our commentary of the narrative themes this question applies itself particularly to our discussion of the narrative themes, principally to what extent was Judeo-Christian theology in the minds of the children who drew the pictures? Although we have deliberately drawn upon this theology to offer an explanation of the themes presented in drawings—justified on the basis of the particular participant sample—we nevertheless recognise that many of the children may not have known, or considered, while making their drawing, such theological

complexities. For instance, they merely may have been imitating cultural memes and imagery that they have been exposed to in their culture. Although all children were invited to provide a written text about their drawing, not all children chose to do this, while some others offered no more than a description of the content (rather than an interpretation). Replicating the research with semi-structured interviews may encourage children to give more comprehensive descriptive and interpretive comments, which may provide a safer foundation for researchers' commentaries on the drawings.

In conclusion, children utilise all three main expressive techniques (i.e., literal expression, subject matter, and formal properties). In addition, they use these techniques to express a wide range of Judeo-Christian themes beyond the topic of God requested in the drawings. This is likely to reflect the biblical and theological knowledge of the sample, particularly from the religious schools, but may also be a reflection of the religious and cultural symbols they have been exposed and learned. Overall, God and related religious themes were presented positively in the Swiss sample, with many of the drawings showing strong intensity and creativity from the children. The present piece of research points to the necessity to explore God representations for their emotional characteristics. Much of the cognitive science of religion has focused on rather "cold" conceptual qualities of gods and religious entities. This is the case of anthropomorphism (e.g., Barrett & Keil, 1996) and counterintuitiveness (e.g., Boyer & Walker, 2000). The search for ontologies of being in individuals' perceptions of the divine had mainly guided research carried out on children's drawings, and it can be hoped that the present line of investigation will contribute to the development of more *embodied* approaches that focus on emotions and expression.

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Chapter 11

Different Attachment Styles in Relation to Children's Drawings of God: A Qualitative Exploration of the Use of Symbols in a Dutch Sample



Hanneke Muthert  and Hanneke Schaap-Jonker 

Abstract The development and functioning of representations of God are complex processes, in which psychological and cultural factors mutually influence each other. Attachment is a psychological factor that can provide insights into the representation and communication of ideas and experiences regarding supernatural agents in children's drawings and narratives. Our hypotheses: (1) Securely attached children will use more God representation-related symbols in their drawings than insecurely attached children, (2) These symbols will have a referring and self-transcending character. We explore children's drawings of God and their accompanying narratives with regard to attachment styles. We describe our theoretical framework and discuss the research process, our use of theory and materials, and our findings. We also present a qualitative analysis of drawings by both insecurely and securely attached children, focusing on qualitative aspects of the drawings and their use of religious symbols. Secure attachment is associated with more God representation-related symbols. Other drawing aspects also relate to attachment. We compare the occurrence of attachment characterizations of relationships with God, the padding of the paper, and the use of anthropomorphic and non-anthropomorphic images. Finally, we focus on the concrete localization of God on the paper, and the figurative place where children imagined God to be.

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Keywords Attachment · God representations · Children’s drawings · Children’s narratives · Use of religious symbols

Theoretical Framework: God Representations and Attachment Theory

Attachment Relationships and Religion

Attachment can be defined as a close emotional bond between two individuals, initially between an infant and the significant primary caregiver or *attachment figure*, usually the parents (Bowlby, 1969/1982, 1973, 1980). Secure attachment relationships are characterized by love, intimacy, and a strong predisposition on the part of the child to seek or maintain proximity to the attachment figures. Attachment figures serve as safe havens in times of distress and as secure bases from which the child can explore the world and develop new mental and physical skills (Ainsworth, 1985; Bowlby, 1969/1982, 1973, 1980; Granqvist, 2010). Within the psychology of religion, God¹ (as perceived by the individual) is regarded as a symbolic attachment figure with the same dual function (Granqvist & Kirkpatrick, 2016; Proctor et al., 2009).

During early development, the infant learns to internalize the dyadic experiences with the attachment figures and develops corresponding mental representations, which John Bowlby, the founding father of attachment theory, termed *internal working models* (IWMs). IWMs involve both a model of the self (“I am okay”—“I am not okay”) and a model of the other (“She/he is okay”—“she/he is not okay”). These IWMs guide perceptions, expectations and behaviours in future relationships (Bowlby, 1969/1982, 1973, 1980; Hall & Gorman, 2003; Hall & Fujikawa, 2013). To a large extent, they function automatically on an implicit level of awareness, although they also have a more explicit layer that can be communicated verbally (Hall & Fujikawa, 2013).

Attachment styles can be defined on the basis of different configurations of positively and negatively valenced IWMs of self and other and the accompanying dimensions of anxiety and avoidance. Four attachment styles are discerned: secure attachment (low anxiety, low avoidance, positively valenced models of self and other); insecure, preoccupied attachment style (negative model of self, “I am bad/worthless...”, positive model of other, high anxiety combined with low avoidance, which is often reflected in clinging or claiming behaviour); dismissive or avoidant

¹ Why the term *god* begins sometimes with an uppercase letter G, sometimes with a lowercase letter g, and why it appears sometimes in the singular and sometimes in the plural, is explained in the introductory chapter of this book (Chap. 1, this volume).

attachment (positive model of self, negative model of the other, who is experienced as unreliable, not responsive, and unsafe, low anxiety, high avoidance); and fearful attachment (high levels of anxiety and avoidance, negative models of self and others, often as a result of traumatic experiences, abuse and neglect) (Bartholomew & Horowitz, 1991; Granqvist & Kirkpatrick, 2013; Priel & Besser, 2001). While 60–70% of individuals in normal samples have a secure attachment style, 30–40% are typified by one of the three insecure attachment styles (Granqvist, 2010). For a more comprehensive introduction to attachment theory, see Cassidy & Shaver, 2016.

The attachment system is active across the life span (Bowlby, 1969/1982) and IWMs are fairly stable over time and across situations. As IWMs generalize across relationships, both religion and spirituality in general, and the relationship with God (or the divine) as perceived by the child in particular, capitalize on the operation of the attachment system. In this context, representation of God can be defined as specific types of IWMs—i.e. as representational models of God as (divine) other and models of self in relation to God. These God representations, which can be classified according to various styles of attachment to God, reflect the God that children experience and believe in personally (in contrast to the “official” God of religious traditions) (Granqvist & Kirkpatrick, 2013; Proctor et al., 2009; Schaap-Jonker, 2018). As models of self and other have both affective-relational and cognitive components, and they function on both implicit and explicit levels of awareness, God representations comprise both emotional and cognitive understandings of God, as well as implicit and explicit forms of memory (see Schaap-Jonker et al., 2016, 2017 for a more detailed discussion of the multidimensional and multifaceted nature of God representations). Most regular methods of examining God representations, such as self-report questionnaires and interviews, have difficulties tapping into implicit aspects of God representations (Davis et al., 2016). Hence, the notion that drawings of God could make a valuable contribution in this regard.

Within the psychology of religion, two opposing hypotheses have been formulated about the functions of God representations in the context of children's psychological and spiritual well-being. According to the correspondence hypothesis, differences in God representations correspond to and reflect differences in attachment styles, attachment history, and IWMs (Kirkpatrick, 2005; cf. Granqvist & Kirkpatrick, 2016). Children with secure IWMs of self and other perceive God as supportive and experience emotions of love, closeness, trust, and security in relation to God, while those with insecure attachment styles view God as punitive, rigid, distant, passive, unreliable, or fear-provoking. In addition to this IWM correspondence, there is evidence for socialized correspondence, as secure attachment facilitates religious socialization: Those who have warm and sensitive caregivers are more likely to adopt their parents' religion and internalize similar religious beliefs, values, and behaviours than those who are insecurely attached (Granqvist & Hagekull, 1999; Granqvist, 2002a, 2002b). The acquisition of epistemic trust, which is the capacity to trust others as a source of knowledge about the world, may play a part here: In the context of religious socialization, a secure child wants to consider their parents' communication of religious knowledge as trustworthy and relevant to the self (cf. Fonagy et al., 2015; Fonagy et al., 2016, pp. 780, 793).

The compensation hypothesis states that for insecurely attached children an attachment relationship with God functions as a substitute for inadequate and disappointing human attachment figures (Kirkpatrick, 2005). Compensation may take the form of explicit religious compensation, which means that insecurely attached children tend to show higher levels of religiousness than those who are securely attached (e.g. Granqvist, 2002b). In addition, God as a substitute attachment figure may fulfil an affect-regulating function and provide emotional compensation, including longitudinally (Granqvist, 2002a). The corresponding and compensatory functions of God representations may occur on different levels of awareness; it is possible that compensation is observed on an explicit level, while the God representation corresponds with insecure IMWs on an implicit relational level (cf. Hall & Fujikawa, 2013).

Before we turn to children's drawings of God, we should discuss another attachment-related construct that is relevant to the study of children's drawings of and narratives about God, namely the *mentalizing* function. The infant develops the capacity to mentalize within the context of the attachment system when the caregiver treats her/him as a mental agent, unconsciously ascribing a mental state to the infant ("You have to cry? You feel so frightened?"). Provided with mind-minded interactions through mirroring and affect-regulating behaviour, the infant learns to distinguish its own mental world from both the physical world and the mental world of others and learns to understand that mental world (Allen et al., 2008, pp. 80–102; Steele & Steele, 2008). As a result, the infant is able to mentalize—i.e., to imaginatively perceive or interpret one's own or others' behaviour—as conjoined with intentional mental states, such as personal reasons, beliefs, feelings, needs and desires. Several developmental modes of mentalizing are distinguished, namely the teleological mode, psychic equivalence mode, pretend mode and the mentalizing or reflective mode (Allen, 2006; Muthert & Schaap-Jonker, 2015; cf. Schaap-Jonker & Corveleyn, 2014). In the mentalizing mode, mental states can be experienced as representations. A mentalizing child is involved in an imaginary activity, constructing meaning on the basis of feelings, thoughts, wishes, and expectations that are not directly observable. In this form of *grounded imagination*, the mental, subjective world is both separated from objective reality and simultaneously anchored in it (Allen, 2006, pp. 3–30). Thus, inner and outer realities are seen as linked, though distinctive (Fonagy, 2008, pp. 27, 33). The child (or adult) includes the representation of mind states in their understanding of self and others, being aware that their own and another's mental states reflect a certain viewpoint on reality and that those representations of reality do not fully equate with reality. This distance results in a sense of *representingness* (Bogdan, 2005, p. 190), the awareness that knowledge is representational. One can use mental states without losing the "as if" condition (see below). Therefore, in a mentalizing mode, an individual is able to reflect on their emotions, understanding them while feeling them (Allen et al., 2008, p. 59; Bateman & Fonagy, 2006, p. 4; Fonagy et al., 2002, pp. 7, 96; Jurist, 2005, pp. 426–444).

Mentalizing is an essential psychological mechanism, which is a prerequisite for relating and representing, including in the religious domain. In addition, mentalizing is involved in the capacity for imagination, transcendence, symbolizing, empathy, taking perspective, and meaning-making (see also Schaap-Jonker & Corveleyn,

2014). Hence, mentalizing seems to be one of the mechanisms through which the attachment system affects the God representations that children draw and talk about. However, insecure attachment may hinder the development and functioning of the mentalizing capacity.

Children's Drawings of Gods and Attachment

Different attachment styles imply different types of relationship between self and other, and thus different ways of being receptive to and connecting with the external social and cultural world, including religion. We therefore assume that children with a secure attachment style will be more open and responsive to (religious) culture regarded as “not-me”, as they have acquired epistemic trust (cf. Fonagy et al., 2015; Fonagy et al., 2016, pp. 780, 793). Furthermore, a securely attached child is able to mentalize and thus integrate external ideas, thoughts, stories, images, rituals, and symbols regarding God into their own thinking, speaking and experiencing of God, while at the same time being connected to personal experiences, needs, and longings (cf. Boyatzis, 2013). It is by integrating these internal and external worlds that one can use symbols to refer to otherness in a way that is personally meaningful (Bateman & Fonagy, 2012; Fonagy, 2008; Schaap-Jonker & Corveleyn, 2014; Muthert, 2020; cf. Granqvist & Kirkpatrick, 2013, p. 140). With regard to children's drawings of Gods, we expect that those who are securely attached will use more religious symbols and that these symbols will have a referring and self-transcending character (It is as if ...; cf. Bogdan's (2005) sense of representingness and Peirce's (1977) category of thirdness in semiotics; see also Ogden, 1986, p. 224ff; 2005). In contrast, insecure attachment and the accompanying limited capacity to mentalize (Allen, 2013) will be associated with symbolic equation, in which symbols are used as signs (It is what it is; cf. Peirce's (1977) category of secondness in semiotics and the psychic equivalence mode; see also Ogden, 1986 p. 224ff; 2005), without a referring quality, or without using signs and symbols. In addition to the psychological literature, art therapy also distinguishes between cognitive meaning-making strategies and emotion- and/or relation-focused strategies in artistic expressions (Einarsdottir et al., 2009; Stanczak, 2007; Ring, 2006). Drawings are therefore considered to be expressions of meaning and understanding, in which the communicative power of both the drawing and the drawing process is stressed. To investigate drawings properly, narratives about the drawings are seen as crucial. In the narratives of insecurely attached children, we would expect fewer references to the symbols present and less explanation of their use of religious symbols than in the narratives of children with a secure attachment style. Regarding artistic development, age is not related in a linear way to the development of symbolization; rather, a U-shaped development of graphic symbolization was found in different studies that included young children (Davis, 1997, Harvard Project Zero; Haanstra et al., 2013).

Although affective aspects of religious and spiritual development in childhood have largely been neglected in research (Granqvist & Dickie, 2006), and research on attachment to God has been dominated by adult studies (Cassibba et al., 2013; Granqvist & Kirkpatrick, 2016), there are several studies of children's God representations in relation to attachment (Cassibba et al., 2013; De Roos et al., 2001a, 2001b, 2004; Granqvist et al., 2007). However, none of these studies used drawings of Gods as a method to investigate aspects of children's representations of God (the divine). At the same time, existing studies that focused on children's drawing of God (see Chap. 2, this volume) did not include attachment factors in the analyses. Our study therefore aims to contribute both to the study of attachment and religion and of children's religiousness and spirituality, and to the study of children's drawings of God.

Empirical Research: Process, Findings, and New Questions

If secure and insecure attachment styles influence mentalizing activity, one would expect to recognize differences in meaningful and expressive communication forms such as the *Dessins de dieux* protocol-led drawings and narratives. Therefore, we aimed to study drawings by Dutch children from the perspective of attachment theory. To assess children's attachment style, the brief Experiences in Close Relationships Scale-Revised Child version (ERC-RC) was added to the standard procedure and questionnaire (see Chap. 2, this volume). This questionnaire is a reliable and valid instrument to measure anxious and avoidant attachment to parents (Brenning et al., 2011). In our study, the 12-item version was administered twice to measure the attachment to both father and mother. In this section, we report our data collection process and the decisions we made during this process.

Five graduate students of the University of Groningen collected drawings and/or wrote their Master's theses on this topic. In addition, 79 Bachelor's students interviewed younger children in the context of a small research assignment. We explicitly included drawings from god-talk contexts as well as non-god-talk contexts. Our sample included children across a range of ages (in the scope of the overall design, 5–13 years old) in both religious (mainly Christian) and general contexts, in towns and cities and other parts of the northern Netherlands.

We predicted that the different ages of the children involved would lead to drawings from distinctive artistic and/or technical stages (Malchiodi, 1998, 2003; Van de Vijfeijken, 2001). Based on the overall prevalence of secure and insecurely attached children (60–70% and 40–30% respectively; Altenhofen et al., 2013; Moullin et al., 2014; Wolff et al., 2017), we assumed that both groups would automatically be present in our sample. An initial in-depth study of ten drawings by 7/8-year-old children (Van der Vegt, 2014) concluded that there were some limitations in directly linking the social-emotional attachment qualities of fear and trust to children's drawings of God. Clear differences were only observed in cases of quite strong indicators of

anxiety and avoidance, which were based on the ERC-scale mean items scores (1 or 2: (very) *low anxiety/avoidance*; 4 or 5: (very) *high anxiety/avoidance*).

However, the drawing process, including the child's behaviour during the process and the use of materials in addition to the narrative, seemed to be much more decisive than the drawing itself. This finding underlines the importance of the mixed method approach to the general design and of contextual information. We concluded that in cases of more diffuse ERC scores, we would need more drawings in order to be able to comment reliably on secure and insecure attachment. We would also prefer process descriptions.

To gain greater insight into the drawings of the children with insecure attachment, as reflected in their ERC scores, our next question (Van Neijenhof, 2016) was whether the drawings showed particular aspects of insecure attachment (and if so, which ones), and to what extent aspects of compensation and/or correspondence could be observed (Granqvist & Kirkpatrick, 2013; Hall & Fujikawa, 2013). Only 12 children (based on the 140 drawings that were collected at that time!) fitted the criteria (one aged almost 5, five 6/7-year-olds and six children aged 12/13) of being insecurely attached to both father *and* mother (other children reported no anxiety or avoidance at all, or only in relation to either the father or mother). An age-related difference was revealed. Primary school children showed clear aspects of insecure attachment in their drawings, such as the absence of expressive flowering and little in-fill, almost no padding of the paper (cf. Meykens & Cluckers, 2006), while high school pupils did not. Perhaps the drawings by the older children needed to match reality as seen in the outside world, whereas for the younger children, being engaged in their drawing activity was far more important than the result, which means that intuitive and/or unconscious elements would occur more naturally and frequently. This relates both to the implicit relational level and the developmental artistic/technical drawing stages (Malchiodi, 2003; Meykens & Cluckers, 2006; Werner, 1957; Lusebrink, 1990). Based on an analysis of (1) the drawing, (2) the narrative and (3) a personalized description of the drawing procedure, Van Neijenhof tentatively concluded that compensation was seen in god-talk contexts with only one exception: coming from a non-god-talk context, the youngest participant showed her trust in a good and loving God. One could hypothesize that, in line with the children's religious affiliation, compensation is only observed on the explicit level in some cases, while correspondence predominates on the implicit relational level (cf. Hall & Fujikawa, 2013). However, the differentiation in insecure attachment styles proved difficult and in the case of religious affiliation the polar distinction between secure or insecure is not particularly solid based on a single drawing.

On the basis of the above findings, we concluded that we needed more indicators of insecure attachment. We therefore added a family drawing to the general protocol as different studies have shown that children's drawings of family are indicators of early attachment (cf. Procaccia et al., 2014; Attili et al., 2011; Fury et al., 1997; Madigan et al., 2003; Kaplan & Main, 1986). For example, open arms, a drawn floor and a full drawing area are indicators of secure attachment, while incomplete, floating and/or small figures are expressions of insecure attachment. We expected that a

comparison of two drawings of objects that children relate to would also improve our analyses in instances of more diffuse attachment styles in terms of ERC scores.

With this new format, drawings were collected from younger children in “multi-problem” families in the free Baptist community in Groningen, from a primary school for asylum seekers (without administering the ERC-RC because of a lack of valid translations in Arabic and Tigrinya; both by De Kraker-Zijlstra (2017) and from a Protestant community (Pruis, 2018). Ambivalent aspects confirmed the value of a multi-perspective approach. Adding the family drawing also seemed fruitful in that findings attached to the first drawing did not necessarily resemble the analysis of the second. From the perspective of cultural diversity (Aronsson & Andersson, 1996; Gernhardt et al., 2013; Malchiodi, 1998; Tharp, 1991), new questions arose, as the literature regards intracultural differences as far more decisive than intercultural differences. However, various styles of upbringing stress and value other goals. If obedience and respect are highly valued because of community interests (Gernhardt et al., 2016), resulting in avoiding attachment patterns, what exactly are we doing if we promote secure attachment based on assigning a high priority to the development of the self? Which elements relating to attachment are recognized as essential in particular cultural contexts? What does it mean when we view secure attachment and related aspects as being healthier than aspects in the other categories, bearing in mind that many children are regarded as being insecurely attached? How do these questions relate to God representations?

If ambivalence emerges as an important aspect in drawing God (especially in contexts where one would expect more insecure attachment styles), might this suggest that a God representation that includes ambivalent aspects could be valued as healthier (from a relational point of view) because this God is still able to embody secure and insecure aspects? Here, we are adhering to the idea that tolerating ambivalence is one of religion’s major cultural contributions (cf. Westerink, 2017; Jongsma-Tielemans, 1996; Winnicott, 1971). If so, how do we change our attachment models and figures concerning God representations in such a way that this ambivalence becomes visible and applicable instead of emphasizing the polarities of secure and insecure? In other words, how could particular culturally diverse meaning issues become incorporated more seriously in attachment theory?

Comparing Drawings by Securely and Insecurely Attached Children: A Qualitative Analysis

Research Questions, Hypotheses and Attachment Questionnaire

Starting from the question of how attachment qualities are reflected in children’s drawings of and narratives about God representations in different subcultures in which god talk is either present or absent, we compared 12 drawings by insecurely attached children (Ins1–12) with 12 drawings by securely attached children (S1–12). The drawings were selected from our total Dutch collection of 233 drawings and narratives (although not all participants filled in the attachment questionnaire).

Our analysis focused on qualitative aspects of children's drawings of God and their use of religious symbols. Attachment style was assessed with the ERC-RC (see above). The groups were equivalent in terms of age and gender. We were not able to make an overall match of god-talk/non-god-talk contexts. Each group consisted of nine girls (2 aged 7; 2 aged 10; 2 aged 12; 3 aged 13) and three boys (1 aged 10; 1 aged 12; 1 aged 13). Our research question was: How do different attachment styles relate to the use of symbols when drawing God? Our hypothesis was that securely attached children would use more God representation-related symbols in their drawings than children who were insecurely attached, and that these symbols would have a referring and self-transcending character.

Method

In order to gain an understanding of the use of symbols in drawing God representations in relation to attachment style, all drawings and narratives by the securely ($N = 12$) and insecurely attached ($N = 12$) children were independently double coded by both authors of this chapter. The narrative was coded first. We calculated the number of independent symbols that were written down by the children themselves. The main criterion for coding an aspect as a symbol was that the child used referring and/or self-transcending language. The child shows awareness of the fact that what was drawn is not a symbolic equation of God but it contains imaginative "as if" elements (in the way Peirce (1977) described thirdness, cf. Raguse (1994)): it is a representation. An example of a referring aspect is found in drawing 4 of the secure sample (S4): "I drew my thoughts about God with the hand of God who holds the world... because God holds and protects you". In this example, God is not identical to the drawn hand. But the hand refers to God's assumed protection. Other narrative examples show some difficulty in using referring aspects in drawing God: InS11: "I wrote God down in letters. I could not imagine something else." InS5: "If you look at my 'drawing' [blank] you do not see that much. Because I do not think anything... God does not exist for me." Subsequently, the drawings were coded by calculating independent symbols as well. The most important criterion for coding was again the potential referring quality of the drawn aspects as seen by the researchers, but still informed by the child's narrative.

In addition, we rated (1) the padding of the paper on a five point-scale: very small, small, average, more than average, and completely padded; (2) we noted the specific position on the paper of the main drawn god aspect (Eshleman et al., 1999); (3) we described the place where God was situated figuratively; (4) we marked the anthropomorphic/non-anthropomorphic design of the drawings; and (5) we coded our interpretation of the nature of the attachment relationship to God as reflected in each child's drawing (human beings-God and/or me-God) on the basis of positive, negative (punishment), and ambivalent aspects, as well as concrete relational features. After independent coding of all these aspects, differences in coding were discussed and negotiated until consensus was reached. In cases of doubt, we chose the

lowest number. Calculations were based on the shared consensus. Although the significance of process descriptions and family drawings had become obvious to us during the data collection process, these sources of information are not included in this qualitative exploration because they were not available for all the participants in our sample.

Results

The results of the coding of symbols are summarized in Table 11.1. In general, securely attached children showed more independent symbols in their drawings than insecurely attached children (drawings Ins26/S34; narratives Ins16/S26).

Table 11.2 shows the results on the basis of age. In the 10–13 age group, securely attached children drew roughly twice as many symbols as the insecurely attached group, with one exception: a 13-year-old girl (Ins9) showed Islam (instead of God) in a full padded drawing with 12 independent coded symbols. In this insecure group, three children did not draw any symbols (InS 5,6,8). All drawings by the 7-year olds were difficult to analyse in terms of our criteria.

Because of the separate coding for symbols in the drawings and narratives, we were also able to study the differences. The narratives (written by the children themselves) contained fewer symbols ($S_{\text{total.narratives}} = 28/\text{Ins}_{\text{total.narratives}} = 16$) than the coded symbols in the drawings ($S_{\text{total.drawings}} = 34/\text{InS}_{\text{total.drawings}} = 26$ including InS9; $\text{InS}_{\text{total}}$).

Table 11.1 Number of coded symbols in the drawings and narratives of the participants in the secure and insecure subgroup and measured padding of the paper on a five-point scale

Participants f = female m = male	Age	<i>Insecure:</i> number of symbols in drawing	<i>Insecure:</i> number of symbols in narrative	<i>Secure:</i> number of symbols in drawing	<i>Secure:</i> number of symbols in narrative	<i>Insecure:</i> rated <i>infill</i> drawing score 1–5	<i>Secure:</i> rated <i>infill</i> drawing score 1–5
1f	7	1	1	0	0	1	2
2f	7	0	0	1	2	2	3
3f	10	2	2	4	4	3	5
4f	10	1	1	3	3	5	3
5f	12	0	0	4	3	n/a	5
6f	12	3	3	4	2	3	5
7f	13	1	1	6	4	2	5
8f	13	0	0	3	3	n/a	4
9f	13	12	4	1	1	5	2
10m	10	1	1	2	2	1	3
11m	12	1	1	2	2	5	5
12m	13	4	2	2	2	4	5
Total		26	16	34	28	31	47
Mean						3.1	3.9

Table 11.2 Comparison of coded symbols as seen by the researcher (based on the drawing, informed by the narrative) and by the children themselves (based on the narrative)

Age f = female m = male	<i>Insecure:</i> Symbols in drawings counted by the authors Total	<i>Secure:</i> Symbols in drawings counted by the authors Total	<i>Insecure:</i> Counted symbols in narrative as presented by the children Total	<i>Secure:</i> Counted symbols in narrative as presented by the children Total
7f (2x)	1	1	1	2
10 (2f, 1m)	4	9	4	9
12 (2f, 1m)	4	10	4	7
13 (3f, 1m)	17 (1 × 12; 1 × 0; 1 × 1; 1 × 4 counted symbols)	12 (1 × 6; 1 × 3; 1 × 2; 1 × 1 counted symbols)	7	10

drawings = 14 without InS9). The difference could be explained by the fact that children can forget to write about aspects in the case of rich drawings. The protocol did not explicitly ask them to write about symbols. Another possibility is that researchers and children make different interpretations. If we focus on the 10–12-year-olds, the secure group showed 19 and 16 independent coded symbols in the drawings and narratives respectively; the insecure group showed 9 symbols in both the drawings and narratives.

Table 11.1 also includes a rough rating of the padding of the paper, scored on a five-point scale: very small, small, average, more than average, fully padded. The secure group seems to have used more padding (total score = 47; mean score = 3.9) than the insecure group (total score = 31; mean score = 3.1; blank sheets are excluded). Thus, the securely attached children in our small sample showed more symbols in both their drawings and narratives and their drawings had more infill than those of the insecurely attached children. It is possible that the symbols they used required more space. Six securely attached and three insecurely attached children used a complete infill.

In addition, we found that four children in the insecure group drew an anthropomorphic image (Ins2–4,12), and nine children in the secure group (S1–5;7,8,10,12). In this subsample of nine, three drawings contained partly anthropomorphic images such as arms, hands or a huge head reaching from the clouds (S4,5,7).

Table 11.3 shows the localization of (the main symbol connected to) God. We found five categories: extraterrestrial, in heaven, between heaven and earth, on earth, and drawings and narratives without explicit references to the localization of God. The secure group used the different categories more or less equally. The insecure group showed more references to a localization on earth or did not use references at all. When God was localized in heaven, the insecure group drew God on the lower half of the paper, whereas the secure group used the upper half (see Chaps. 6 and 7, this volume).

Table 11.3 Imagined localization of (the main symbol connected to) god

Localization of God	Insecure	Secure
Extraterrestrial		4 + God can be thought in our earthly human thoughts; 9
In heaven	3; 6 Both positioned in the lower half of the paper	5; 7; 8 All positioned in the upper part of the paper
Between heaven and earth	7 hovering church; 10 burning bush	2; 3
On earth	1 in your heart; 9 Islam; 11 nature; 12 on the cross	6 mosque; 10 invisible on earth; 12 on a hill in Rio
No explicit references	2; 4; 5; 8	1; 11

Table 11.4 Attachment to God

Characterization of the relationship with God	Insecure	Secure
Warm positive		2, 10
Positive but ambivalent	1 (very little infill); 4	12
Relationships central: inviting; protecting etc.	9	3; 4; 5; 7
Relationships central: ambivalent	3; 6	
Potential punishing or not existing	5	
Not specified	2; 7; 8; 10; 11; 12	1; 2; 6; 8; 9; 11

Table 11.4 presents our interpretations of the attachment relationship to God, as reflected in the drawings and narratives. The majority of the drawings in both sub-groups did not provide adequate information in terms of the attachment relationship aspects we were looking for based on the literature (positive, ambivalent, negative/punishing; explicit relational features). However, when there was explicit input on this subject, the secure group used more positive connotations, whereas the insecure group tended to use more ambivalent or negative aspects.

Images

See Figs. 11.1, 11.2, 11.3, 11.4, 11.5, 11.6, 11.7, 11.8, 11.9, 11.10, 11.11, 11.12, 11.13, 11.14, 11.15, 11.16, 11.17, 11.18, 11.19, 11.20, 11.21, 11.22, 11.23, and 11.24.

Fig. 11.1 <http://ark.dasch.swiss/ark:/72163/1/0105/bCcfGj7XR==487gIXHG HhQ5.2019100 9T084035211248Z>



Fig. 11.2 http://ark.dasch.swiss/ark:/72163/1/0105/_MneXhgNTvCmzZzHsOEVqAg.2019100 9T074809188366Z



Fig. 11.3 <http://ark.dasch.swiss/ark:/72163/1/0105/gXogkIJISiCcGGwaeVgbwX.20180702T171949316Z>

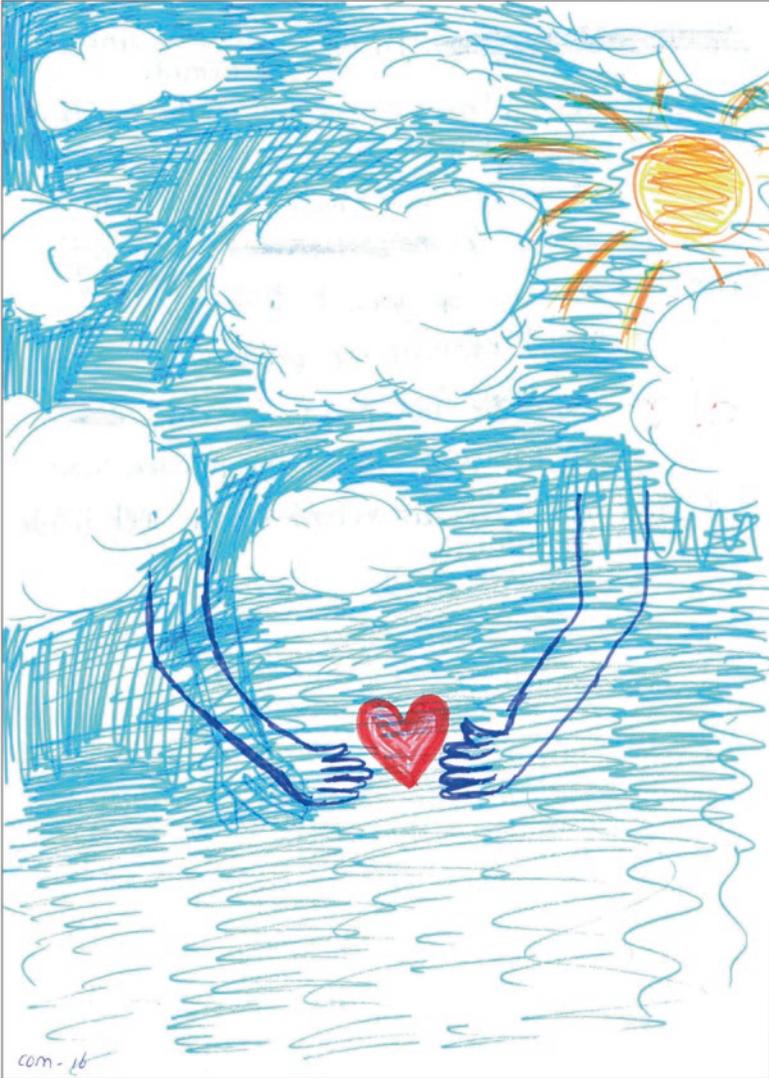


Fig. 11.4 http://ark.dasch.swiss/ark:/72163/1/0105/yIj1XBwdTyapgOiS_fyGMAc.20180702T172011232Z

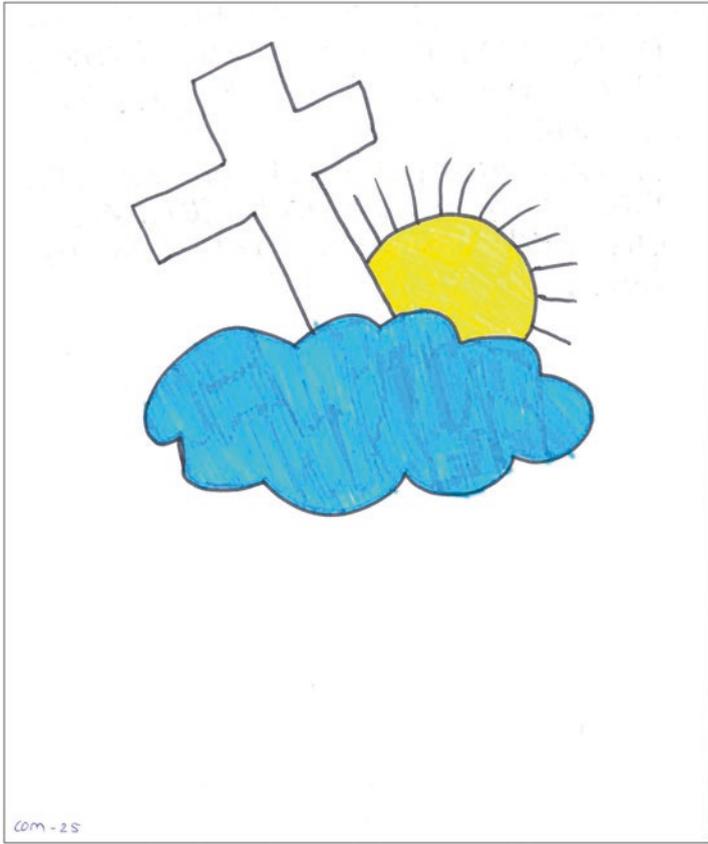


Fig. 11.5 <http://ark.dasch.swiss/ark:/72163/1/0105/=NFSImu0RW62LNqPs7AWpQK.20180702T172033226Z>



Fig. 11.6 <http://ark.dasch.swiss/ark:/72163/1/0105/R60JtBgIQDKOCFK74yHLfQu.20180702T172055631Z>



Fig. 11.7 http://ark.dasch.swiss/ark:/72163/1/0105/oW4YstOHSwu677fNI6o6ZQ_.20180702T172138458Z

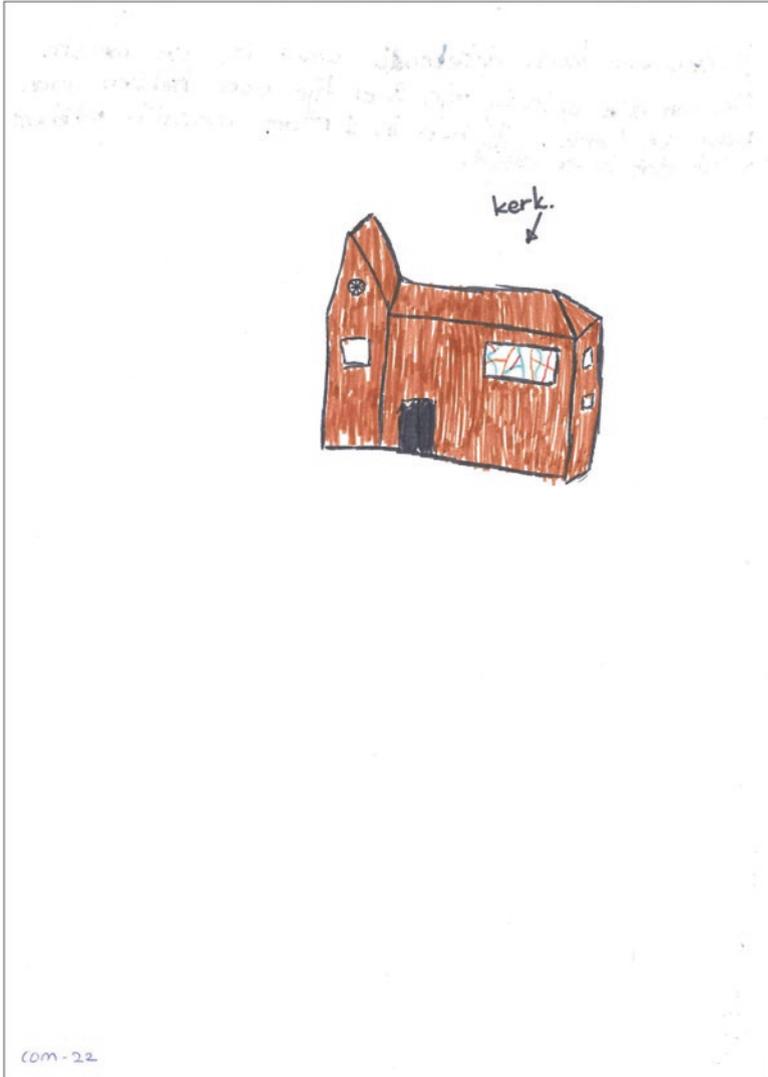


Fig. 11.8 <http://ark.dasch.swiss/ark:/72163/1/0105/1Bm=dwDAQPeYGeMCA9P4rgF.20180702T17220008Z>

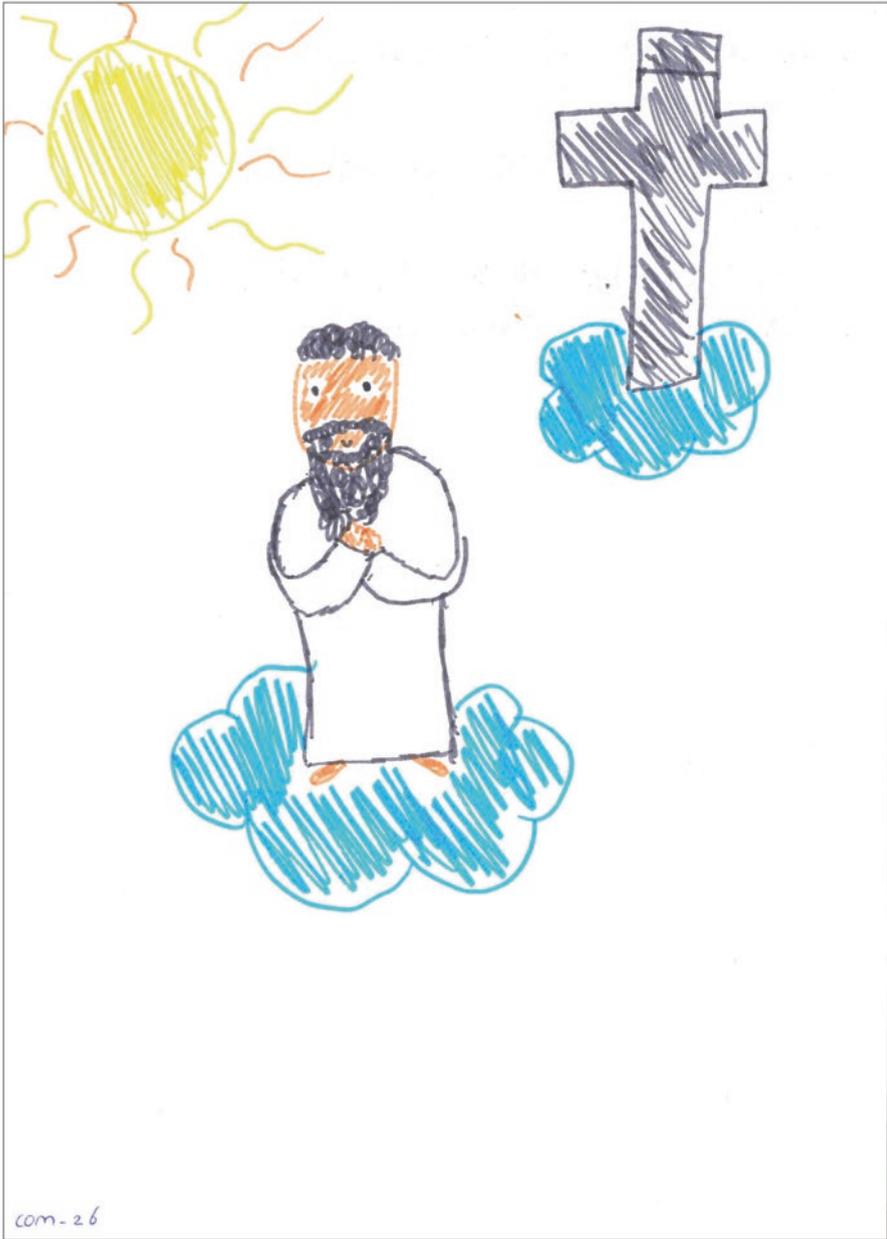


Fig. 11.9 <http://ark.dasch.swiss/ark:/72163/1/0105/=T8hAg8qTJigi5QzkO01oQD.20180702T172210874Z>

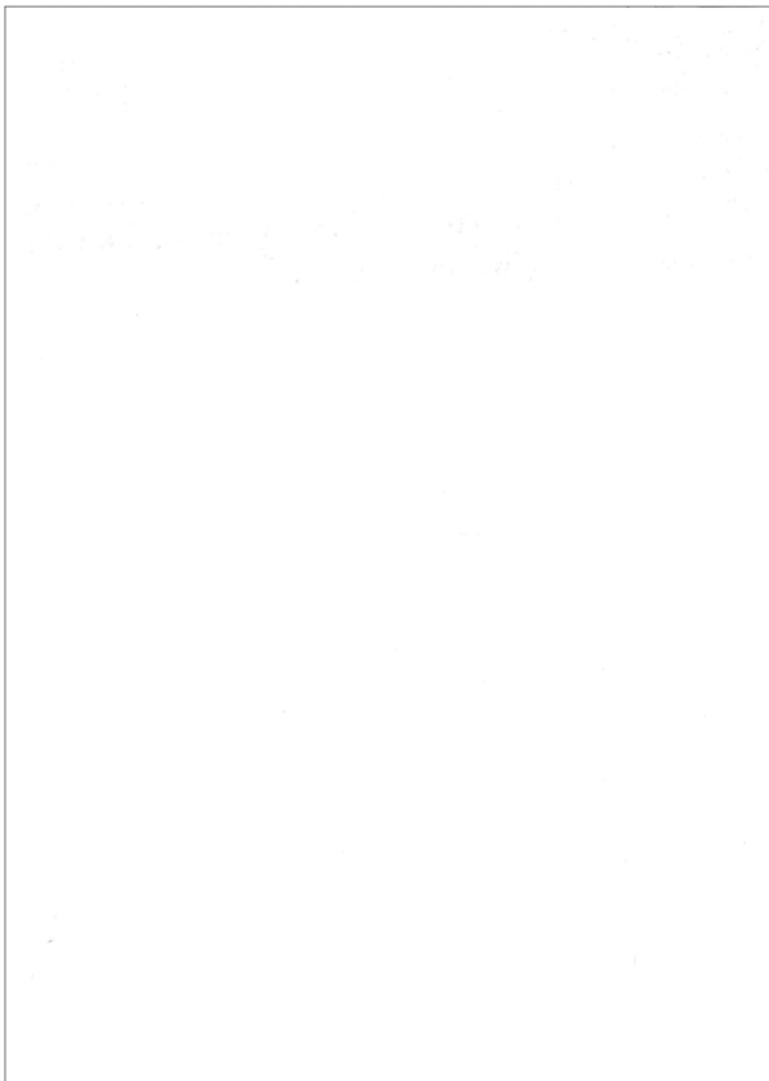


Fig. 11.10 <http://ark.dasch.swiss/ark:/72163/1/0105/4SWzV6uVQvOo12UWXRq7yAn.20180702T172230387Z>



Fig. 11.11 <http://ark.dasch.swiss/ark:/72163/1/0105/VrW1mN4gQvuNrRZR7QCgewk.20180702T172253021Z>



Fig. 11.12 <http://ark.dasch.swiss/ark:/72163/1/0105/ak7oh6kmSQCYwKm0zzuFQA9.20180702T17230344Z>



Fig. 11.13 <http://ark.dasch.swiss/ark:/72163/1/0105/KeEl5Z39RyCaJHMIQe4dtQ5.20180702T172556159Z>

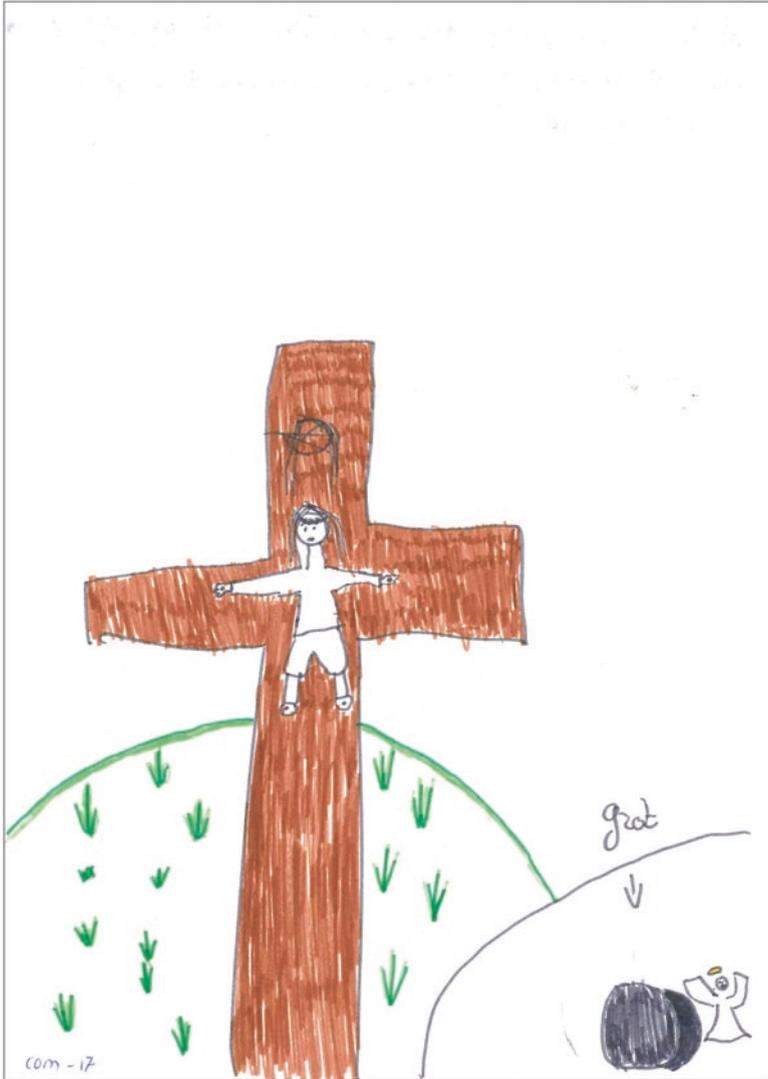


Fig. 11.14 <http://ark.dasch.swiss/ark:/72163/1/0105/jKlmyfrOQn=Ej9Kzk3McfQz.20180702T172628264Z>

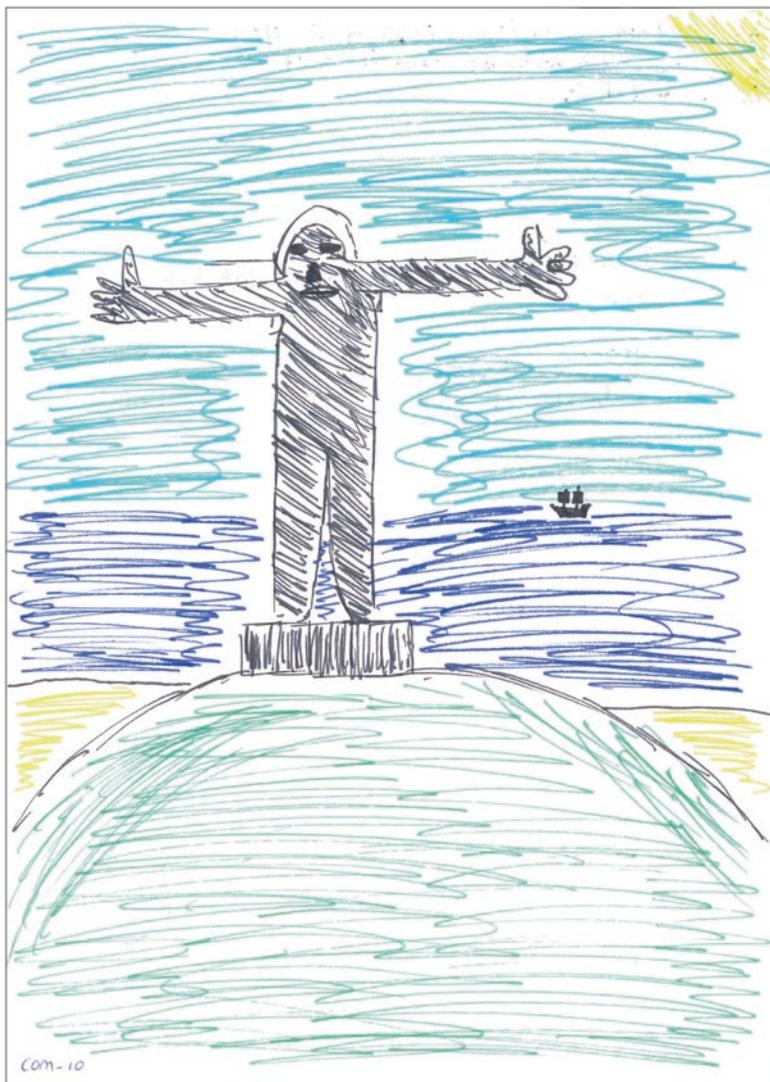


Fig. 11.15 <http://ark.dasch.swiss/ark:/72163/1/0105/OGSlwk=QTZq2lyOjwpqBEgO.20180702T172732466Z>

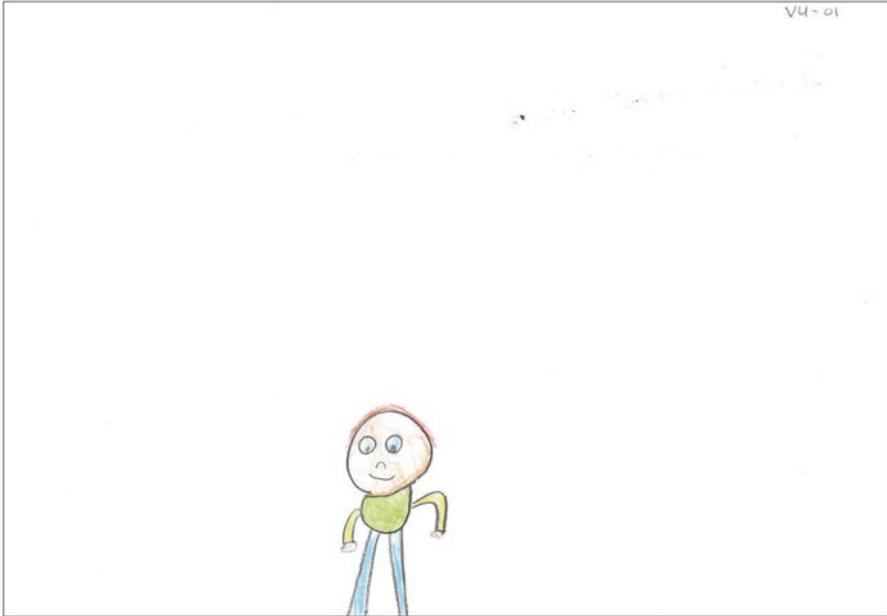


Fig. 11.16 <http://ark.dasch.swiss/ark:/72163/1/0105/wUFc9U7YQ4KdcAn5SOxGAN.20180702T173126528Z>



Fig. 11.17 <http://ark.dasch.swiss/ark:/72163/1/0105/JSnqeM3HTJWZPopgLiHIHGr.20191009T0858238192Z>

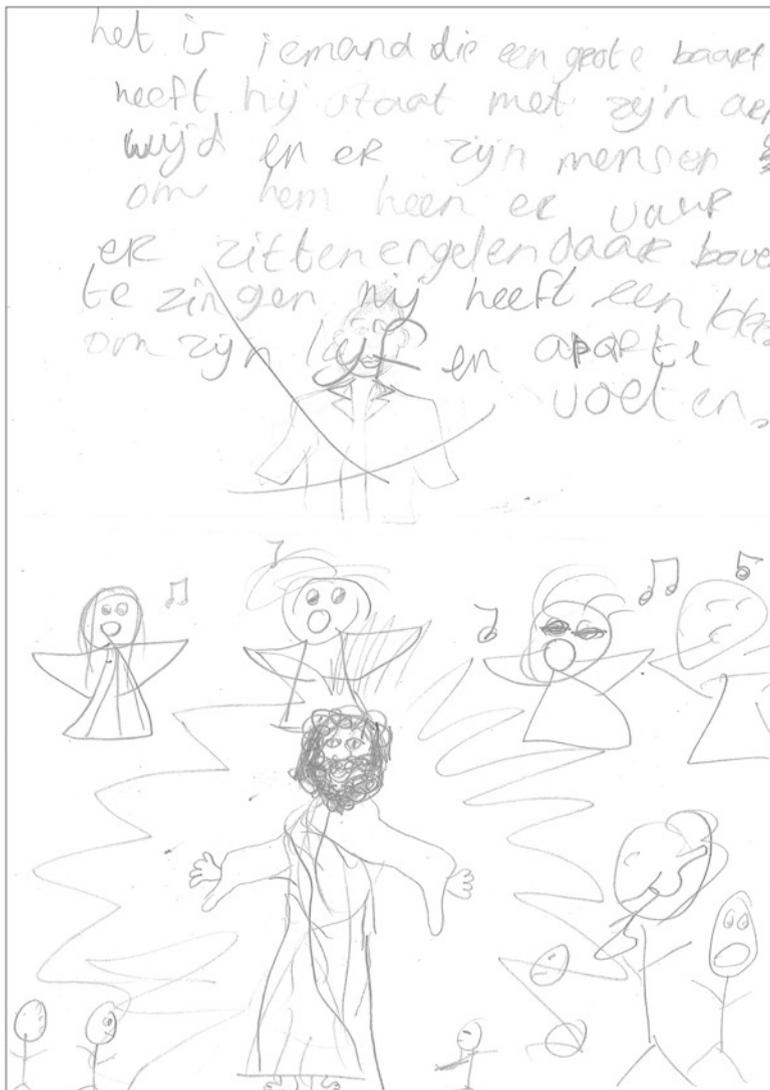


Fig. 11.18 <http://ark.dasch.swiss/ark:/72163/1/0105/sL54GEeZRYW3HYQH1LdeZQW.20191009T091437752148Z>



Fig. 11.19 http://ark.dasch.swiss/ark:/72163/1/0105/e=X2kx6NT7=X_NcETirlw7.20191009T09325474002Z

Fig. 11.20 <http://ark.dasch.swiss/ark:/72163/1/0105/SN7ybX9lRqyM0lEoP9p53QF.20191009T094325715154Z>

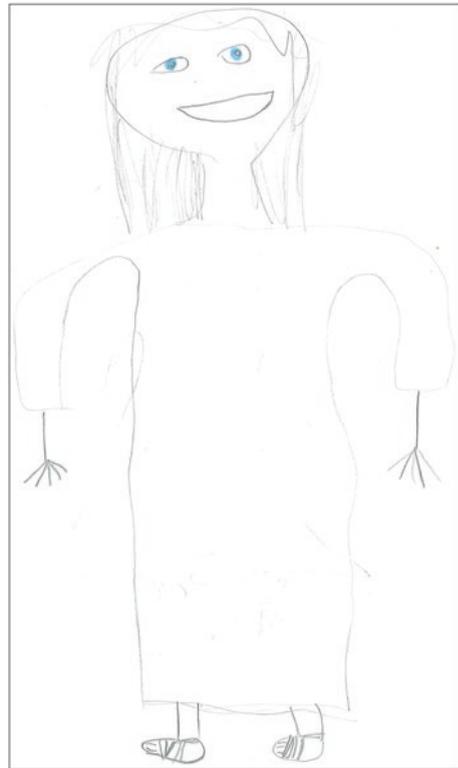
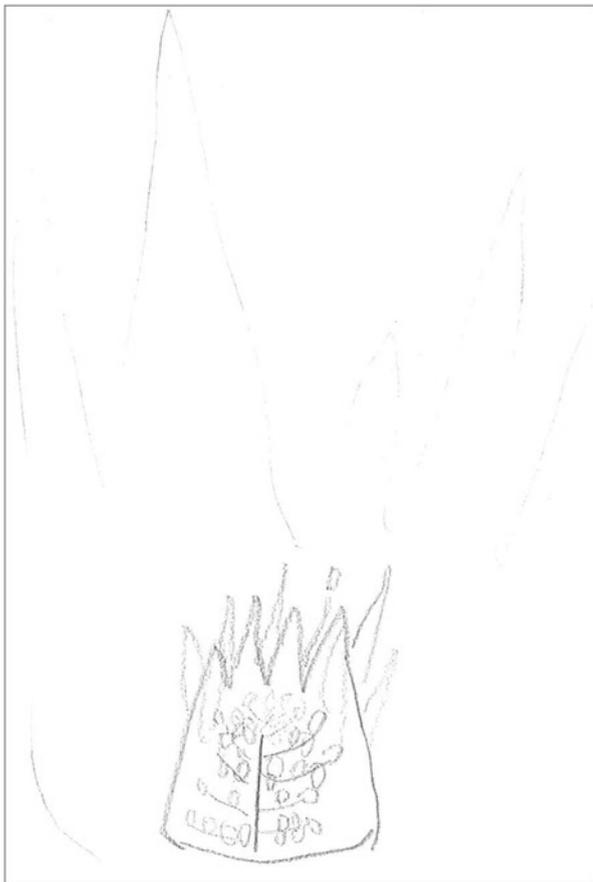


Fig. 11.21 <http://ark.dasch.swiss/ark:/72163/1/0105/eoxyGYjrSHmxa9F2p=dD8QB.20191009T104019655399Z>



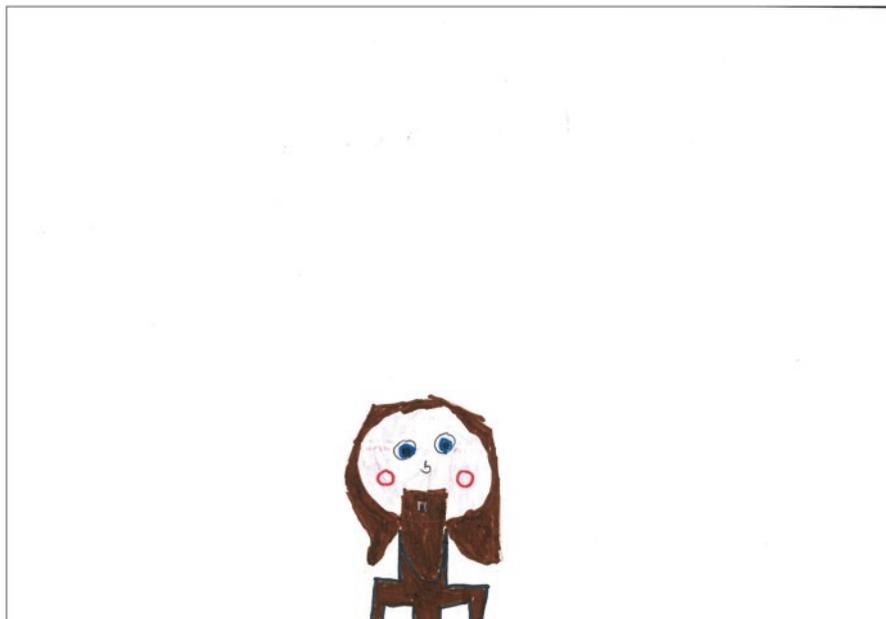


Fig. 11.22 http://ark.dasch.swiss/ark:/72163/1/0105/xVpaTRjARMeFNS4K5_JHxQ_20180702T174126408Z

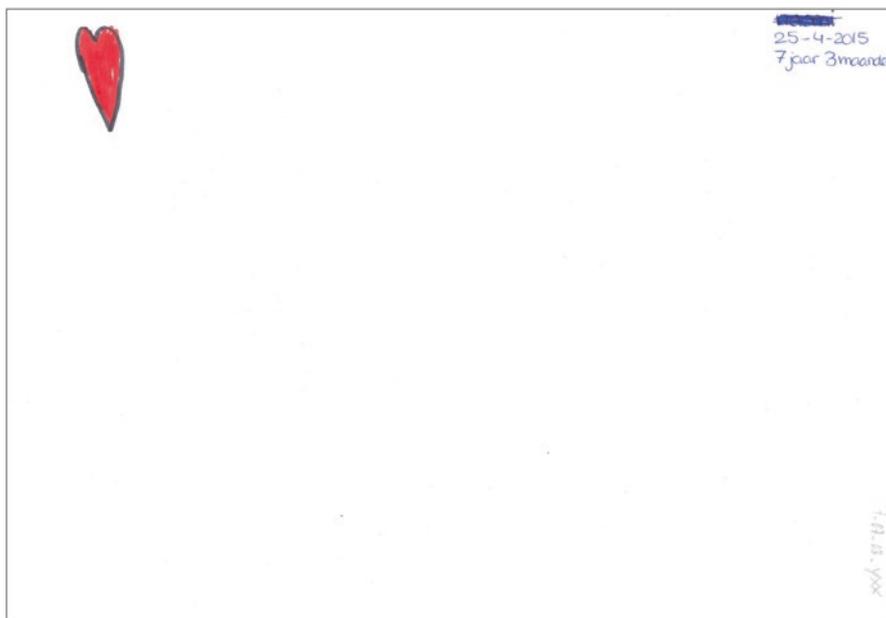


Fig. 11.23 <http://ark.dasch.swiss/ark:/72163/1/0105/vUU1EmWrTBmgcqVI9tRtOgP.20180702T174137874Z>



Fig. 11.24 <http://ark.dasch.swiss/ark:/72163/1/0105/fwgc39XURVWVYJR=JxdqWAX.20180702T174211265Z>

Discussion and Conclusion

For the relationship between attachment style and children's drawings of Gods, we hypothesized that securely attached children would use more God representation-related symbols in their drawings than children who are insecurely attached and that these symbols would have a referring and self-transcending character. The results of our qualitative analyses seem to support this hypothesis. Both the drawings and the narrative of those who were securely attached according to the attachment questionnaire (ECR-RC) contained more God representation-related symbols than those of the insecurely attached children. This finding could be explained in terms of an open and responsive attitude towards the (religious) environment, epistemic trust being a possibly mediating mechanism (Fonagy et al., 2015; Fonagy et al., 2016, pp. 780, 793). (The drawings and narratives of the four 7-year-olds were difficult to rate. A possible explanation is that the writing and drawing skills of that particular age group do not meet our criteria. However, this subgroup is too small to make generalizations.) In addition, the drawings by the group with secure attachment showed more infill of the page, in line with findings regarding drawings of families (Attili et al., 2011). Their drawing of God is positioned more in the upper part of the picture than in the drawings by the insecure group. This suggests that children with a secure attachment style feel freer to take up space, facing others and the world with their heads held high, which are expressions of basic trust.

However, our sample was very small—just 24 children. This is an recognized limitation of our study, which was designed to be of an exploratory nature. The results should therefore be interpreted with considerable caution. Follow-up studies involving bigger samples are needed. Taking this limitation into account, in instances where attachment relationship aspects were explicitly present, the secure attachment sample displayed different themes and articulations than the insecure sample. The secure group showed more positive connotations and used different figurative places in connection with God.

An important point of discussion among the researchers concerned the scoring of symbols. How do we know, for example, whether a sun is part of the God representation that should be interpreted in relation to the divine, or is simply a standard part of the drawing, because the child is always drawing the sun, whatever the subject of the drawing may be? In this context, interpretation has a subjective component, as it is largely culturally determined. Therefore, follow-up studies also need intra- and interculturally diverse exchanges when it comes to counting and rating.

We rated the symbols to which children referred in their narrative. However, those who collected the drawings and narratives were not instructed to ask questions about (potential) symbols in the drawings, as this was not part of the standard protocol in the international project. If new data is collected in the future, the protocol should include explicit attention to the meaning of the different aspects of the drawing as seen by the child in view of these referring and or self-transcending qualities. The process description should also be included in the protocol.

The material was collected in different contexts. Most drawings were collected in schools, and some in churches, but the degree to which children felt safe and happy at these places may have affected the results, possibly also in relation to the ECR-RC-scores. Based on research data for the general population, we predicted higher numbers of insecurely attached children. This discrepancy can be partly explained by the fact that not every institute where we collected our drawings accepted our questionnaire. In some cases, research assistants showed resistance in using the questionnaire because they did not feel sufficiently well-equipped. Another explanation could be that specific social contexts influence the narrating and drawing activities. We suggest that the individual processes should also be taken into account in the general protocol.

In our study, we made a clear distinction between securely and insecurely attached children. We only included children who were either securely or insecurely attached to both father and mother and excluded those who reported secure attachment scores for one parent and insecure scores for the other. However, from a theoretical perspective, the capacity to tolerate ambivalence is an indication of mature development. This may also apply to toleration of ambivalence regarding attachment to different parents. Cultural norms and values could play a part in this context. Whereas relatedness, confidence and closeness between parents and child are stressed in the Western world of the twenty-first-century, obedience and independence (cf. the distinctions between relatedness and self-definition (Blatt, 2008), agency and communion (Bakan, 1966), autonomy and surrender (Angyal, 1951) and the accompanying developmental tasks are seen as more important in some

other cultures. This suggests that secure and insecure attachment could (or even should) be operationalized across more dimensions than the degree of anxiety and avoidance.

In sum, our qualitative exploration suggests that children's drawings of God and their use of God-representational symbols reflect their attachment styles. Hence, drawings of God can be considered a valuable method for assessing children's religious experience in relation to their relational-affective functioning, which is a promising research line for the psychology of religion.

Acknowledgments We would like to express our sincere gratitude to all the children who were willing to draw and narrate for the Dutch subsample of Dessins de dieux. The same is true for our Master's students who collected these drawings and/or wrote their Master's theses on this topic: Anouk Helmich, Anieljah de Kraker, Suzanne Landman, Sanne van Neijenhof, Ruth Pruis and Annemarie van der Vegt.

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Part V
Focus on Specific Cultural Contexts

Chapter 12

Iranian Children's Drawings of God: Demographic and Contextual Considerations



**Mohammad Khodayarifard, Reza Pourhosein, Shahla Pakdaman,
and Saeid Zandi**

Abstract In 2014, we collected more than 3000 drawings of God in Iran. Here we present the conditions for this collection and the results derived from it. We interpret our findings from the perspective of developmental psychology, and discuss them in terms of social, cultural, and contextual factors (media, formal and informal education). We consider God representation with regard to Iranian-Islamic culture. Additionally, we make a brief comparison between our findings, drawn from participants in Iran, and the findings of studies conducted in Western cultures. Finally, limitations of the study and future research directions are critically discussed.

Keywords Culture · Developmental psychology · God representation · Religious development · Psychology of religion

Research indicates that our understanding of the complexity and multidimensionality of children's concepts of God¹ is still developing (Dandarova-Robert et al., 2016; Khodayarifard et al., 2015). For a detailed review of literature on multidimensional factors affecting children's drawings of God (see Chap. 2, this volume).

¹Why the term *god* begins sometimes with an uppercase letter G, sometimes with a lowercase letter g, and why it appears sometimes in the singular and sometimes in the plural, is explained in the introductory chapter of this book (Chap. 1, this volume).

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At this point, most of the studies about children's drawings of God have been conducted in Western cultures, often in a specifically Christian context. To date there are almost no corresponding studies in Middle Eastern countries among Islamic cultures, such as the Shia Muslims of Iran. Iran is a Middle Eastern country with a population of around 81,672,300 people (2018 estimate). Persian is the formal language in Iran; however, the Azerbaijani language (Azeri Turkish), Kurdish, Luri, Balochi, and Mazanderani are also spoken informally. Ninety eight percent of Iranians are adherents of Islam (Shi'a 89%, Sunni 9%); Iranian Sunni citizens are primarily concentrated in the provinces of Golestān, Kurdistan, and Baluchestan (Ahmadi et al., 2018). Shia Islam is the official religion of the country.

In this work, we report and discuss the results of a comprehensive study conducted in Iran. The research explores the representation of God in the drawings of Iranian children, and the factors affecting this representation. The investigation addresses the following research questions:

1. How do Iranian children draw God?
2. How is the gender of Iranian children related to their representation of God?
3. How does the age of Iranian children affect their drawing of God?
4. How do culture and social environment influence Iranian children's representation of God?
5. How do demographic factors affect the representation's gender (if gender is applicable to drawing)?

Method

Population and Sample

Iranian male and female school students, 7–14 years old, were selected as a target population. We used the cluster sampling method to select the counties, and then selected schools randomly in each county, taking into account three variables: gender (male, female), age range (7–8, 9–10, 11–12, 13–14), and county (Tehran, Savojbolagh, Sanandaj, Sari, Neyriz, and Tabriz). Tehran is the capital and the largest metropolitan area in Iran. In Tehran, most people speak Persian and adhere to the tenets of Shia Islam. Savojbolagh is a county in Alborz Province in which most people self-identify as Shia Muslim and speak in both Persian and Azerbaijani. Sanandaj is a county in the Kurdistan Province of Iran and it has grown to become a centre of Kurdish culture. In Sanandaj, most people self-identify as Sunni Muslim and speak in Kurdish. Sari is the capital of Mazandaran Province; Mazanderani is the language informally spoken there, and most people follow the tenets of Shia Islam. Neyriz is a county in Fars Province in which most people speak in Persian and adhere to Shia Islam. Tabriz is a county in East Azerbaijan Province of Iran and it is a centre of Azerbaijani culture. Azerbaijani is the language spoken in Tabriz and most of the people self-identify as Shia Muslim.

Initially, 3025 subjects were selected for the study. We removed from consideration the subjects whose data were incomplete and/or those whose data indicated that they misunderstood the task ($n = 276$). Of these, 252 belonged to schools for girls in Sanandaj; instruction was not formulated there in the same manner as it was at the other schools where the study was conducted. We retained 2749 drawings for further analysis. Table 12.1 demonstrates the number of participants by age, gender, and geographic-cultural region.

Instruments

The participants were provided with supplies for drawing (sheets of A4 blank paper, 12 coloured pencils, an eraser, and a pencil sharpener). On the front of the paper, each participant drew his/her representation of god. On the back of the paper, each participant provided additional information (name, gender, date, name of their school, a restatement of the instructions given by researcher, and a description of their own drawing).

Procedure

We conducted the study in five stages:

Table 12.1 Number of participants by age, gender, and county

Age	Gender	Tehran	Sari	Neyriz	Savojbolagh	Tabriz	Sanandaj	Total
7–8	male	49	65	62	63	60	63	362
	female	62	63	62	65	62	–	314
	total	111	128	124	128	122	63	676
9–10	male	64	65	70	63	64	61	387
	female	62	63	61	65	62	–	313
	total	126	128	131	128	126	61	700
11–12	male	60	65	64	64	62	62	377
	female	63	65	61	64	63	–	316
	total	123	130	125	128	125	62	693
13–14	male	64	64	51	63	63	62	367
	female	62	63	59	66	63	–	313
	total	126	127	110	129	126	62	680
total	male	237	259	247	253	249	248	1493
	female	249	254	243	260	250	–	1256
	total	486	513	490	513	499	248	2749

1. **Obtaining Permissions.** After delivering a written application to the Ministry of Education and its branches in target counties, we obtained formal permission for conducting research in the schools.
2. **Data Collection.** Each participant was seated on a separate bench so as to avoid looking into their classmates' drawings. Then, they were given the aforementioned paper. First, the children wrote their name, gender, and age (date/month/year), and also the current date (date/month/year) and the name of the school. Then, they were asked: "Have you ever heard the word God?" Subsequently, they were instructed to close their eyes, imagine God and draw it (they were allowed 50 min of time). The researcher asked the children not to speak aloud and to raise their hand if they had any questions so that they could be answered individually. Next, the children were asked to provide a written description of the required task and their own drawings. Working with 7–8 years old children and those unable to write, the researchers interviewed each child and recorded the answers. The researcher examined the child's drawing and the description and then collected them; if something was not clear in drawing and/or description, s/he asked the child to clarify it.

For the data collection stage, only psychologists or counsellors with a master's degree were employed. In every county, at least two researchers (one male and one female) were responsible for data collection. The principal investigator trained all members of the data collection team in two instructional sessions.

3. **Identification Coding.** To organize the database, we assigned a unique identification code to each drawing and its description. For more information on the coding process, please see Chap. 18, this volume.
4. **Translating and Digitizing the Drawings and Uploading Them to the Database.** For more information on the process of this stage, please see Chap. 18, this volume.
5. **Data Analysis.** This stage included four steps:
 - 5.1. *Recruiting and Training the Analysts.* For the first analysis, the qualitative analysts included nine (six female, three male) psychologists who were trained by an associate professor of child psychology. In addition, we recruited a Ph. D. level psychologist—an expert in statistics—to assist with statistical analysis. Six briefing and problem-solving sessions were held in the process of data analysis in order to achieve inter-rater reliability and concordance.
 - 5.2. *Pilot Study of 240 Drawings.* For an initial exploratory qualitative analysis, we randomly selected a subsample of 240 drawings from the six counties (Khodayarifard et al., 2015). Then, members of the research team checked both the children's drawings and their statements on the back of the drawing paper. Using the thematic analysis method, the God representations were labelled with codes and then the similar codes were categorized and thematised. The analysis generated ten initial themes:

1. Blank
2. Celestial being

3. Islamic objects
4. Islamic rituals
5. Anthropomorphic
6. Prophet or imam
7. Non-anthropomorphic living being
8. God's blessings
9. Akhirah
10. Light

5.3. *Initial Analysis of 2749 Drawings.* This step was carried out to make sure that all the drawings could be assigned into one of the ten themes extracted from the pilot study. In this step, due to exploring three new themes, the number of themes increased to 13. The three added themes were as follows:

11. Spirit
12. Ambiversion (abstract-concrete): When the description represents that it is not possible to draw God but His actions can be demonstrated. This may indicate objectivity and abstraction simultaneously (Ex: Child has written something like "I'm not able to draw God", but s/he has drawn God's works or some affairs related to Him).
13. None

5.4. *Main Analysis of 2749 Drawings.* In this step, we conducted the main coding and categorizing process, based on the 13 themes generated in the initial analysis. To assure proper coding and categorizing, the child's statements on the back of the paper were always scrutinized and compared with the drawing. There were some cases in which two or three codes and themes could have been assigned to a given drawing; however, the analysts chose only one code (theme) that was most representative of the child's drawing and statements. At this point, we defined two additional, combinative themes according to the following criteria:

14. Human (anthropomorphic + prophet or imam)
15. Abstract (blank + light + spirit)

5.5. *Additional Analyses.* We examined the effects of children's gender, age and county of residence on their representations of God. In addition, we analysed the gender of the representation (if applicable); we were only able to do this on certain categories (celestial being, anthropomorphic, and prophet or imam) and not all drawings in these categories provided enough information to make definitive decisions. The researchers made the gender determination through factors such as clothing, Hijab, hair, nails, jewellery, and facial features (beard, moustache, makeup, etc.), because the children had not been asked for this information during the data collection. It was a time-consuming process due to the large amount of data available. The raters were trained in common briefing sessions and were asked to determine which of these set of factors were more dominant in the drawing. Any con-

troversial or ambivalent representations were discussed among the group and if we were not able to reach consensus, we excluded the drawing from this analysis.

- 5.6. *Inter-Rater Reliability.* In order to determine inter-rater agreement and internal validity, we calculated a Kappa coefficient. Kappa is a correlation statistic used for determining the agreement between two or more raters when the measurement scale is categorical. We selected 240 drawings from across the various counties, both genders, and all age groups and assessed them again by pairs of analysts (different pairings than those used in the initial analysis). The Kappa coefficient was then calculated at $K = 0.78$, which guarantees an inter-rater reliability.

Data Analysis Methods

First, we explored the drawings using the qualitative theme analysis described above. In addition, we employed descriptive statistics (absolute and relative frequency) and chi-squared tests (Table 12.2).

Ethical Considerations

We explained the nature of the project to the participants; telling them about the international scope of the study and the activities that would be involved, namely drawing and answering questions. Children could decline to participate in research before it began, or could withdraw from any part of the research at any time. Children could decline to complete the drawing task for any reason. In such a case, the child wrote his/her reason for declining on the provided sheet of paper. To protect confidentiality, only the first name of the child was required.

Results

In this section, we report the results of the study. First, we look at the total and relative frequency of each theme. We explore the effect of the participant's gender on the theme of the drawing, then, the effect of the participant's age on the theme of the drawing. Next, we consider the impact of the location of the participant (county) on the drawing. Finally, we focus on the gender ascribed to the human based God figures in the drawings by the Iranian participants. It is important to note that because we excluded the girls' schools of Sanandaj due to improper administration; we also excluded the boys' schools of Sanandaj for the sake of approximate gender equality and reliable subsequent conclusions. However, we did include the boys' schools of

Table 12.2 Themes extracted from drawings of god

No.	Themes	Sample codes
1	Blank	Child has left the paper blank; child has written statements like “it is not possible to draw God” or “God is not seen” on the paper
2	Celestial being	Angels
3	Islamic objects	Kaaba ^a ; mosque; holy Quran; turba ^b ; misbaha ^c ; Alam ^d
4	Islamic rituals	Establishing Salat ^e ; Mourning of Muharam ^f
5	Anthropomorphic	Ordinary human being
6	Prophet or imam	Hazrat Muhammad ^g (PBUH); Imam Ali ^h
7	Non-anthropomorphic living being	Snake; shark
8	God’s blessings	Nature; food; tree; stone; star; house
9	Akhirah ⁱ	Heaven; hell; As-Sirat ^j
10	Light	Illumination; sun; colour; rainbow
11	Spirit	figure of a spirit; blowing spirit into body ^k ; spirit in heart or brain ^l
12	Ambiversion (abstract-concrete)	Child has written something like “I’m not able to draw God” on the back of the paper, but s/he has drawn God’s works or some affairs related to Him
13	None	Miscellaneous or unspecified drawings

^aA building at the centre of Islam’s most important mosque, Al-Masjid Al-Harām (The Sacred Mosque), in the Hejazi city of Mecca, Saudi Arabia, is the most sacred site in Islam. It is considered by Muslims to be the Bayt Allāh (House of God)

^bShi’as put their foreheads on a piece of clay (“dust”) during prayers, which they call “turba”

^cA misbaha is a string of beads which is often used by Muslims to keep track of counting in tasbih

^dOne of the most important and symbolic objects used at mourning rituals; it is the ensign of Husayn ibn Ali in the Battle of Karbala and a sign of truth and bravery

^eSalat is one of the Five Pillars in the faith of Islam and an obligatory religious duty for every Muslim. It is a physical, mental, and spiritual act of worship that is observed five times every day at prescribed times

^fShia Muslims around the world every year commemorate the mourning custom of death of Husayn ibn Ali, his family and his follower in months of Muharram and Safar. They entitle him “Prince of Martyrs” and know him as a spiritual and political saviour

^gMuhammad was the founder of Islam. According to Islamic doctrine, he was a prophet, sent to present and confirm the monotheistic teachings preached previously by Adam, Abraham, Moses, Jesus, and other prophets

^hAli was the cousin and son-in-law of Muhammad, and is regarded as the rightful immediate successor to Muhammad as an imam by Shia Muslims

ⁱAkhirah is an Islamic term referring to the afterlife

^jAs-Sirāt is, according to Islam, the hair-narrow bridge which every human must pass on the Yawm ad-Din (“Day of the Way of Life” i.e. Day of Judgment) to enter Paradise

^kSome Iranian children produced drawings that imply God’s spirit being blown into Adam’s corpus, referring the story of the creation of Adam in Quran. “When your Lord said to the angels; Surely I am going to create a mortal from dust: So when I have made him complete and breathed into him of My spirit, then fall down making obeisance to him” (38:71–72)

^lSome Iranian children produced drawings in which they drew themselves and then typed the words God or Allah on their brain or heart, implying that God is not physical, but a spirit in one’s brain or heart. This may be affected by a well-known Quranic verse: “It was We Who created man, and We know what dark suggestions his soul makes to him: for We are nearer to him than (his) jugular vein.” (50:16). Islamic positive view heavily relies on the intimate and close relationship between human and God (Khodayarifard, Ghobari-Bonab, Akbari-Zardkhaneh, Zandi, Zamanpour, and Derakhshan, 2016b)

Table 12.3 Number of drawings by theme of the drawing

Theme	Number of drawings	Percentage
Light	455	18.2
God's blessings	432	17.3
prophet or imam	354	14.2
Celestial being	352	14.1
Blank	261	10.4
Islamic objects	164	6.6
Anthropomorphic	145	5.8
Spirit	134	5.4
Non-anthropomorphic living being	62	2.5
Islamic rituals	58	2.3
Ambiversion	45	1.8
Akhirah	34	1.4
None	5	0.2
Total	2501	100

Sanandaj when assessing the impact of location (county) on boys' drawings in order to reflect the findings obtained from varieties of cultures.

Table 12.3 shows the number of drawings by the theme of the drawing.

According to Table 12.3, light is the most frequent theme drawn by Iranian children (18.2%). God's blessings, prophet or imam, celestial being, blank, Islamic objects, anthropomorphic, and spirit come next, respectively. Akhirah (1.4%) is the theme used least frequently.

Children's Gender Effect To investigate the effects of a participant's gender on their drawing of God, we calculated the frequency of all categories with regard to gender and made comparisons through chi-squared tests (see Table 12.4). In addition to the mentioned 13 categories, the two combinative themes, human (anthropomorphic + prophet or imam) and abstract (blank + light + spirit), were also calculated.

According to Table 12.4, there is a significant difference between girls and boys with regard to the following themes: light, prophet or imam, blank, Islamic objects, spirit, Islamic rituals, human, and abstract. It seems that the boys draw God in four themes (light, Islamic objects, spirit, and abstract) significantly more frequently than the girls do. On the other hand, girls draw God in four themes (prophet or imam, blank, Islamic rituals, and human) significantly more often than the boys do.

Children's Age Effect To investigate the effects of participant's age on the drawing of God, the frequency of all categories were calculated with regard to age. Significant differences were examined through chi-squared tests (see Table 12.5).

According to Table 12.5, there is a significant difference between age ranges on all themes except non-anthropomorphic living being, Islamic rituals, and Akhirah. According to Table 12.5, an increase in the age of participants results in increase in

Table 12.4 Number (and percent) of drawings by theme and by gender of participant

Theme	Number (and percent)		Chi-squared test		
	Male	Female	Value	df	Sig.
Light	266 (21.4%)	189 (15%)	16.76	1	0.001
God's blessings	212 (17%)	220 (17.5%)	0.1	1	0.74
Prophet or imam	143 (11.5%)	211 (16.8%)	14.52	1	0.001
Celestial being	168 (13.5%)	184 (14.6%)	0.7	1	0.4
Blank	106 (8.5%)	155 (12.3%)	9.8	1	0.002
Islamic objects	109 (8.8%)	55 (4.4%)	19.54	1	0.001
Anthropomorphic	72 (5.8%)	73 (5.8%)	0.001	1	0.97
Spirit	81 (6.5%)	53 (4.2%)	6.4	1	0.01
Non-anthropomorphic living being	28 (2.2%)	34 (2.7%)	0.54	1	0.46
Islamic rituals	20 (1.6%)	38 (3%)	5.55	1	0.02
Ambiversion	25 (2%)	20 (1.6%)	0.61	1	0.43
Akhirah	13 (1%)	21 (1.7%)	1.83	1	0.17
None	2 (0.2%)	3 (0.2%)	0.19	1	0.66
Human	215 (17.3%)	284 (22.6%)	11.17	1	0.001
Abstract	453 (36.4%)	397 (31.6%)	6.36	1	0.01

the frequency of more abstract themes, and a decrease in the frequency of the themes indicating a physical and concrete God.

Next, all themes except five (ambiversion, none, spirit, light, and blank) were categorized as *concrete* while spirit, light, and blank were categorized as *abstract*, and ultimately, the analysis was carried out once more (see Table 12.6). It is worth noting that we made this categorization according to the criterion of whether the drawing refers to a (would-be) physical, touchable, and sensible object or one with partial possibility of objectification; however, this categorization may not be clear-cut and exhaustive.

According to Table 12.6, increase in participant's age leads to decrease in concrete depictions, and increase in abstract representations. The difference between age ranges is significant. As children get older, they tend to draw less concrete and more abstract drawings of God.

Table 12.5 Number of drawings by theme and by age of participant

Theme	Frequency				Chi-squared test		
	7–8	9–10	11–12	13–14	Value	df	Sig.
Light	91	117	141	106	12.38	3	0.006
God's blessings	70	87	152	123	44.18	3	0.001
Prophet or imam	133	133	59	29	109.5	3	0.001
Celestial being	88	131	76	57	36	3	0.001
Blank	30	36	63	132	115	3	0.001
Islamic objects	61	49	36	18	27	3	0.001
Anthropomorphic	57	35	26	27	19.43	3	0.001
Spirit	33	11	21	69	62.9	3	0.001
Non-anthropomorphic living being	20	13	11	18	4	3	0.26
Islamic rituals	13	17	17	11	1.6	3	0.65
Ambiversion	7	5	15	18	10.76	3	0.01
Akhirah	7	5	13	9	4.15	3	0.24
None	3	0	1	1	3.95	3	0.26
Human	190	168	85	56	125	3	0.001
Abstract	154	164	225	307	109	3	0.001

Table 12.6 Frequency of general categories (abstract and concrete) by age of participant

General category	Frequency				Chi-squared test		
	7–8	9–10	11–12	13–14	Value	df	Sig.
Concrete	449	470	390	292	124.6	3	0.001
Abstract	154	164	225	307	109	3	0.001

Differences Between Counties To investigate the effects of participant's cultural background on the drawings of God, the frequency of all themes were calculated with regard to county and the comparisons were made through chi-squared tests (see Table 12.7). This time we performed the analysis with all six counties; however, we included only the boys, as explained above.

According to Table 12.7, there is a significant difference between counties on almost all of the themes. God's blessings was the theme identified most frequently in Neyriz and Sanandaj. In Tehran and Sari, light was the theme most frequently produced by boys. In Tabriz, the theme prophet or imam occurred most often. In Savojbolagh, boys produced the theme Islamic objects most frequently. Regarding the combinative themes, boys in Sanandaj produced the least number of drawings identified as abstract, compared to boys in other counties. Boys in Tabriz produced the highest number of drawings identified as human.

Gender of Representation by Gender of Participant To investigate the effects of the participant's gender on the gender of the representation, we used chi-squared tests in order to perform calculations based on the number of drawings to which we were able to attribute gender and the gender of the corresponding participant (see

Table 12.7 Frequency of themes by county (boys’ drawings only)

Theme	Frequency						Value		
	Tehran	Sari	Neyriz	Savojbolagh	Tabriz	Sanandaj	Value	df	Sig.
Light	45	84	65	37	35	13	77.44	5	0.001
God’s blessings	38	52	75	34	13	91	101	5	0.001
Prophet or imam	19	30	13	26	55	20	44.42	5	0.001
Celestial being	32	44	33	18	41	17	22.82	5	0.001
Blank	40	2	6	16	42	12	86	5	0.001
Islamic objects	21	4	19	53	12	75	139	5	0.001
Anthropomorphic	8	17	5	12	30	1	45.27	5	0.001
Spirit	10	10	10	45	6	1	93.66	5	0.001
Non-anthropomorphic living being	3	4	8	2	11	0	18.23	5	0.001
Islamic rituals	6	2	4	7	1	16	25.24	5	0.001
Ambiversion	9	8	8	0	0	2	21.16	5	0.001
Akhirah	5	2	1	2	3	0	7.38	5	0.14
None	1	0	0	1	0	0	4.1	5	0.53
Human	27	47	18	38	85	21	91	5	0.001
Abstract	95	96	81	98	83	26	68.38	5	0.001

Table 12.8 Gender of representation by gender of participant (frequency and percentage)

Gender of the participant	Gender of representation Frequency and percentage		Chi-squared test		
	Masculine	Feminine	Value	df	Sig.
Male	196 (84.5%)	36 (15.5%)	33.94	1	0.001
Female	195 (61.7%)	121 (38.3%)			
Total	391 (71.4%)	157 (28.6%)			

Table 12.8). We were able to attribute gender to only some of the drawings categorized as celestial being, anthropomorphic, and prophet or imam.

According to Table 12.8, there is a significant difference between boys and girls in terms of the gender of their representations. The human-based representations exhibit attributes of male gender in most cases. Overall, the children (male and female) tended to draw God as male; however, we learned specifically that boys are much more likely than girls are to draw God as a male figure.

Gender of Representation by Age of Participant To investigate the effects of the participant’s age on the gender of the representation, the frequency of all feminine and masculine representations was calculated as a percentage with regard to participant’s age and the comparisons were made through chi-squared tests (see Table 12.9). For this calculation, we considered only those drawings to which we could attribute

Table 12.9 Gender of representation by age of participant (frequency and percentage)

Age	Gender of representation Frequency and percentage		Chi-squared test		
	Masculine	Feminine	Value	df	Sig.
7–8	127 (71.3%)	51 (28.7%)	8.02	3	0.05
9–10	136 (65.7%)	71 (34.3%)			
11–12	77 (76.2%)	24 (23.8%)			
13–14	51 (82.3%)	11 (17.7%)			
Total	391 (71.4%)	157 (28.6%)			

gender. This process was applicable only to some of the drawings categorized as celestial being, anthropomorphic, and prophet or imam.

According to Table 12.9, there is a significant difference between children with different age ranges in terms of the gender of the representation of God. The children who drew God as female were predominantly younger children.

Gender of the Representation by County To investigate the effects of participants' environmental culture on the gender of the representation, we calculated the frequency of male and female representations as a percentage with regard to county and the comparisons were made through chi-squared tests (see Table 12.10). For this calculation, we considered only those drawings to which we could attribute gender; this process was applicable only to some of the drawings categorized as celestial being, anthropomorphic, and prophet or imam.

According to Table 12.10, there is a significant difference between children from different counties in terms of the drawn God's gender. We found that, in general, children draw God as a masculine figure more frequently than as a feminine figure. Yet, the children from Savojbolagh and Tabriz tend to draw God as masculine more frequently than the children of other counties do. The children from Sari and Tehran, by contrast, produced a greater quantity of feminine representations of God.

Discussion

The current research was part of a cross-cultural and comprehensive project, investigating representations of God in children's drawings. The Iranian collection, including almost 3025 drawings, is a large sample and may provide strong findings and reliable evidence.

Table 12.10 Gender of representation by county (frequency and percentage)

County	Gender of representation Frequency and percentage		Chi-squared test		
	Masculine	Feminine	Value	df	Sig.
Tehran	59 (70.2%)	25 (29.8%)	18.86	4	0.001
Sari	86 (58.9%)	60 (41.1%)			
Neyriz	71 (75.5%)	23 (24.5%)			
Savojbolagh	47 (85.5%)	8 (14.5%)			
Tabriz	128 (75.7%)	41 (24.3%)			
Total	391 (71.4%)	157 (28.6%)			

Children's Representations of God

To answer the first research question, the data (Table 12.3) suggests that most Iranian children draw God using the following themes: light (18.2%), God's blessings (17.3%), prophet or imam (14.2%), and celestial being (14.1%). The *God's-blessings* theme includes features such as nature, food, tree, stone, star, and home; the *light* theme includes features such as sun, anthropomorphic light, colour, and rainbow; the *prophet-or-imam* theme includes features such as Muhammad the Apostle of God (PBUH) and Alī bin Abī Ṭālib (PBUH); the *celestial being* theme includes images like angels. Drawing God in the form of light along with His blessings is consistent with Islamic teachings. In the Quran, Allah has been introduced as the creator and arranger of the universe. According to one teleological argument (as an argument for the existence of God), the natural world has a designer, whom we may know through his reflections in nature. Allah, as the unique, omnipotent, and only deity, has been frequently described by the word *light*, "Allah is the Light of the heavens and the earth" (35th verse of the 24th Sura of the Qur'an, Sura an-Nur). Our finding with regard to light suggests that the teleological argument and the verse that mentions light may have been well transmitted via textbooks and parents. Vahed-Dehkordi et al. (2015) have demonstrated that the figure of the sun in Iranian children's drawings represents safety, happiness, power, and a secure base. These may be the attributes that children look for in God. Eskandari (2003) argued that imagining God in the form of His blessings might imply a sense of gratitude.

The image of God that often occurs to Muslims is similar to that repeated in Qur'anic verses. In this view, God is self-existent; He is not an object, He has not been born, "He neither begets nor is born; nor is there to Him any equivalent" (112th Sura of the Qur'an, Sūrat al-Ikhlāṣ). God's existence is appreciated through His blessings and creatures; that is why Iranian children may represent God as a supernatural agent that is unseen. Recurrent appearance of the themes light and God's

blessings in the Iranian children's drawings may provide evidence for the powerful influence of religion and religious education as one of the cultural factors affecting God image and God concept. This interpretation may not be in line with some researchers in the field who place more emphasis on psychological factors in this process. For instance, Rizzuto (1979) argues that the primary representation of God, as drawn by children, is determined mainly by intrapsychic factors and it is only later that the influence of social and cultural factors comes into play. She believes that representations of God originate from a variety of sources. We agree that the psychological factors should not be taken for granted. Thus, we suggest that, in future research, we incorporate deep interviews with children and their parents.

Historically, the colour yellow, being closely associated with gold, represented eternity and indestructibility (Gage, 1999), both of which are thought to be divine attributes. Depiction of God as light may imply that children crave a powerful God that brings them a guiding light. Children achieved this effect by producing sun and yellow colours at the top of the paper as an attempt to portray God overseeing our activities and life from the heavens (see Chap. 8, this volume).

Representations of God in Terms of Child's Gender

To answer the second research question, the data show that a child's gender significantly affects the representation of God. We see this especially in representations that display themes of light, prophet or imam, blank, Islamic objects, spirit, and Islamic rituals (see Table 12.4). The themes of light, Islamic objects, and spirit appeared significantly more often in boys' drawings than in girls' drawings. Girls, more often than boys, depicted God using the themes of prophet or imam, blank, and Islamic rituals. This finding is partially similar to Kay and Ray (2004) who found that, generally, girls drew God as an archetypal figure: a smiling, bearded old man dressed in a tunic. This figure resembles graphic representations of the Prophet, or imams in Islam. Iranian girls' involvement with religious life (representing by themes prophet or imam, and Islamic rituals) is consistent with Lehmann's study who found that girls were more likely to employ concepts associated to their own life to describe God (Lehmann 2003, cited in Schaap-Jonker, 2008). In addition, this finding is consistent with Hilger and Dregelyi (2002) who, in their study, showed that boys emphasized God's power and were more likely to regard God as distant, while girls emphasized God's nearness and personal relatedness. The Iranian boys' production of the themes light and spirit and Iranian girls' production of the themes prophet or imam and Islamic rituals are consistent with the above described findings.

The data also demonstrate that Iranian boys' drawings of God are more abstract when compared to the drawings of Iranian girls. The drawings of female participants suggest that they have paid more attention to religious life by depicting prophet or imam and Islamic rituals. This may be explained in light of the different religious obligations for boys and girls. In the Shia Muslim tradition, girls are obliged to practice religious obligations at the age of nine, while boys are not expected to do so until the age of 15.

Children's Representations of God in Terms of Their Age

Findings of the study demonstrate that the effects of a child's age on God representation is significant on all themes except non-anthropomorphic living being, Islamic rituals, and Akhirah. The results show that an increase in a participant's age leads to a decrease in concrete depictions, and an increase in abstract representations (Table 12.6). Some other researchers (e.g. Tamm, 1996) have also found that an increase in the participant's age results in decrease in anthropomorphic representations of God. This is consistent with developmental psychology theories especially Piaget's ideas. The path from the concrete operational period to the formal operational period is achieved through biological and innate patterns, but contextual and implicit trainings may facilitate and promote this process. Several children in the Iranian sample have made statements such as "I cannot draw God" and "God is bigger than my paper" on the back of their drawings. These statements provide convincing evidence of abstract thinking. Astaneh (Chap. 15, this volume), provides more information in this respect. In Islamic teachings, direct and indirect religious education is provided according to a child's developmental level and age range. Thus, abstract and philosophical contents are not presented to children under 12 years of age because they comprehend God as concrete. However, it is worth noting that the abstract-labelled themes may have been produced as a mere reflection of education and media, and not solely as the result of the child's conceptualization. Therefore, a Piagetian clinical interview seems essential for proper understanding of the child's thinking.

Children's Representations of God in Terms of Their Social Environment

Findings also showed that the county in which the children reside, being representative of cultural, religious, and social background, has significantly affected the content of God representations (Table 12.7). The significant differences are seen in all themes. We may expect that the children's mental representations of God be affected by their social life style and subculture.

Our data revealed that children in Tabriz have composed more drawings of God that fit the prophet-or-imam theme. A socio-historical approach may help to interpret this finding. Tabriz is thought to be a centre of Azerbaijani culture. Most of the people in Tabriz are Shia Muslims of Azerbaijani ethnicity. Azerbaijani people's interest in, and love for, infallible imams are quite well-known in Iran. Azeri people have made more acquaintance with the household of the Apostle of God in recent centuries. Historically speaking, Azeri people have shown an inclination to follow great religious leaders (e.g. Abbas ibn Ali²) and national heroes (e.g. Sattar Khan,³

²Abbas ibn Ali, also known as Qamar Banī Hāshim, was a son of Imam Ali, the first imam of Shia Muslims. He is highly revered by Shia Muslims for his loyalty to his half-brother Husain, his respect for the Household of Muhammad, and his role in the Battle of Karbala.

³Sattar Khan, honorarily titled Sardār-e Melli (meaning National Commander) was a pivotal figure in the Iranian Constitutional Revolution and is considered a national hero. Sattar Khan was born in Tabriz, of Iranian Azerbaijani origin.

Baqir Khan,⁴ and Babak Khorramdin⁵) with great attention. This adult devotion to the Prophet or imams in Tabriz may have been reflected in the children's drawings too. The high frequency of the prophet-or-imam theme in the drawings from Tabriz results in an increase in production of human representations because this combinative theme (human = anthropomorphic + prophet or imam) appears in Tabrizi children's drawings more frequently than it does in the drawings from other counties.

We also analysed the county impact on boys' drawings (this time, including Sanandaj County as well). An important finding is observed in the Sanandaj data. We find that Sanandaji boys produced considerably fewer abstract representations of God than the boys in other counties. The theme God's blessings occurs most frequently in this county. In Sanandaj, Sunni Muslims are in the majority; however, we cannot decisively attribute the differences in representations of God to differences in the branches of Islam. In other words, although the frequency of abstract God-drawings in children from Sanandaj is lower than that in other counties, we have no reason to attribute this difference to their denomination (Sunni Islam) within Islam. Their educational system and textbooks are the same as those for children in other counties. However, an Iranian survey demonstrated that Sunni people report higher religious behaviours (with regard to the concrete side of religion) when compared with Shia people, who reported higher religious beliefs and affects (the abstract side of religion) (Khodayarifard et al., 2010).

We may also suppose the differences to originate from subculture, ethnic identity, and familial life style. Sanandaji people are Kurds and speak the Kurdish language. Navabakhsh and Geravand (2011) demonstrated that ethnic identity is the dominant influential force in Kurdish culture. Universal identity and national identity are respectively their second and third priorities. This shows that the Kurds are highly influenced by their ethnic identity. Kurds are famous for their dance in nature and their ethnic customs, and they may use these for objectifying themselves and acknowledging their ethnicity (Aziz, 2015). According to Mahmoudian and Nobakht (2010), attitudes and perspectives are certainly affected by ethnic and cultural differences. Nevertheless, the impact of ethnic identity on God representation remains a question. This gap of knowledge deserves more deliberate research and detailed ethnographies.

Another interesting finding of the current research is that the Islamic objects theme was the theme most frequently found in the drawings by boys' from Savojbolagh. They have drawn several Alams. The Alam procession on Ashura is much more common and customary in Alborz Province (of which Savojbolagh is a county) as compared to the other areas in Iran. The Mourning of Muharram⁶ and

⁴Bagher Khān, honorarily titled Sālār-e Melli (meaning National Chieftain), was one of the key figures in the Iranian Constitutional Revolution.

⁵Babak Khorramdin was one of the main Iranian revolutionary leaders of the Iranian Khorram-Dinān.

⁶The Mourning of Muharram (or Remembrance of Muharram or Muharram Observances) is a set of Islamic rituals. The event marks the anniversary of the Battle of Karbala, when Imam Hussein ibn Ali, the grandson of Muhammad, was killed by the forces of the second Umayyad caliph.

Muharram processions are strictly held in Savojbolagh. Therefore, it seems that the environmental atmosphere significantly affects children in their processes of developing God image and God concept.

Masculinity-Femininity of the Representation of God in Terms of Participant's Gender and Age

We also examined the effects of the participant's gender on the masculinity or femininity of their representation of God. Findings show that most Iranian children prefer to produce a masculine representation of God. Additionally, boys significantly tend to draw God as masculine more frequently than girls do. As children become older, they gradually tend to draw God as masculine rather than feminine. These findings are inconsistent with Riegel and Kaupp (2005), who found that God gender is balanced in children's drawings and when imbalance was observed, God was represented more often as feminine than as masculine.

Muslims' beliefs in God's attributes of might,⁷ wrath⁸ and power may suggest Allah to be a masculine figure. In a study in the United States, Heller (1988) showed that most boys emphasize a rational, thinking, and knowledgeable God, and they also assumed God to be an active agent; this perhaps suggests rather a largely male-oriented and father-like conception of God. The female participants, by contrast, described a deity characterized by aesthetic appeal, assigning femininity to God. McMillan (1982) observes that the aesthetic versus rational division is the primary socialization difference between women and men. However, Heller (1988) argues that the continuing changes of gender-role norms in societies may influence the God representations of future generations.

Kay and Ray (2004) have demonstrated that boys do not cross the gender line and draw feminine Gods; however, girls sometimes do draw masculine representations of God, primarily as a kind old man. Brandt et al. (2009) have reported a similar finding. The Japanese data, however, are inconsistent with this idea. They bring forth more dynamic aspects of culture and visual media. Wilson (1997) also supports the idea that the gender of the portrayed God is an imitation of animated characters. Children's identification with animated characters may predict the masculinity or femininity of the God representation. Generally, when children draw God as human being, they cannot take God's gender for granted (Khodayarifard et al., 2015). Dessart, Dandarova-Robert and Brandt (Chap. 5 this volume), raise and deal with this issue in-depth.

Family members accompanying him were killed or subjected to humiliation. The commemoration of this event during the yearly mourning season, with the Day of Ashura as the focal date, serves to define Shia communal identity.

⁷An example of might would be "When He wills a certain thing, He commands it 'Be!' and it is" (36:82).

⁸An example of wrath would be "Ask of the Children of Israel how many a clear revelation We gave them! He who altereth the grace of Allah after it hath come unto him (for him), lo! Allah is severe in punishment" (2:211).

Overall Conclusion

The Iranian study elucidates the role of demographic factors in development of God representation in children. In the study, some positive attempts have been made to strengthen and refine the findings. First, a large dataset was generated due to the selected sample size. Second, the analyses were carried out repeatedly to enhance validity and reliability. Finally, the inter-rater agreement was calculated.

The present work took into consideration the effects of children's age and developmental issues. Additionally, we explained the way children's gender functions in their representations of God. Moreover, we sought to understand the influence of culture and environment on the task of drawing God. The findings we have presented represent a sample of children from specific parts of the country of Iran; therefore, generalization of these findings to other populations should be done with care.

We discussed the fact that subcultural factors (e.g. ethnic identity) may be important in investigating the God representations. Heller (1988) argues that family members, functioning as role models, are the primary socializers of religious imagery; family effects are evident because parents transmit and interpret formal religious knowledge to their children. As Dandarova-Robert et al. (2016) emphasize, investigating children's drawings of God requires a multidimensional perspective; a paradigm which simultaneously considers age, gender, language, parenting styles, ethnic identity, attachment styles, media, oral literature, etc. Cultural differences depend on cultural elements (life style, history, art, religion, language, customs, etc.); therefore, we recommended that future research address these specific elements.

Understanding religious and/or spiritual concepts in children is a rather complex task since spirituality is an elusive concept in and of itself. In addition to adopting a multidimensional perspective, it seems necessary to utilize parallel instruments along with drawings. For example, carefully designed interviews, play-oriented activities, letters to God, and storytelling may assist researchers in specifying codes and categories more reliably; however, researchers have to be conservative with regard to the size of participant groups. It is important that the data collection occur in a spontaneous atmosphere—free of any researchers' suggestions regarding God—so as to help the participant's inner world emerge naturally and to prevent parrot-like renditions.

Theologians and those who are concerned with religious education and the promotion of religiosity (e.g., media and school staff) may benefit from such findings. They may do this in two ways: (1) They may assess their efforts to nurture religiosity and spirituality in children and see how children imagine God; (i.e., *how is the adult world responsible for children's thinking about God?*), and (2) They may apply the scientific findings in updating and upgrading the content and procedures they include in religious education. Children freely reveal their spiritual needs and desires in their drawings, and these needs and wishes can be sources of inspiration for the authorities in mosques, churches, schools, and media. Therefore, the study

of the religious imagination may contribute to novel direct and indirect methods for enhancing religiosity (Khodayarifard et al. 2016a, 2016b, 2019); *do we take children's religious conceptions and communications seriously enough?*

Moreover, child psychologists and developmental theorists will be interested in the imaginative realm of the child and in broadening the scientific borders in this field. The way children view transcendence may shape their thinking, feeling, and actions; thus, the content of deity representations may be used in formulating and refining psychological theories. Children's religious explorations, the effects of their creativity level in this process, and how their inner world is projected onto the transcendental world are tremendous subjects for research.

Acknowledgments We greatly appreciate the funding made by the University of Tehran. We also would like to thank Professor Pierre-Yves Brandt and Zahra Astaneh for having guided us in many ways, and Dr. Saeed Akbari-Zardkhaneh for his comments on the early proposal. We extend our sincere gratitude to Dr. Ruhollah Mansouri for his assistance with quantitative analyses. Additionally, hereby we acknowledge all assistants' valuable efforts for data collection and qualitative coding, without their help such a large data would have not been gathered and investigated.

Appendix: Samples of Themes and Examples of Masculine or Feminine God Representations

1. Blank (Fig. 12.1)
2. Celestial Being (Fig. 12.2)
3. Islamic Objects (Fig. 12.3)
4. Islamic Rituals (Fig. 12.4)
5. Anthropomorphic (Fig. 12.5)
6. Prophet or Imam (Fig. 12.6)
7. Non-Anthropomorphic Living Being (Fig. 12.7)
8. God's Blessings (Fig. 12.8)
9. Akhirah (Fig. 12.9)
10. Light (Fig. 12.10)
11. Spirit (Fig. 12.11)
12. Ambiversion (Abstract-Concrete) (Fig. 12.12a, b)
13. None (Fig. 12.13)
14. Sample Drawing Depicting a Masculine God (Fig. 12.14)
15. Sample Drawing Depicting a Feminine God (Fig. 12.15)

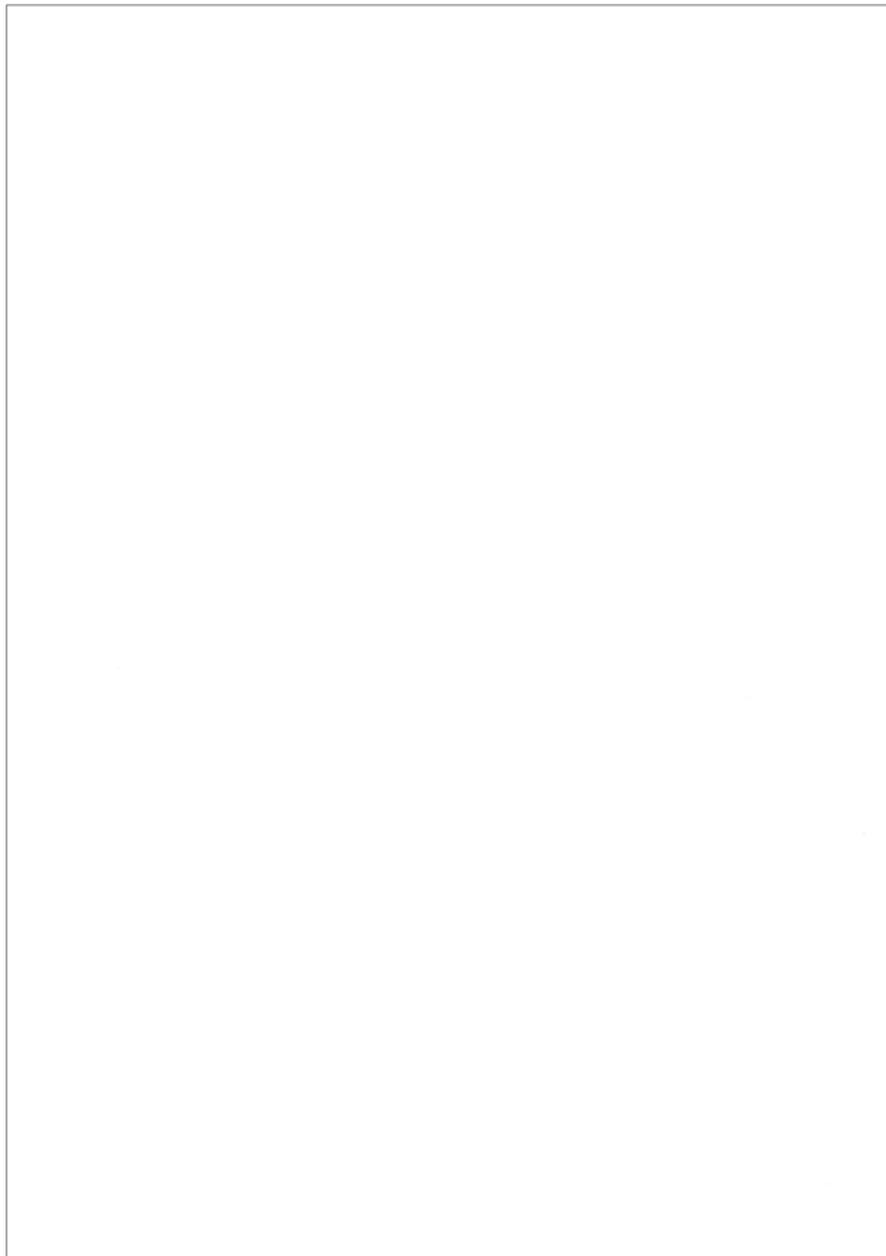


Fig. 12.1 Blank sheet (http://ark.dasch.swiss/ark:/72163/1/0105/WcDhTky5R_ys0=dMeRIr2A2.20181215T031308152Z)



Fig. 12.2 Celestial being (<http://ark.dasch.swiss/ark:/72163/1/0105/O1dI1bDcQPSrYfwFlkZjHg o.20181214T224140807Z>)

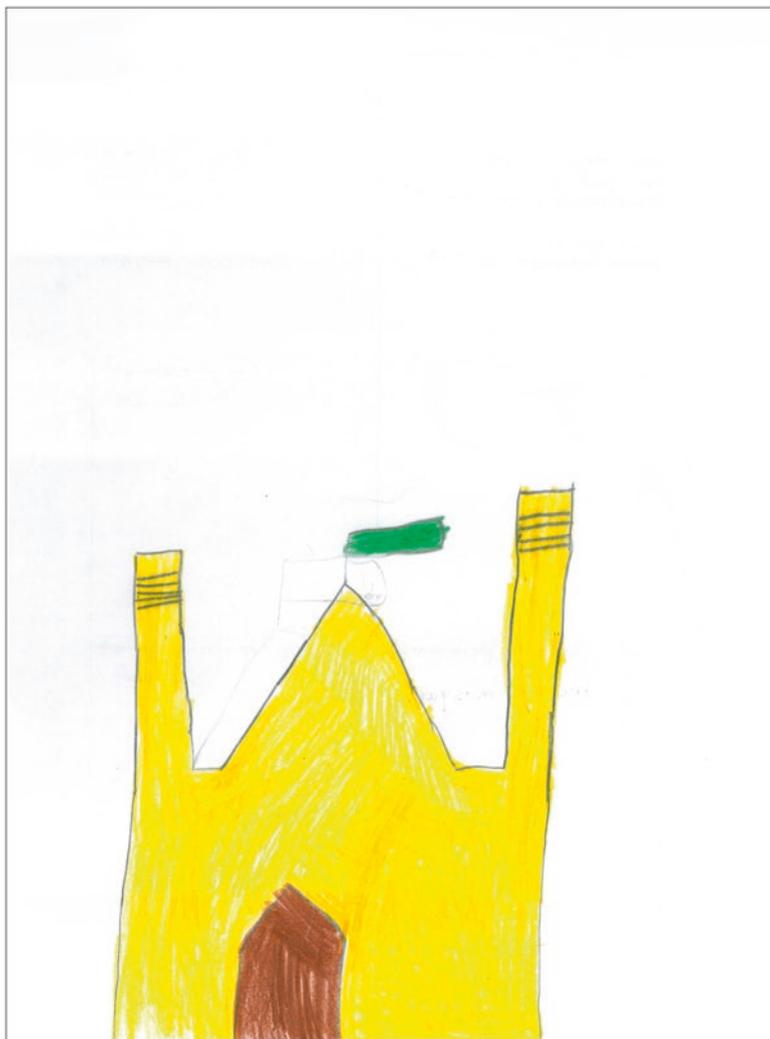


Fig. 12.3 Islamic object (http://ark.dasch.swiss/ark:/72163/1/0105/NvT82pqySfOx_PiNhM4P_ow8.20181214T223242101Z)

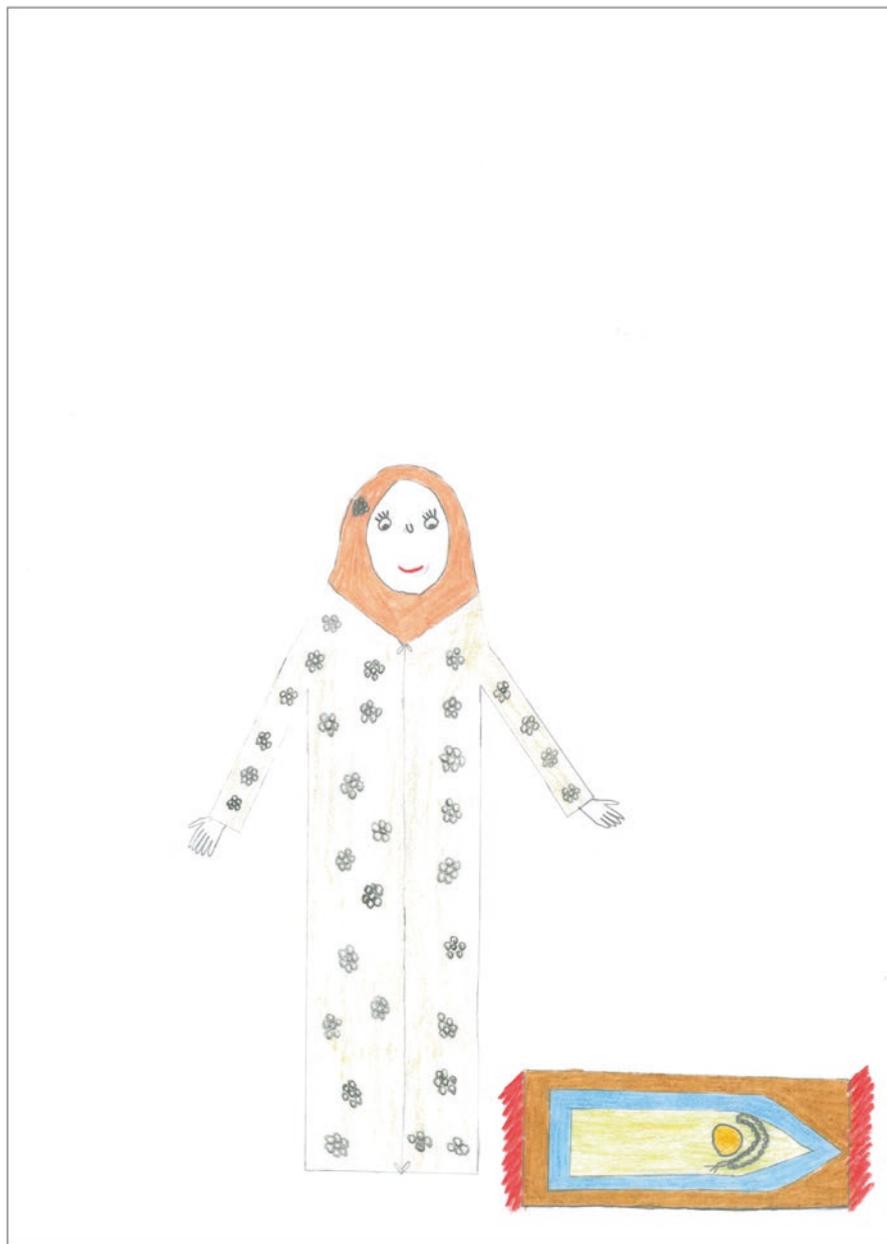


Fig. 12.4 Islamic rituals (<http://ark.dasch.swiss/ark:/72163/1/0105/koordn9UQqiM2z96sFfw5w7.20181214T20093128Z>)



Fig. 12.5 Anthropomorphic (http://ark.dasch.swiss/ark:/72163/1/0105/zKefyUkeRvm=Cc0ogyr0_QS.20181214T223408721Z)

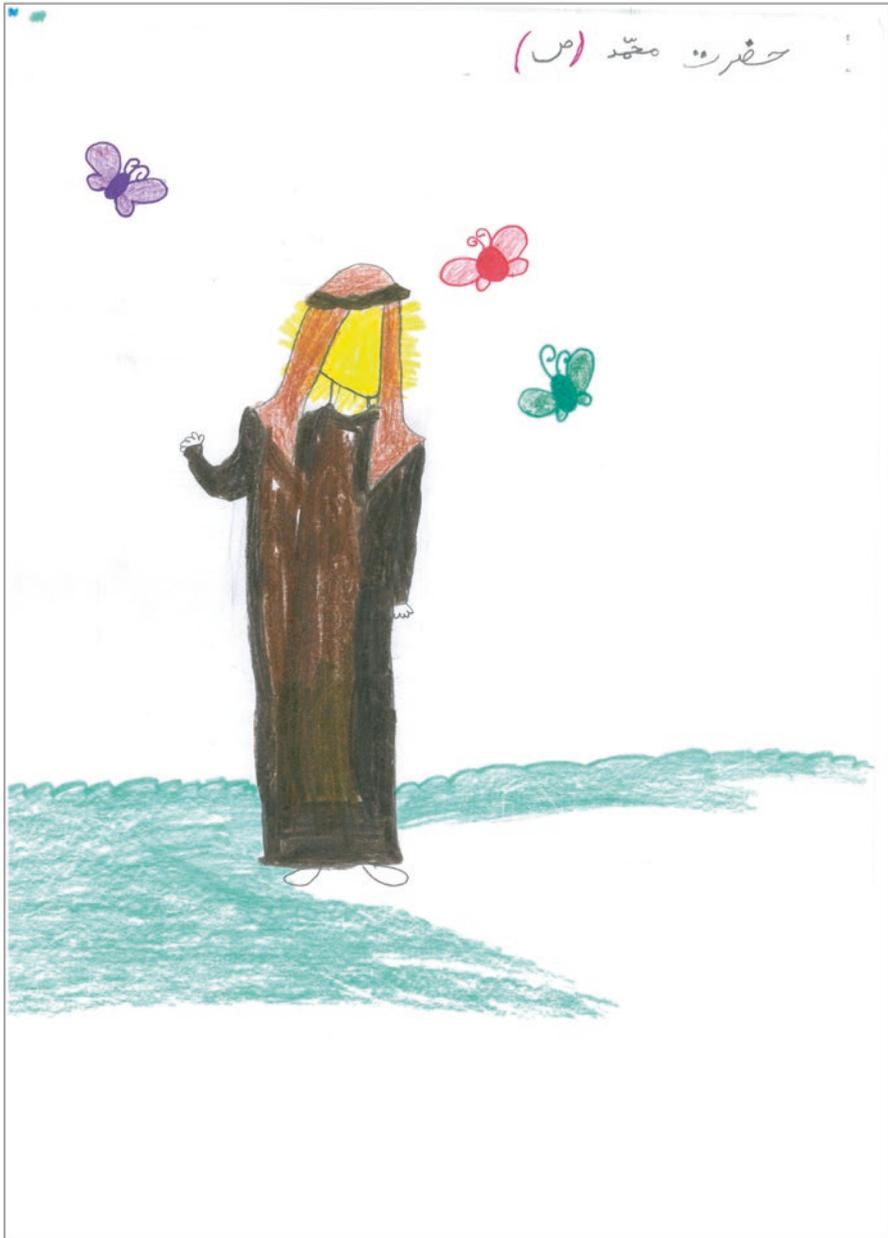


Fig. 12.6 Prophet or Imam (http://ark.dasch.swiss/ark:/72163/1/0105/gLSsXhe1Qaug_dBzYRoDsQ_.20181215T031330208Z)

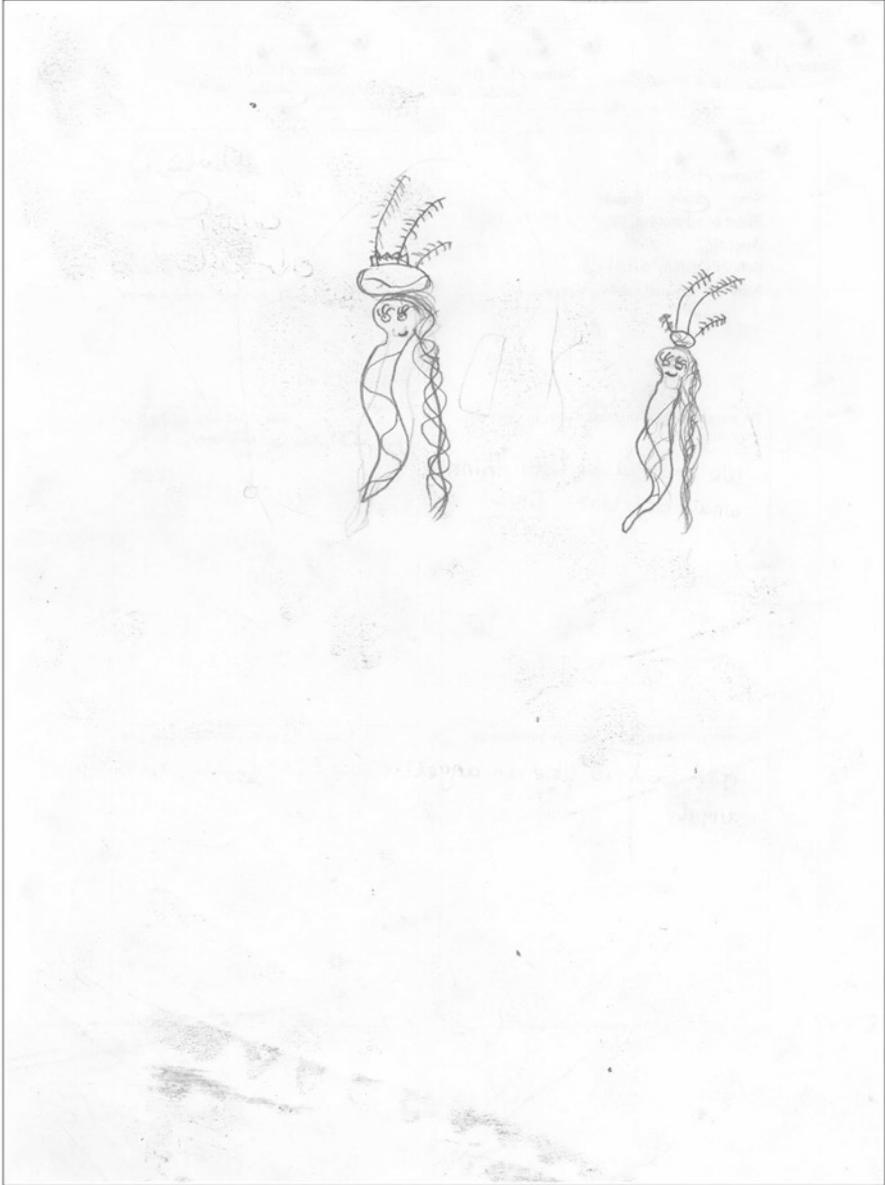


Fig. 12.7 Non-anthropomorphic living being (<http://ark.dasch.swiss/ark:/72163/1/0105/JKvbbvn eQmeFWBbgW1dgw.20181214T225327466Z>)



Fig. 12.8 God's blessings (<http://ark.dasch.swiss/ark:/72163/1/0105/gE5qCk0AS9WWz85eduIKWA8.20181214T23243502Z>)



Fig. 12.9 Akhirah (<http://ark.dasch.swiss/ark:/72163/1/0105/YzquXQKvSsaYdSaJBUKYWQ9.20181214T235942909Z>)

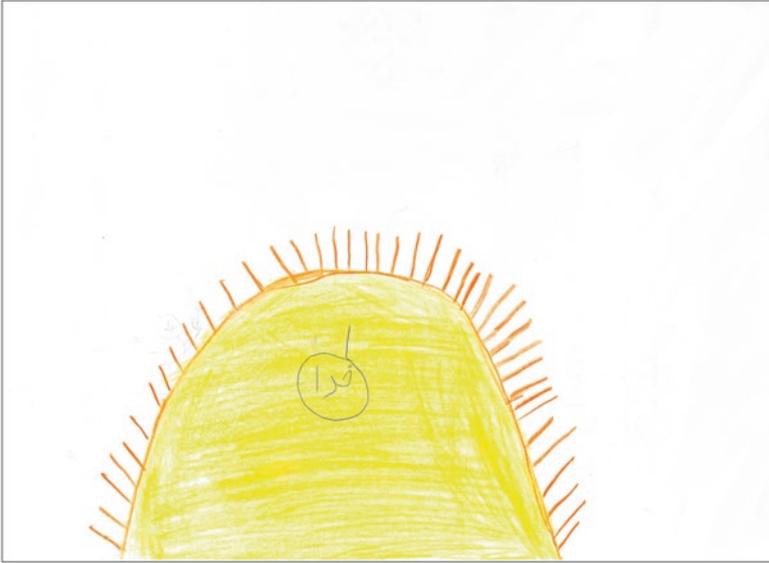


Fig. 12.10 Light (<http://ark.dasch.swiss/ark:/72163/1/0105/jW54oF5JQxC67vfHggulIA.X.20181214T223859655Z>)

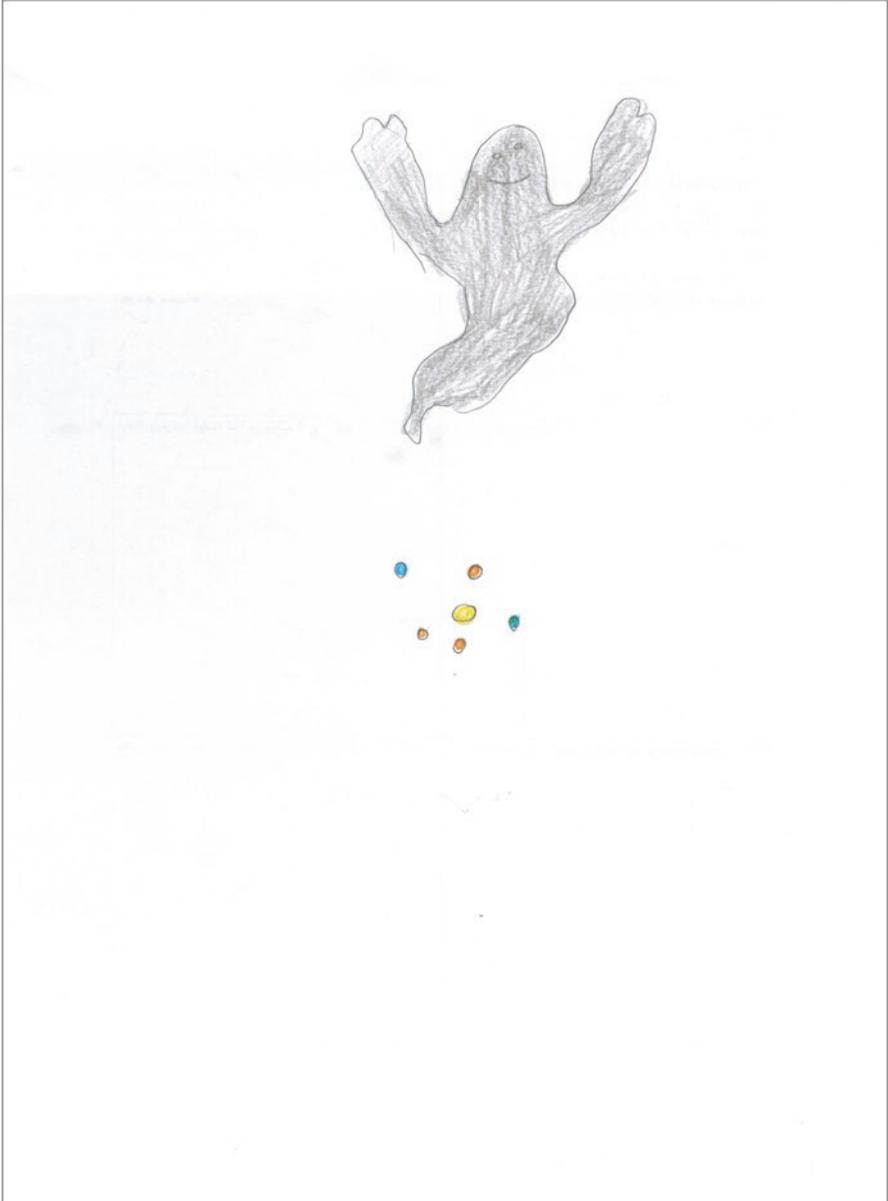


Fig. 12.11 Spirit (http://ark.dasch.swiss/ark:/72163/1/0105/vbBeUsyJSS2_NF_DK8ARYA.M.20181214T231031482Z)

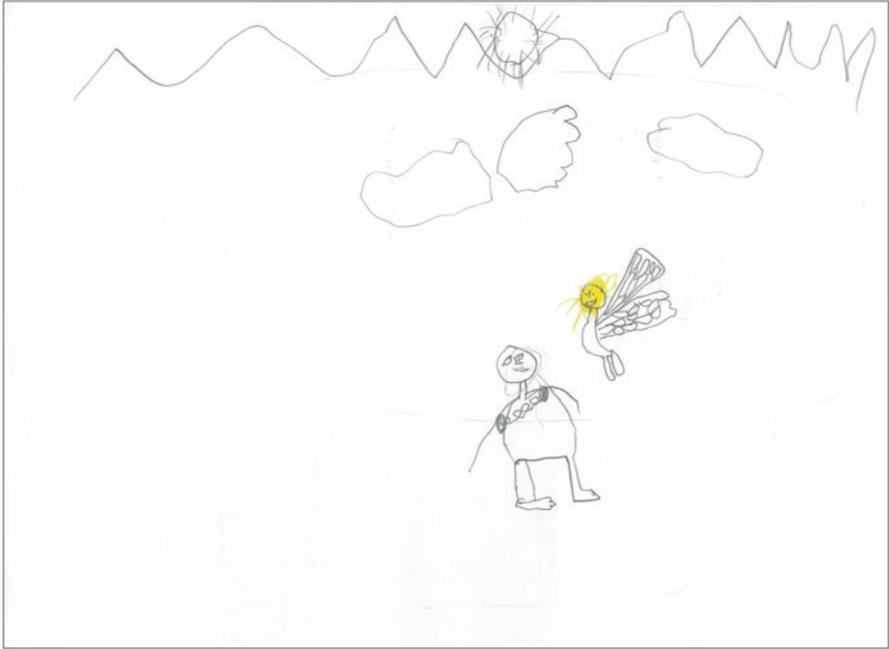


Fig. 12.12 (a) Ambiversion (abstract-concrete) front of paper (http://ark.dasch.swiss/ark:/72163/1/0105/WZkZrf1SmaB02teV_Gw4gO.20181214T223709737Z). (b) Ambiversion (abstract-concrete) back of paper

IR14-Sari-m-p shahed-8-Ahm-V

Code:	کد:
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<p>Name: <i>Ahmad reza</i></p> <p>Sex: <u>male</u> female</p> <p>Stage of education: <i>primary school</i></p> <p>Age: <i>8</i></p> <p>School's name: <i>shahed</i></p> <p>Name of city and region: <i>Sari-7</i></p>	<p>نام: <i>احمد رضا</i></p> <p>جنسیت: <u>دختر</u> (boy)</p> <p>مقطع تحصیلی: <i>ابتدایی</i></p> <p>سن: <i>8</i></p> <p>نام مدرسه: <i>شاهد</i></p> <p>نام شهر و منطقه: <i>ساری 7</i></p>
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<p>Do you remember what task I gave to you? To draw what?</p> <p style="text-align: center; font-size: 1.2em;">To draw about God.</p>	<p>چه کاری از شما خواسته شد؟ چی بکشید؟</p> <p style="text-align: center; font-size: 1.2em;">در مورد خدا بکشیم</p>
<p>Explain your drawing. What have you drawn?</p> <p style="text-align: center;">I drew Jibreil that he gave the message of God to the prophet. God does not have any form, but he is very great.</p>	<p>تفاسی خودت را توضیح بده و بگو چه چیزی کشیدی؟</p> <p style="text-align: center;">من جبرئیل را کشیدم که پیام خدا را به پیامبر می رساند خدا شکلی ندارد اما خیلی بزرگ است.</p>

Fig. 12.12 (continued)



Fig. 12.13 None (<http://ark.dasch.swiss/ark:/72163/1/0105/nsergbbeRYmmVBB=Hy37Zge.20181214T192243143Z>)

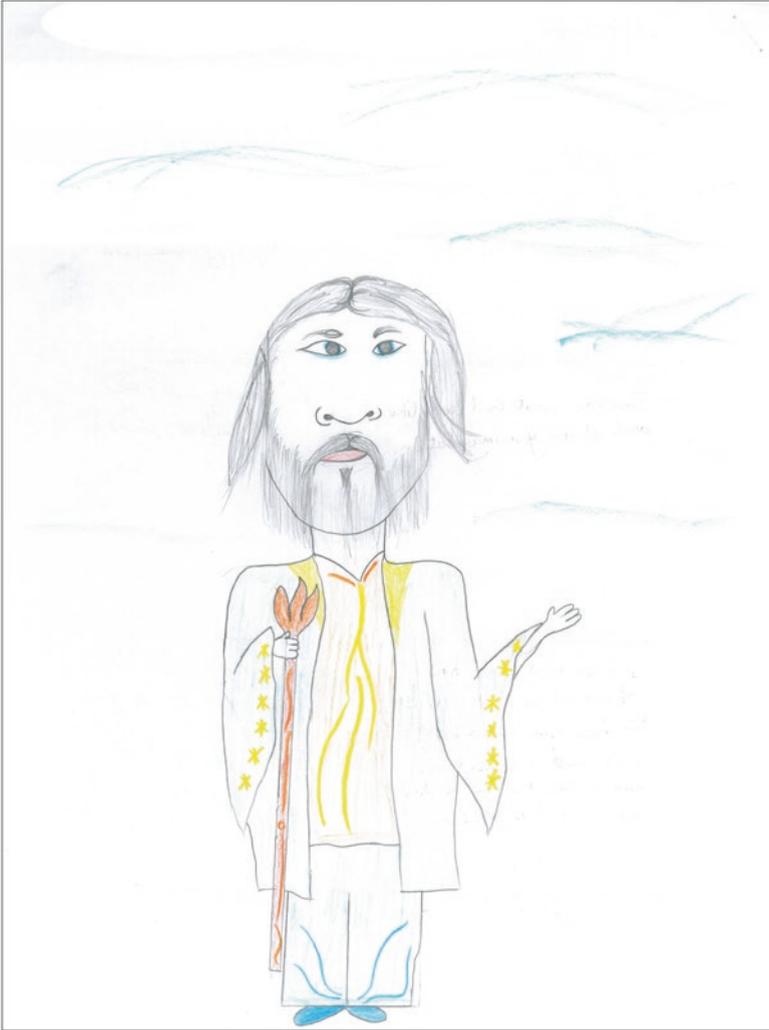


Fig. 12.14 Sample drawing depicting a masculine God (http://ark.dasch.swiss/ark:/72163/1/0105/D9HI4zBxSouWBGp_8VGKFQy.20181214T230315618Z)

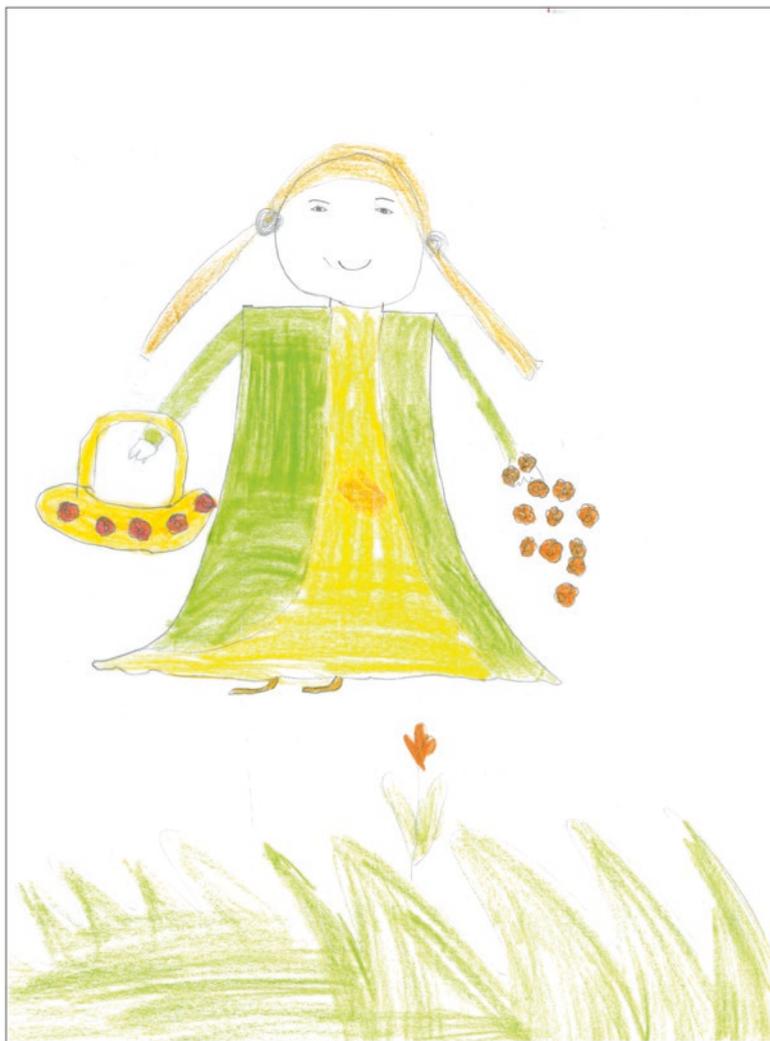


Fig. 12.15 Sample drawing depicting a feminine God (http://ark.dasch.swiss/ark:/72163/1/0105/098GXg0_TPe2N2=vEGGpVgK.20181214T221249001Z)

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Chapter 13

The First Discoveries and the Challenges of Researching Representations of Gods in a Continental Country Such as Brazil



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Esdras Guerreiro Vasconcellos, and Wellington Zangari

Abstract This chapter presents the results of the first research on representations of gods in Brazil, within the context of the *Children's Drawings of Gods* project. Brazil is a country of continental dimensions. It is also marked by a strong, predominantly Christian, religious scene. We collected data in the city of São Paulo, the largest and most urbanized city in the country, and in the Guajajara indigenous village in Maranhão, one of the less developed states. Our findings show a large number of representations influenced by Christianity (e.g., anthropomorphic representations of god). Anthropomorphic representations appear across the entire sample, but were more prevalent in the children of São Paulo. Among the Guajaras, there was a greater incidence of non-anthropomorphic representations of god, including animistic representations. The children of São Paulo employed a larger repertoire of representations than the Guajaras children did. The data presented in this exploratory study reflect a small, convenience sample; they do not represent the Brazilian population as a whole. We suggest that further studies with other groups, religions, and ages. Exploration of the representations of gods in Brazil is still in its infancy; the country promises to be a very fertile field for future research.

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A Brief History of the Collection of Drawings in Brazil

The story of the *Children's Drawings of Gods* project's¹ research in Brazil began during the conference of the International Association for the Psychology of Religion (IAPR), held in Lausanne, in August 2013. The way the religious experience of children in different countries was being researched and presented caught our attention at once.

Coming from a place where 90% of the population considers themselves religious, we were immediately interested in finding out if there were any available data drawn from the Brazilian population. We found that at that time there was no initiative related to research in Brazil, so, upon returning from the congress, we began conversations with the intention of joining the research project, and contributing samples that would represent the Brazilian religious panorama.

What initially caught our attention was the possibility of researching the representations of gods² in a country with two exceptional characteristics. First, Brazil has a large geographical extension; it is practically a continent. Second, the population of Brazil is very religious, with about 90% of the population self-identifying with one or more belief systems. The questions that guided our research were these: (1) Which belief system would prevailing representation in Brazil reflect? (2) How would Brazilian children be able to represent their perceptions and ideas about God?

In order to initiate our participation in this research, at the beginning of 2014 we signed a letter of confirmation of interests, confirming the partnership and officially initiating the process of adaptation, collection, and analysis of drawings from Brazil. Soon after, we received an authorization and the first files explaining how the research should be done.

A few months later, a research group linked to the project *Dessins de dieux* (DDD), also called *Children's Drawings of Gods*, was started, within the Psychology department of the Seventh-Day Adventist University of São Paulo. A group of students interested in the theme assembled to collect the first sample of drawings in Brazil.

Before we started the research itself, the students received basic training in Psychology of Religion. Our first task was to translate the documents we received

¹ The international project, *Drawings of Gods: A Multicultural and Interdisciplinary Approach to Children's Representations of Supernatural Agents*, is also known in French as *Dessins de dieux* (DDD), and referred to in this volume simply as *Children's Drawings of Gods*.

² Why the term *god* begins sometimes with an uppercase letter G, sometimes with a lowercase letter g, and why it appears sometimes in the singular and sometimes in the plural, is explained in the introductory chapter of this book (Chap. 1, this volume).

and adapt them to the Brazilian reality, being especially careful with the translation of some research terms, so that they did not lose their intended meaning. We met weekly for this purpose. The phase of translations and adaptations of the material lasted until August 2014. Once this process was finished, we carried out a test phase, when we in the research team applied the protocol to each other, in order to train for ourselves for the task.

The next step was to collect the drawings. The students collected drawings within the urban context of the city of São Paulo, and in the rural context of the state of Maranhão. The data collection lasted through the middle of 2015. Each researcher was responsible for contacting a school, presenting the research, and obtaining the necessary authorization to carry out the research.

Soon after, we began the process of data storage and processing that culminated in the first analysis concerning to the Brazilian reality, the subject of the present work.

The drawings were collected between 2014 and 2015. When we finished the collection process, we started the process of scanning and coding the images. This was one of the most complex phases of the whole process. First, because it took us a long time to arrive at a format and quality of scanned drawings that suited the necessary standards. We scanned our sample of drawings five times, until we deemed the results to be of sufficient quality for detailed analysis.

Unfortunately, it was necessary to discard a large number of drawings from the sample due to errors made in the collection process, especially regarding the instructions given to the children. The errors invalidated the drawings and we were forced to discard them.

While coding the drawings, we found another difficulty that we determined to be due to the differences between the Brazilian educational model and other educational models that had been previously encountered in the project. It became necessary to adapt the school codes to our situation. In some cases, the illiteracy of a portion of our sample also made it difficult for us to create complete records the data; however, we decided not to discard these drawings, since this difficulty arose from an issue pertaining to the participants—not from an error in the application of the research methods.

Finally, with the sample considered adequate, we did the initial analysis that reflects the first results of the Brazilian sample of children's drawings of God. However, before presenting the results, a brief description of the educational and religious reality of the Brazilian context is necessary, so that our results may be better understood.

The Particularities of the Brazilian Educational Context

The research in Brazil required some adaptations, since the Brazilian educational context presents a series of differences from the European educational systems, for which the research and analysis procedures were initially designed.

The main difference is that in Brazil, besides public schools, we have private schools that may be religious or not religious. Moreover, due to the fact that the level of education provided by the public schools is quite low, a very large number of students attend private schools.

Although Brazil adopts an educational policy according to which free education is a right of all children, and a duty of the State (as guaranteed by the articles 205 and 206 of the Federal Constitution of 1988, and the article 53 of the Statute of the Child and Adolescent of 1990), the Brazilian educational system is precarious and still far from guaranteeing these basic rights (BRASIL, 1988).

The difficulties range from structural problems such as lack of schools, schools without ideal conditions for education, to low salaries for educators, a lack of security for students, and a low level of quality in education. The 2017 census (BRASIL, 2017) revealed that 55% of 8-year-olds (approaching age nine) are not properly literate. Data published in 2016 (BRASIL, 2016) revealed that at the end of elementary school, after spending 9 years in school, around 40% of Brazilian students cannot even identify the main subject of a text after reading it.

This scenario, in which the government is not able to offer quality basic education, has contributed to the growth of private schools. The Basic Public Education system in Brazil has 48.6 million children and adolescents. Of these, only 13.9% have access to full-time education. About 8.9 million attend private schools. The country has 184,100 schools and 21.7% of them are private (BRASIL, 2017).

Brazil ranked 39th among the 40 countries that are part of the ranking that was prepared by the Organization for Economic Cooperation and Development (OECD). The ranking is based on the results of tests applied to students from the 5 to 9 year of the basic educational cycle (students who are between 11 and 15 years old, on average). The state of São Paulo occupies the first place in the Index of Opportunities of the Brazilian Education of 2017, while the Maranhão is in the penultimate position (IOEB, 2018).

Religion in Brazil

Besides the differences in the educational model, the peculiar characteristics of the religious background in Brazil, also must be taken into account for a better understanding of the research. Brazil is a country with multiple religious affiliations. The growth of evangelicals, the decrease in the percentage of Catholics, and the increase of those who claim to be “without religion” are the three main factors indicated by the last two published censuses (IBGE, 2010).

The Catholic hegemony that characterized the country until the early 1990s has been losing ground to the growth of Pentecostal and neo-Pentecostal evangelical variations, concentrated among the poorest, the least educated, and among the black population.

According to data from the last census (IBGE, 2010), 86.8% of Brazilians self-identify as Christian, of which 64.6% are Catholic and 22.2% are evangelical. Brazil

is still the largest Catholic nation in the world, but in the last decade the Catholic church has experienced the loss of about 1.7 million members, a reduction of 12.2%.

At the same time, the number of evangelical Christians has increased significantly. Since 1970, they have jumped from 5.2 to 22.2% of the total population. This increase is mainly due to the large number of Pentecostal churches that have arisen, especially in the outskirts of major cities.

The group of people who consider themselves non-religious in Brazil, corresponds to 8% of the population. About 5% of the population belong to minority religious groups: Spiritists, adherents to religions originating in Africa, Jews, Buddhists, and practitioners of indigenous religions.

In addition, many people, 44% of the population, claim to follow more than one religion, while 49% now self-identify with a different religious group than the one into which they were born. This religious plurality is maintained in smaller groups, such as that of the indigenous communities, for example.

The indigenous population is marked by a cultural diversity that goes from the various languages spoken by the groups to the various religions native to a particular area. It is curious to notice that the trends shown by the census in the general population, also appear in the indigenous population, and in some groups, such as the Indians of Mato Grosso do Sul, for example, the evangelical population already surpasses the Catholic population.

Brazilian religious syncretism points to a religious experience in which borders are not rigid, and one practice touches another. The Brazilian indigenous practices encountered Portuguese Catholic Christianity, into this mix came the African natives slaves, who combined their own beliefs and practices with hegemonic Catholicism and with indigenous beliefs. Although in the course of history, religions in Brazil have constituted themselves as independent groups, popular practice inherits the tolerance of the miscegenation, and still demonstrates a flexible and pluralistic Brazilian religiosity (Negrão, 2008).

The Collection of Drawings

The process of collecting the drawings took place in four different contexts. In public, private, and private religious schools in the city of São Paulo and its borders, and in the indigenous village of the Guajajaras, in Maranhão. The understanding of the Brazilian religious and educational contexts mentioned above is an important factor for the analysis of the samples.

The initial proposal was to collect 200 drawings; however, due to difficulties in the collection process that we will describe mentioned later, we finished with a total of 116 drawings that were considered suitable for analysis. Many of the drawings, especially those collected in the indigenous community, eventually had to be discarded because of the difficulty in transmitting the instructions properly to that population, because of the particular language they speak. Not all of the participants were able to understand the Portuguese language efficiently.

Table 13.1 Gender and age distribution of Brazilian drawings

Gender	N	%	São Paulo	%	Guajajaras	%
Male	71	61	49	60.5	22	63
Female	45	39	32	39.5	13	37
Total	116	100	81	100	35	100

Ages	N	%	São Paulo	%	Guajajaras	%
<7	6	5	6	7	0	0
7–8	20	17	7	9	13	37
9–11	44	38	31	38	13	37
12–14	34	29	30	37	4	12
>14	12	11	7	9	5	14
Total	116	100	81	100	35	100

Table 13.2 School distribution of Brazilians drawings

School	N	%
Religious	19	16
Private	11	10
Public	51	44
Guajajaras	35	30
Total	116	100

Table 13.3 Distribution of Brazilian drawings by religious affiliation

Religion	N	%	São Paulo	%	Guajajaras	%
Evangelical/protestant	73	63	45	55	28	80
Catholic	22	19	21	26	1	3
Other religion	12	10	12	15	0	0
No religion	9	8	3	4	6	17
Total	116	100	81	100	35	100

In general, we had a larger number of male subjects, as well as a greater concentration of subjects who were 9–14 years old in the sample coming from São Paulo. In the Guajajaras sample, we had a larger concentration of subjects who were 7–11 years old. Gender, age, and school distributions are shown in Tables 13.1 and 13.2.

Although the Brazilian population has a larger number of Catholics, our sample had a greater number of evangelicals. This is mainly due to two factors. The first one, as previously discussed, is related to the growth of the evangelical and Pentecostal churches of Protestant origin in the last decades. On the periphery of large cities in particular, such as São Paulo, where we collected most of the sample, there is a great number of evangelicals. Moreover, the part of the sample collected in the area of the Guajajaras tribe in Maranhão was heavily evangelized by missionaries in recent years, resulting in a large majority of followers among this group (see Table 13.3).

Thus, we can say that our sample can be divided into two sub-groups: drawings collected in the state of São Paulo, the most developed region of the country; and drawings collected in the Guajajaras of the state of Maranhão, one of the poorest regions of the country. Our analysis will take these differences into account and will be divided in order to obtain a more accurate picture of these different Brazilian environments.

Results

The first results related to the drawings of the Brazilian sample were qualitative in nature. We sought to list the main themes that appeared in the drawings and, based on the frequency of their appearances, we created the categories that later were used for the analysis. We also tried to use as basis for the creation of the categories, the document that we received with the analysis descriptors of the drawings. The analyses are reflected in the tables and graphics presented here (see Table 13.4).

The anthropomorphic representations of God appeared most frequently. We divided them into four sub-categories:

1. Anthropomorphic Representation of God in Heaven or Sky
2. Anthropomorphic Representation of God (Jesus or God) alone
3. Anthropomorphic Representation of God in Nature

Table 13.4 Distribution of drawing categories

Drawing category	Total number of drawings	%	Number from São Paulo	%	Number from Guajajaras	%
Anthropomorphic representation of God in heaven or sky	25	22	24	30	1	3
Anthropomorphic representation of God (Jesus or God) alone	26	22	12	15	14	40
Anthropomorphic representation of God in nature	12	10	9	11	3	8
Face	8	7	7	9	1	3
Nature	13	11	5	6	8	23
Human figure (s) in nature/ landscape	12	10	10	12	2	6
House(s)	4	3	1	1	3	8
Cross(es)	5	4	5	6	0	0
Biblical scenes	3	3	3	4	0	0
Boy or girl	2	2	2	2	0	0
Other	6	6	3	4	3	9
Total	116	100	81	100	35	100

4. Face

At this point, it is important to note that we differentiate the *Anthropomorphic-Representation-of-God-in-Nature* category, in which a divine entity appears in the midst of a landscape or nature, from another category in which human figures appear as families or children playing in the same context. For this specific group we created another category called: *Human Figure (s) In Nature or Landscape*.

In total, 71 drawings depicted anthropomorphic representations of God. If we take into account that 95 of the children surveyed self-identified as Christian, this fact is not surprising, because the biblical, Christian perspective states both that human beings were created in the image and likeness of God, and that God became incarnate as a human being in the person of Jesus Christ. Therefore, the Christian participants reproduce this belief by drawing a God figure with physical similarities to a human being. At the same time the Christian theological belief that God is located, or lives, in heaven was also evident in a significant number of drawings (25). Figures 13.1, 13.2, 13.3, and 13.4 provide examples of anthropomorphic representations of God.

The cross of Christ, the greatest symbol of Christianity, was represented in five drawings. Other biblical scenes appeared in an additional three drawings. If we add these categories to the others mentioned, we arrive at a total of 80 drawings that in some way depicted biblical, Christian theological notions. This figure aligns with the Brazilian religious context, in which, according to the last census (2010), 86.8% of the population calls itself Christian.



Fig. 13.1 An example of an anthropomorphic representation of God (http://ark.dasch.swiss/ark:/72163/1/0105/dVi31O=KSHS2u_Ny5Yh_ug3.20190122T114739746Z)



Fig. 13.2 An example of an anthropomorphic representation of God (http://ark.dasch.swiss/ark:/72163/1/0105/PwI3R4OfS2ml_0cr4x6dOgX.20190122T11430612Z)

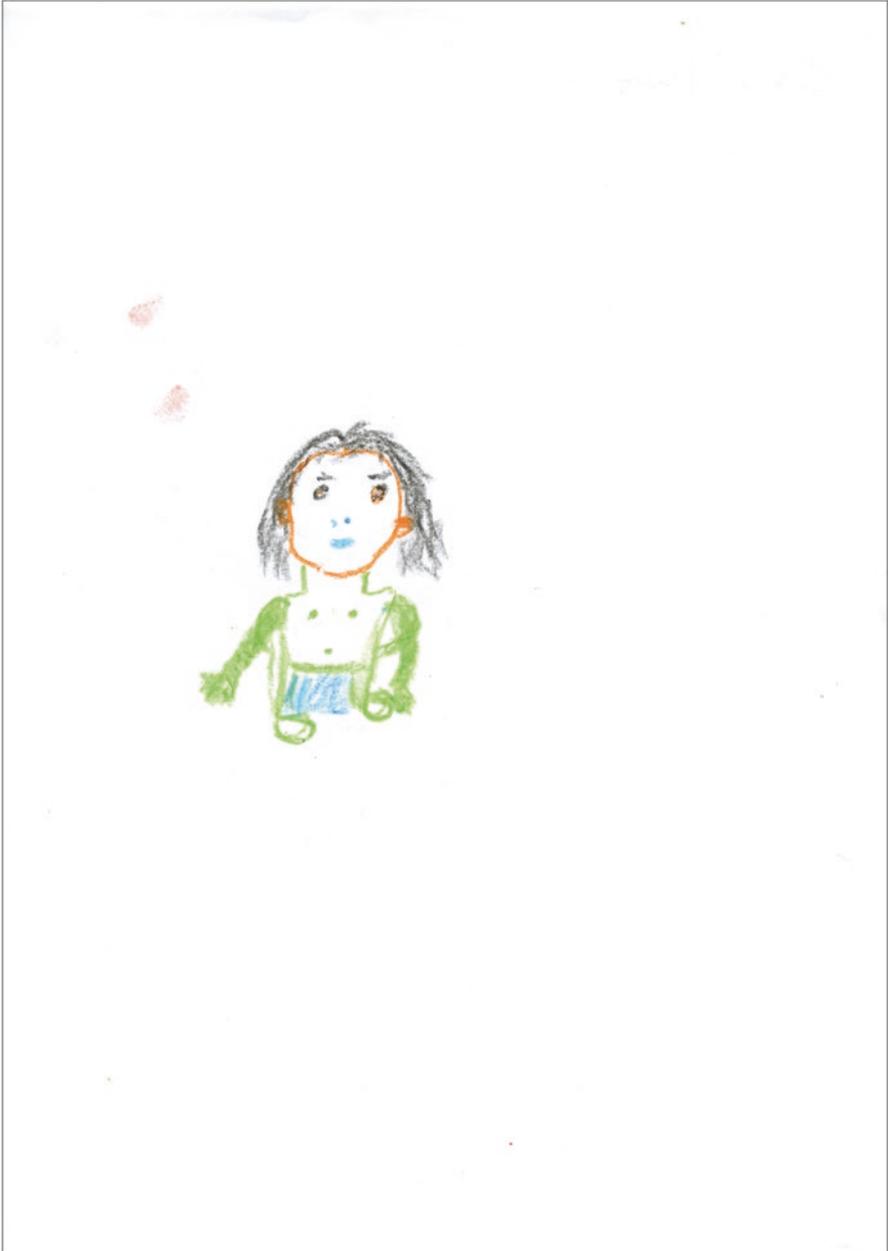


Fig. 13.3 An example of an anthropomorphic representation of God (http://ark.dasch.swiss/ark:/72163/1/0105/oCxxVnXqTsi_u3Ou_cp51wh.20190122T114106791Z)



Fig. 13.4 An example of an anthropomorphic representation of God (<http://ark.dasch.swiss/ark:/72163/1/0105/Bv3oOz4PSoiQaAQLyYIVSQI.20190122T114026927Z>)

Another fact worthy of note is that 13 children made drawings that identified God with nature. Of these, eight drawings were made by the Guajajara Indigenous participants, which shows that although conversion to Christianity is widespread in this native community, an animistic notion still appears to be very strong among them. Despite this, only one child mentioned the belief in a divine entity from the indigenous religious tradition.

Table 13.5 Anthropomorphic and non-anthropomorphic representations grouped by location

	Total sample		Guajajaras		São Paulo	
Anthropomorphic representations:	71	61%	19	54%	52	65%
– God in heaven						
– Jesus or God						
– God in nature						
– Face						
Non-anthropomorphic representations:	22	18%	11	31%	11	13%
– Nature						
– House						
– Cross						
Other:	23	21%	5	15%	18	22%
– Human figure (s) in nature or landscape						
– Boy or girl						
– Biblical scenes						
– Other						
Total	116	100%	35	100%	81	70%

Table 13.5 helps to reveal the difference between the samples collected in São Paulo, and those that were collected among the Guajajaras, with respect to the anthropomorphic representations of gods.

A comparison of the samples helps us to perceive some interesting data relating to the anthropomorphic representations. On one hand, when we look at the categories of anthropomorphic representations, the Guajajaras sample has fewer (19 drawings, 54%) than the São Paulo sample (52 drawings, 65%). In other words, among the participants from Guajajaras, it is less common to represent divinity anthropomorphically, even though this type of representation is the choice of the majority of participants, overall. On the other hand, in the non-anthropomorphic categories of representation, the Guajajaras sample contains more (11 drawings, 31%) than the São Paulo sample, (11 drawings, 13%). This means that the Guajajaras participants display a more varied repertoire of representations of the divine.

We can suggest at least two reasons for this. First, as already mentioned, the Guajajaras representations may bear an animistic influence, a remnant of the primitive religions of Brazil. Second, the rural context of the Guajajaras makes nature an important tool not only for representing aspects of their spirituality, where it is a major component of their religious conceptions, but also for representing the world in general.

We also found that the Guajajaras used a smaller number of categories in their representations of God. This group, for example, did not use representations of crosses, children, or biblical scenes. We can raise the hypothesis that this is due to the lack of contact that this population has with information media such as books, television, and the internet. Thus, the Guajajaras' repertoire of representations, in general, ends up being smaller than that of children living in São Paulo.

In a statistical analysis of the data (see Tables 13.6 and 13.7), we noticed that there was no statistical significance of the difference between the groups evaluated. Thus, we reaffirm that our analysis applies to the specific groups we studied, and

Table 13.6 Representation * groups crosstabulation

		Groups			
		Guajajaras	São Paulo	Total	
Representation	Anthropomorphic representation	Count	19	52	71
		% of total	16.4%	44.8%	61.2%
		Adjusted residual	-1.0	1.0	
	No anthropomorphic representation	Count	11	11	22
		% of total	9.5%	9.5%	19.0%
		Adjusted residual	2.3	-2.3	
	Other	Count	5	18	23
		% of total	4.3%	15.5%	19.8%
		Adjusted residual	-1.0	1.0	
Total	Count	35	81	116	
	% of total	30.2%	69.8%	100.0%	

Table 13.7 Chi square test results

Chi-square tests			
	Value	df	Asymp. sig. (two-sided)
Pearson chi-square	5.274 ^a	2	.072
Likelihood ratio	4.992	2	.082
N of valid cases	116		

^a 0 cells (0%) have expected count less than 5. The minimum expected count is 6.64

cannot be generalized to a larger sample of the population. We encourage further studies in this area, in order to verify these findings in larger samples.

The Guajajaras Sample

In the indigenous community of Guajajaras, participants did not attend traditional schools. For this reason we set up a separate school category for them. Since this is a very peculiar sample, we present some of their data separately as well. We collected 35 from the Guajajaras Indians in the municipality of Amarante, in the state of Maranhão (see Figs. 13.5, 13.6, 13.7, 13.8, and 13.9 for examples of drawings from Guajajaras). The Guajajaras comprise one of the most numerous indigenous populations of Brazil today. In 2010, it numbered 23,949 people. The indigenous in this region speak Portuguese and the Teneteara language (from the Tupi-Guarani family). They have been in contact with colonizers for more than 380 years. They rely on agriculture and hunting for survival. The villages of the Guajajaras are the

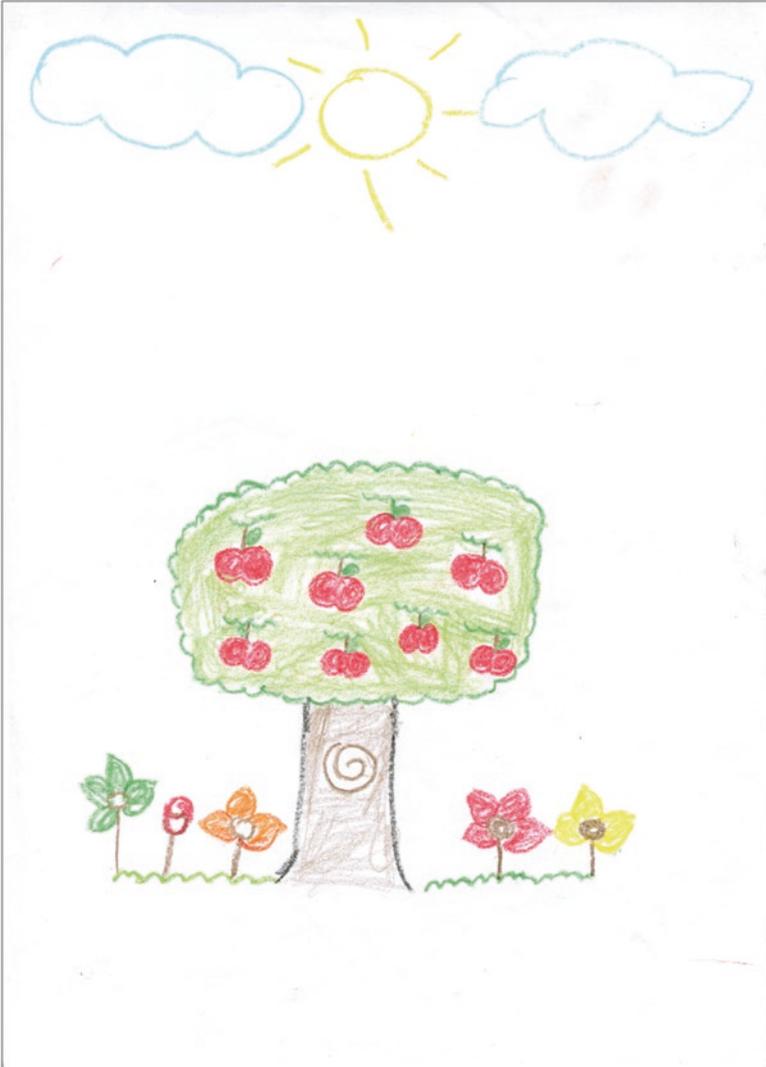


Fig. 13.5 An example, from the Guajajaras sample, of God represented as nature (http://ark.dasch.swiss/ark:/72163/1/0105/_H4pHG1IQr=Hb1VeWbodrgW.20190122T11373915Z)

most populous in this region of the state of Maranhão. They maintain their indigenous culture through events, specific language, commemorative dates, and rituals (Gomes, 2002).

The people of this region have the same religious traditions as the Tupi-Guarani peoples, sharing the same beliefs in particular supernatural beings. Among them are *Maíra*, the twins *Maíra-ira* and *Mucura-ira*, and *Zurupari*. These entities have played a large part in myths that are full of allusions to the daily life and culture of the Guajajaras and that have helped to explain much of their world. Nowadays,

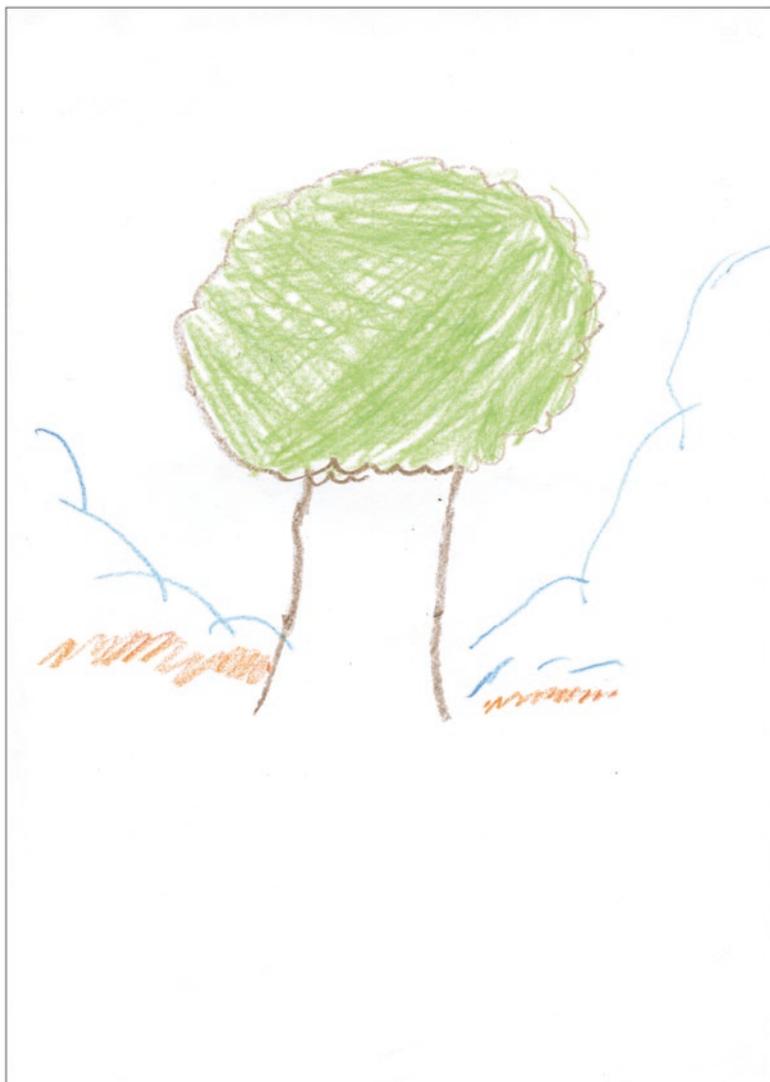


Fig. 13.6 An example, from the Guajajaras sample, of God represented as nature (<http://ark.dasch.swiss/ark:/72163/1/0105/xm8g3mZsQLmhF3jBSzAjHgK.20190122T114013964Z>)

however, many Guajajaras no longer believe in these entities, or in related religious traditions, due to the activities of missionaries in their region. The evangelical missionaries to the Indians in Brazil, for example, have been working among them for more than 30 years. The sample of drawings from the Guajajaras shows clearly how these evangelistic efforts were successful, since 28 of the 35 subjects surveyed claimed to be evangelicals.



Fig. 13.7 An example, from the Guajajaras sample, of God represented as nature (<http://ark.dasch.swiss/ark:/72163/1/0105/MAktv8tjSkq=bpAxDtGp4wK.20190122T113821407Z>)

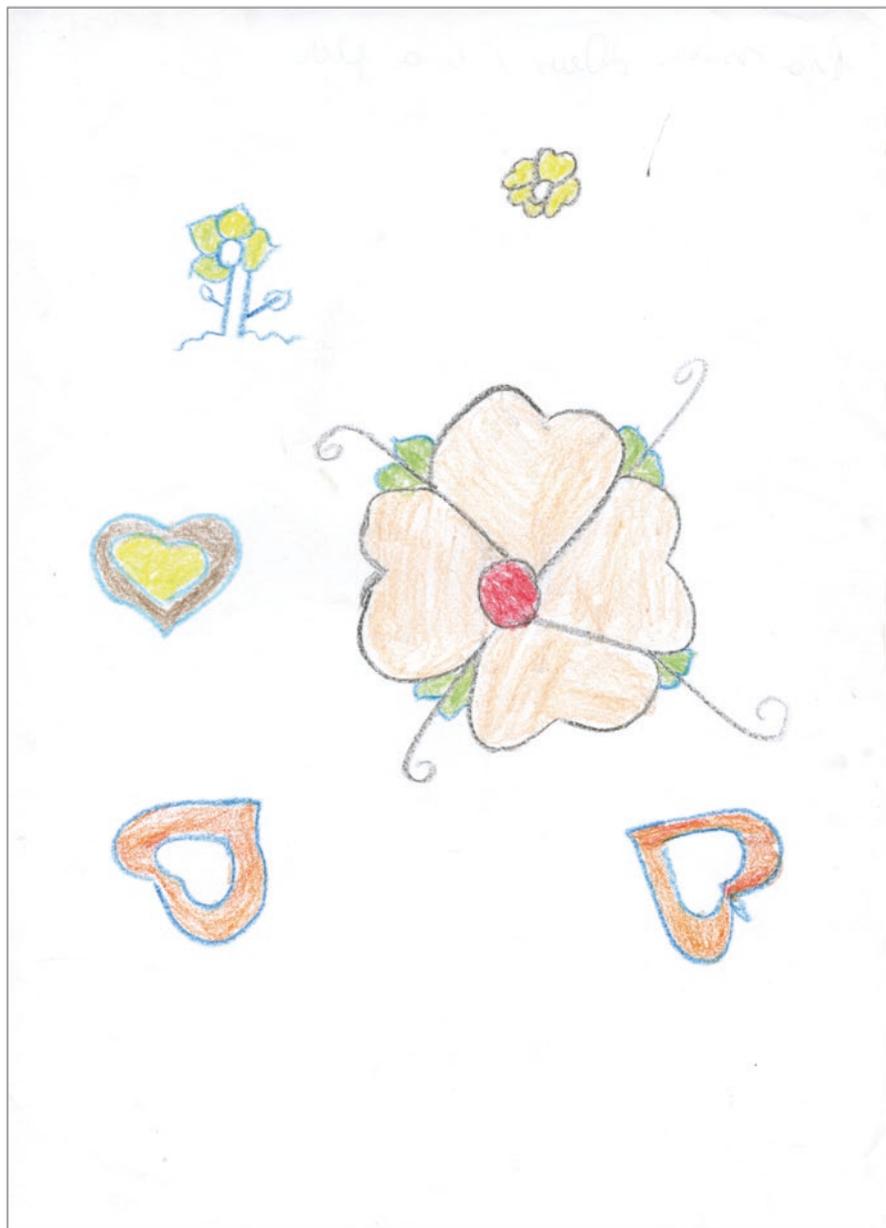


Fig. 13.8 An example, from the Guajajaras sample, of God represented as nature (<http://ark.dasch.swiss/ark:/72163/1/0105/uRuufXiiTDO7FWXajXEmZak.20190122T113732636Z>)

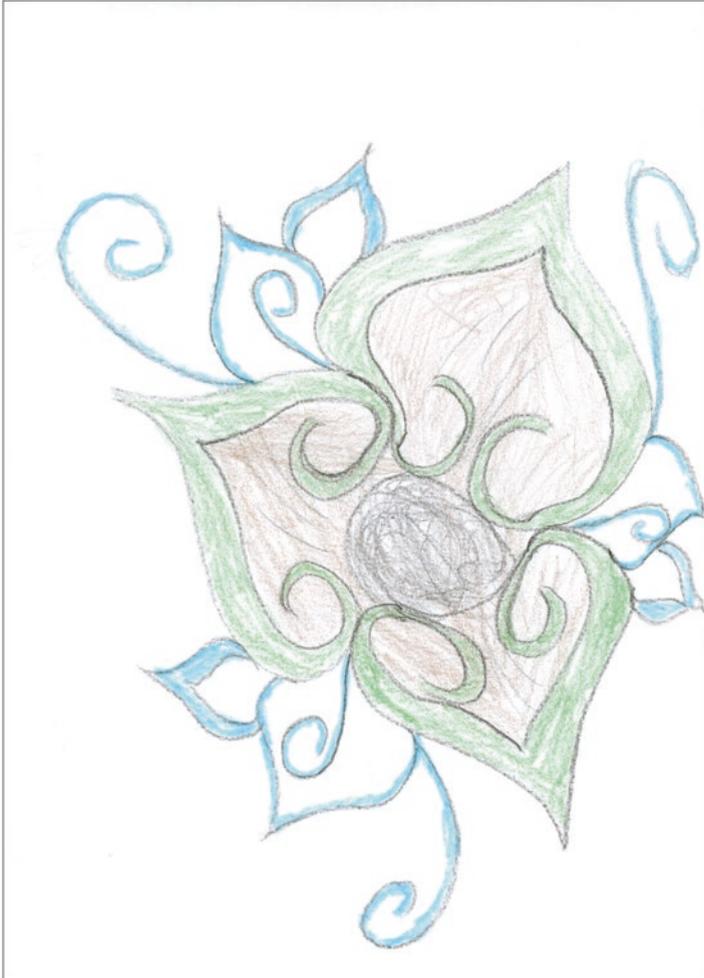


Fig. 13.9 An example, from the Guajajaras sample, of God represented as nature (<http://ark.dasch.swiss/ark:/72163/1/0105/yJrxBS48TeeiSCmSVEiLwQC.20190122T113913856Z>)

Another important factor that needs to be mentioned in order to better understand the drawings collected among the Guajajaras has to do with the fact that most of them were not literate and did not know the exact date of their birth, just their age. This is due to the social and educational instability in which they live. For this reason, it was not possible to collect the description of most of the drawings of this sample, and some of the data remain incomplete.

The psychologist Eduardo Araújo, a former researcher on the project, spent 3 days traveling through these villages to collect samples for the research. According to his report, access was only possible in four-wheel-drive or all-terrain vehicles. Moreover, although these places are considered peaceful communities, he found

that it was not advisable to make visits without the supervision of government teams. In his case, a multi-professional federal health care team accompanied him.

Araújo acknowledged that the difficulties encountered in the process of data collection were numerous. As an example, he reported the following incident. When proposing the activity of the drawings in one community, a boy refused to do the drawing. The researcher respected the wishes of the child and did not press him to complete the drawing task. However, the boy called the *Pajé* (leader of the indigenous community) and complained that the researcher was asking the children to make “demonic” drawings. Communication became more difficult at this point, because the conversation continued among the indigenous people, and they had shifted over to using their local language exclusively. The *Pajé* looked aggressive and held a machete in his hands. After some additional exchanges, the researcher was able to clarify the facts, and regain a more congenial atmosphere. This is but one example of the challenges faced by our researchers when collecting samples in Brazil.

Main Challenges and Prospects for the Future

Within the Brazilian setting, we conducted the first phase of the *Children’s Drawings of Gods* research project between the years 2014 and 2018. This phase was important in the sense of data collection, but even more so in the sense of establishing a partnership, adapting the research instruments, and forming the first group of researchers to collect samples that would provide insight on children’s drawings of god in a Brazilian context.

On one hand, undertaking this research in Brazil was challenging. Regarding the technical part of the project, we conclude that some of the main difficulties arose due to lack of training and practice in the collection and treatment of samples. Factors such as the process of scanning images and naming files were difficult points at first. As previously noted, we scanned our sample more than 5 times in order to reach an acceptable level of quality. Naming and coding the archives were also challenging processes, since the differences in the Brazilian educational model forced us to adapt the school portion of the identity codes.

On the other hand, this research undertaking has been very rewarding. We find in Brazil to be a fertile ground for the collection of samples due to the religiosity of the people and interest in the subject. Both the researchers and the research subjects showed great willingness to participate.

In 2018, we entered a second phase of the research, in which an important milestone was reached: The study became affiliated with the Program of Social and Work Psychology of the Institute of Psychology of the University of São Paulo. Through the postdoctoral research (in progress) under the responsibility of Camila Mendonça Torres, we will begin a new cycle of data collection for the *Children’s Drawings of Gods* project. We are now working with the translation and cultural validation of all the material into Brazilian Portuguese, with an aim of collecting 500 new drawings from different cultural and religious contexts in the country.

We encountered a number of difficulties in the first phase of the project; what we learned from those difficulties will allow this second phase will be even more productive. We conclude that, to researchers in this area, children's religiosity in the Brazilian context offers a wealth of discoveries.

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Part VI
Focus on Non-Representability and
Prohibition

Chapter 14

Biblical Aniconism? Representing the Gods of Ancient Israel and Judah



Thomas Römer

Abstract This paper argues that one should not speak of an “original aniconism” in the cult of Yhwh, the god of Israel. In the Northern kingdom and in the first temple of Jerusalem, this god was represented in a theriomorphic and anthropomorphic way. The prohibitions of images of the god of Israel in the Decalogue and other texts were written after the Babylonian exile and are related to the rise of monotheism. During the Persian period Yhwh became the “only” and transcendent god who could no longer be represented by statues or other symbols as were the Mesopotamian gods. However, the Menorah, the candelabra, which was placed in the Second Temple is, in a way, a representation of the divine presence. Aniconism is, however, not a pure invention of nascent Judaism. There are apparently in the Ancient Near East aniconic tendencies that are, nevertheless, compatible with iconic representations of the deities. This may be explained by the facts that ancient people were aware that statues and other images should not be identified with the deities.

Keywords Aniconism · Iconism · Israelite religion · Statues · Images · Yhwh

According to the Hebrew Bible, Yhwh, the god¹ of Israel, who is also confessed to be the god of the whole earth, cannot be represented by any statues or other images. The ban of images of Yhwh figures in a prominent way in the Decalogue and in many other texts. For this reason, many scholars have argued that in ancient Israel and Judah there was an original aniconism that would have distinguished the

¹Why the term *god* begins sometimes with an uppercase letter G, sometimes with a lowercase letter g, and why it appears sometimes in the singular and sometimes in the plural, is explained in the introductory chapter of this book (Chap. 1, this volume).

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Yahwistic religion, especially in Judah, from the surrounding religions (Mettinger, 1997).

Should One Set Aniconism and Iconism in Opposition?

Defenders of the idea that the yahwistic religion was an aniconic religion consider the so-called *maššebôt*,² standing stones, as a sign of a worship of Yhwh without any images. Standing stones are well attested in the Levant since the Bronze Age. According to the Hebrew Bible they can have different functions: they can mark a tomb (cf. 1 Sam 18:18); they can commemorate the place of an important event from the past (Exod 24:4) or the conclusion of a treaty (Gen 31:43–45) and they can be used in a cultic context in worshipping a deity. This is clearly shown in the story of Gen 28:10–22 where the patriarch Jacob appears as the founder of the sanctuary of Bethel: “Jacob got up early and took the stone which he had used as his pillow and set it up as a *maššebah* and poured some oil on its top. He called this place by the name of Beth-el [...] He said: ‘This stone which I have set up as a stele shall be a house of god (*bet elohîm*)’” (Gen 28:18–19a and 22).

The Hebrew word *bet-‘el* (House of El or of God) is often considered, but maybe wrongly, to be the origin, via Greek, of the term *betyle* (see the discussion in Durand, 2019, pp. 24–27), which designates stones used in religious rituals. The question of the function of these stones is disputed, and it is possible that they had more than just one meaning. Originally standing stones could have been used in fertility cults because they have often a phallic form. According to Gen 28, they could symbolise the dwelling of a god; often however they represent the deity itself. This has led to the idea that standing stones originated in the context of nomadic populations and reflect an aniconic religion in contrast to the sedentary religious population that represented their deities with theriomorphic or anthropomorphic images.

However, standing stones appear very often in a sedentary context. This is, for instance, the case for Mari, but also for the two *maššebôt* that were discovered in the Judean sanctuary of Arad, which was probably a royal foundation.

Was the cult of standing stones really aniconic? At Mari, a standing stone has been discovered which is also sculpted in a rudimentary way to represent the features, and in particular, the sexual organs of a woman (for a picture see Margueron, 2004, p. 56).

The privileged locations for the cult of standing stones are the “high places”, called in Hebrew *bamôt*. They were open-air sanctuaries, and the biblical authors often refer to steles and “sacred poles” (*maššebôt wa’ašerîm*) that were standing in these sanctuaries. Since these *bamôt* are yahwistic sanctuaries, it is plausible to assume that the *maššebôt* in these places represented the god Yhwh, accompanied

²The transliteration of the Hebrew terms as been done in a very simple way in order to reconstitute the pronunciation of the words. The sign *š* indicates the sound “ts”, the sign *š* indicates the sound “sh”. A circumflex indicates a long vowel.

by his *paredra* Asherah, represented by a stylized tree. The presence of standing stones is no evidence at all in favour of assuming that there was an aniconic cult of Yhwh, especially because when the prohibition of statues of Yhwh was formulated, it was also immediately applied to the *maššebôt*. Thus, the book of Deuteronomy contains the following prohibition: “You shall not set up any *maššeba*; Yhwh your god hates it.” (16:22). Leviticus parallels sculpture and *maššeba* in a text from the so-called Holiness Code (Lev 17–26), a document composed at the end of the sixth or the beginning of the fifth century BCE: “You shall not put up a sculpture (*pesel*) or a stele (*maššebah*) ... to prostrate yourself in front of, for I am Yhwh, your god” (26:1). In this text a standing stone and a statue appear as parallels, just as in a passage from the Book of Micah: “I shall suppress from among you your sculptures (*pesilekâ*) and your standing stones (*maššebôtékâ*) (5:12)”.

According to these texts, a standing stone is considered illegitimate as a statue to represent Yhwh. Other passages are more tolerant towards the *maššebôt*, as the narrative in Gen 28 already mentioned or a text from the Hellenistic period in Isa 19:19 which speaks of a *maššebah* of Yhwh in Egypt, referring probably to the Jewish diaspora that was living there.

The example of the *maššebôt* shows that the definition of aniconism is complicated and a strict opposition between aniconism and representations of the deity is not adapted to describe the Yahwistic religion.

One should not forget that the concept of aniconism is very much linked to the theological option that the “true God” cannot be represented in any way. The first attestation of the term seems to be found in the writings of Clement of Alexandria who used the term in his polemics against “pagan” religions by claiming that God cannot be represented by an image (Gaifman, 2012, pp. 18–20). This idea was taken over, also with theological motivations, in Classical Studies, which postulated for the Greek religion an original “anikonische Zeit” that underwent an evolution towards iconism (Gaifman, 2012, pp. 20–26). In Judeo-Christian Studies, Jewish and Christian theologians postulate an original aniconism that would have distinguished the worship of Yhwh from the worship of other gods.

If we define, following Doak, aniconism as “a representational style that systematically (i.e., not inadvertently) avoids specific kinds of figural representation, most specifically anthropomorphic images of the deity or deities” (Doak, 2015, p. 34), we cannot qualify the ancient Israelite and Judahite religion as aniconic.

Evidence for Images of Yhwh in Israel and Judah

Let us start with a very simple observation. If aniconism were the typical feature of the Yahwistic religion, why would the biblical authors and redactors constantly prohibit the making of all kinds of representation of the god of Israel? The insistence in many biblical texts not to produce statues and other images sounds like the attempt to introduce something new, probably in the context of the reconstruction of the Second Temple of Jerusalem around 520 BCE (Köckert, 2009; Kang, 2018). There

are indeed several biblical and extrabiblical indications of an iconic Yhwh cult in the North and in the South.

Representations of Yhwh in the North (Israel)

The books of the second part of the Hebrew Bible are written and revised in a Judean, Southern perspective according to which the inhabitants of the Northern kingdom and their kings were constantly unfaithful in regards to Yhwh's law.

Therefore, the redactors of the book of Kings have no problem admitting that Yhwh was worshipped in the North in the form of a young bull. According to 1 Kgs 12:28–30, Jeroboam, the first king of Israel, founded the sanctuaries of Bethel and Dan in which he placed golden statues of a young bull presenting Yhwh. However, the mention of Dan as the place where a sanctuary was supposedly set up at the end of the tenth century BCE is problematic because Dan probably did not become Israelite until the eighth century BCE (Arie 2008). If this view is adequate, the story about the founding of a sanctuary at Dan should be understood as a retrojection from the era of Jeroboam II, who, during his reign in the eighth century, may well have been able to annex Dan and establish a Yahwistic sanctuary there (Berlejung, 2009). The worship of a bovine statue is also attested for the capital of Israel, Samaria. There are several passages of the Book of Hosea, which condemn the bull of Samaria. Hos 8:5–6 in its present form reads, “He has rejected your calf, Samaria! I am angry with them. For how long still shall they remain incapable of attaining purity? (6) *For it comes from Israel, an artisan has made it, it is not a god. Yes, the calf of Samaria shall be shattered*”. The underlined part is the original oracle. It is written in the third person, and contains a criticism of a divine statue in the form of a calf. The oracle announces that this calf will soon be destroyed, probably by the Assyrians. This text was then augmented by the addition of a divine speech in the first person, which attributes the destruction of the statue expressly to the wrath of god. Finally the passage was revised a last time (with the parts in italics added) and turned into a polemic against images, which is very close to those that we find in the second part of the Book of Isaiah, dating from the Persian period.

Sometimes it is argued that the bulls in these texts are pedestals for an invisible god (Hendel, 1997; Lemaire, 2007, pp. 63–76). But this is a *petitio principii*. We do know of images of gods enthroned on bulls or other animals, but there is no clear evidence of the statue of an animal serving as pedestal of an invisible god (Schroer 1987, p. 101). So the conclusion to be drawn is that the bull in the sanctuaries of the North represented Yhwh, who, as a storm-god and chief god of the pantheon, is represented in the same way Baal or El are, namely as a bull.

An Assyrian inscription of Sargon II relating the destruction of Samaria mentions among the booty brought to Assyria “the gods in which they had put their trust”. This can only refer to *visible* gods, to statues. The inscription also indicates that Yhwh was not the only god worshipped in Samaria. The representation of Yhwh as a bull fits well with his function as a storm- and a weather-god. This brings him

close to the Ugaritic Baal, who in the is often characterized as a bull. But the same *baal* can also be depicted in an anthropomorphic way, as for instance in the famous stele *Baal au foudre* (Baal with thunderbolt). And this may also have been the case in Israel (Leuenerger, 2019).

Representations of Yhwh in the South (Judah)

Although there is no direct evidence, it seems plausible to assume that there was a statue of Yhwh in the temple of Jerusalem (Niehr, 1997; Uehlinger, 1997; Römer, 2019). Several indications support this assumption. The vision of the prophet Isaiah (Isa 6) who sees Yhwh in heaven sitting on his throne may have been inspired by a statue of Yhwh representing him, like a king, sitting on a throne.

Another indication is the frequent mention of “the face of Yhwh”, especially in the book of Psalms. In the ancient Near East the expression “to see the face of God” had its roots in the royal ideology. To “see the face of the king” meant to be admitted into the royal presence; in a cultic context, then, the expression “see the face of a god” described the entrance into the sanctuary where the statue of the god was located. Thus Ps 17 describes the situation of the praying person from an initial suffering in the night to the certainty that God will reveal himself to him in the morning: “With justice I shall contemplate your face and when I wake I shall have my fill of your image (*temunah*)” (v.15). This psalm uses the term *temunah* for *image*, and this is precisely the word that is used in the Decalogue in the prohibition of representations of god, and also in chapter 4 of Deuteronomy (vv. 16, 23 and 25). So, the theophany in verse 15 of Psalm 17 takes the concrete form of a vision of the statue of Yhwh in the morning. Many psalms also refer to a procession of Yhwh (e.g., Pss 24 and 68), which can be best explained of moving a statue of Yhwh. Ps 24:7–8, “Gates, lift your head! Raise yourselves up, ancient portals! Let him enter the king of glory! Who is the king of glory? Yhwh, strong and mighty, Yhwh, mighty in war” would then describe the return of the divine statue after its procession.

Some drawings and other objects could indeed been understood as representations of Yhwh. In the Kingdom of Judah there are a significant number of representations of deities on all kinds of supports, but none is explicitly identified with Yhwh. However, one may ask the question whether deities represented on seals whose owners have Yahwistic names represent Yhwh who was the tutelary divinity of those owners (Sass, 1993, pp. 232–34).

In Kuntillet Ajrud, a caravanserai on the road leading from Gaza to Eilat several inscriptions and paintings have been discovered (Meshel & Freud, 2012). One of these inscriptions reads, “I bless you [or, have blessed you] by Yhwh of Samaria and his Ashera”. This blessing that shows that Yhwh had a goddess as a consort is overlapping with a drawing showing two divine beings. Some scholars have identified the figure on the left (with a penis) to Yhwh, and the figure on the right to Ashera. Others have argued that the two figures, who seem to be entwined or in some way doubled, in fact represent the Egyptian god Bes, who often appears in the form of

twins. However, Bes is always male and the couple represented here is quite clearly male and female so that it cannot be excluded that we have here an attempt to represent Yhwh and his Ashera (for the discussion and the opinion of an existing link between the inscription and the representation cf. Schmidt, 2002, 2016).

The best case for a representation of Yhwh is a Judean coin from the Persian period. The deity represented seated on a throne is probably Yhwh since the deity is identified by an inscription that reads yhw, (*Yahô*), the short name of the god of Israel (Blum, 1997; Shenkar, 2007/2008).

This overview clearly indicates that Yhwh could be represented in ancient Judah in an anthropomorphic form. But this does not exclude that there were also possibilities to represent him in an “aniconic” way.

Iconism and Aniconism

Contrary to a quite common idea, there is no opposition between aniconism and anthropo- or theriomorphic representation of the deities in the Ancient Near East. First of all, in Mesopotamia the deities can be represented through a human figure but also by their symbols (sun, moon, star and others). Especially interesting is a tablet from the time of King Nabu-apal-iddin of Babylon (885–850).³ This tablet shows the king with two priests approaching the Sun-god Shamash (see Fig. 14.1). In the temple on earth Shamash is represented by a solar disk, but one can see him in anthropomorphic form seated on his throne in heaven. The inscription informs the reader that the statue of Shamash in the temple had been captured by enemies and since nobody was able to rebuilt it, it was replaced (in a provisory way) by an aniconic symbol.

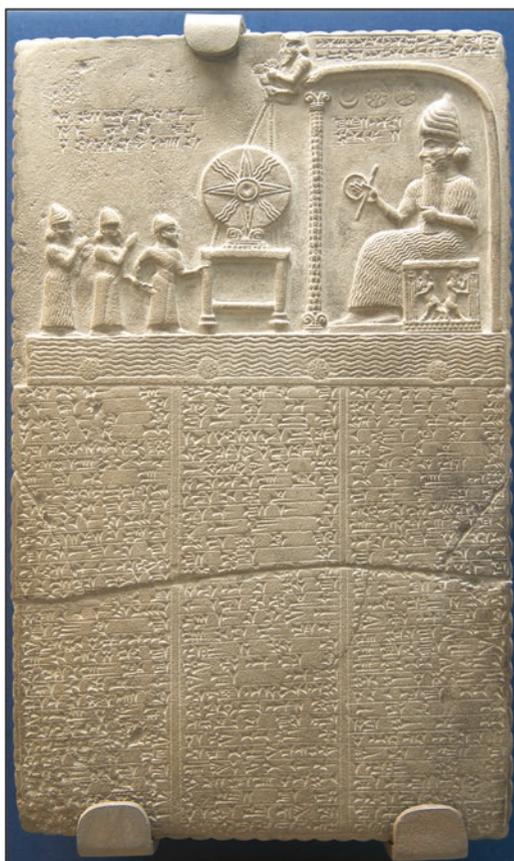
A similar case can be made for the so-called empty thrones in Phoenicia, which are mostly flanked by sphinxes or cherubs (see Fig. 14.2).

Apparently these empty thrones from the first millennium BCE were used to worship different deities. In many cases, it is clear that the throne received a statue of a deity, which has now disappeared, but in other cases the empty throne as such was apparently conceived to represent the presence of an invisible deity. It is difficult to know how to understand the cohabitation of thrones conceived to host a divine statue or stele and the empty thrones. One may think of different deities (Doak, 2015, p. 111 suggests, “for deities associated with major natural phenomena, such as the sun or especially the sky, a throne may serve as a symbol of the deity without an anthropomorphic image”); one may also imagine that the Phoenicians were aware that divine statues were not identical with the deity so that they could also worship empty or “non-iconic” cultic objects.

A similar phenomenon may be observed in regards to the Yahwistic cult. We have already mentioned the *maššebôt*, which were used in the “high places,” but

³For a reproduction of this bas-relief see <http://fr.wikipedia.org/wiki/Ban%C3%BB-apla-iddina>

Fig. 14.1 https://commons.wikimedia.org/wiki/File:Tablet_of_Shamash_relief.jpg



also in official sanctuaries such as Arad, where the two standing stones may represent Yhwh and his consort Ashera. It is, of course, a question of definition whether one should consider these steles as aniconic, since they may have been painted.

Another case of an aniconic representation of Yhwh may be found in the cultic stand from Taanakh (see Fig. 14.3), located in the southern part of the valley of Jisreel in Galilee. This object, which dates from the tenth or ninth century, has four levels.⁴

Several scholars have argued that these four levels represent twice the couple Yhwh and Ashera (Taylor, 1988; Hadley, 2000, pp. 173–80). The top two levels show a stylised tree and a solar disk with what seems to be an accompanying horse, the tree could refer to Ashera and the solar disk to Yhwh. On the bottom there is a naked goddess holding two lions who can be identified again with Ashera. Above the goddess there is an empty space, a hole, with two sphinxes on both sides

⁴For a photo of the object see <http://members.bibarch.org/image.asp?PubID=BSBA&Volume=20&Issue=03&ImageID=05200&SourcePage=publication.asp&UserID=0>

Fig. 14.2 An empty throne, probably from Sidon, Hellenistic period, National Museum of Lebanon Beirut. Fragment© Thomas Römer. <https://commons.wikimedia.org/w/index.php?curid=92684749> and https://commons.wikimedia.org/wiki/File:National_Museum_of_Beirut_%E2%80%93_Thrones_of_Astarte_1.jpg#/media/File:National_Museum_of_Beirut_-_Thrones_of_Astarte_1.jpg



guarding it. This could be a way of symbolising the presence of Yhwh, not with an image, but by means of the smoke that was allowed to escape from the opening. This would be parallel to the literary references that speak of the “glory of Yhwh” which was conceived as a kind of cloud representing a manifestation of the god of Israel.

The Rise of Judaism and the Rise of Aniconism

The prohibition on the use of graven and other images will become one of the most important features of nascent Judaism in the second half of the Persian era. This aniconism will later attract the interest, but also the contempt, of the Greeks and the Romans. However, the prohibition of images of the god of Israel was not immediately enforced in all Jewish circles. The Judean coin mentioned above, which probably bears an image of Yhwh, indicates that still in the Persian period this type of representation was possible. There are probably several reasons for the ban of images. It is even quite possible that there was a debate whether there should be a new statue of Yhwh in the Second temple of Jerusalem (Uehlinger, 2003, pp. 70–71). First of all, there was no longer a king (who had traditionally taken care of the divine statue in the royal temple). But more importantly, the idea that Yhwh is the only god who cannot be compared to the Babylonian gods and their statues triggered the idea that Yhwh cannot be represented in any way. This idea is the result of the polemics against the statues in Second Isaiah and shall become the distinctive sign of Judaism. After the prohibition of images was imposed by the intellectual

Fig. 14.3 Cult stand from Taanakh © The Israel Museum, Jerusalem. <https://www.ancientpages.com/wp-content/uploads/2017/04/yahwehasherah3.jpg> (Accessed on 3.11.2021)



elite substitutes were found for the statue of Yhwh; this is especially the case for the menorah, the seven-lamp lampstand which later was stolen by the Romans after the destruction of the Second temple in 70 BCE (see the depiction on the arch of Titus in Rome). The menorah was a way to indicate the presence of the god of Israel in the temple of Jerusalem. This shows that even a “strict aniconism” still needs some kind of representation.

To Conclude

One should not speak of an original aniconism in the cult of Yhwh. It is quite clear that in the Northern kingdom and in the first temple of Jerusalem, this god was represented in a theriomorphic and anthropomorphic way. The prohibitions of images of the god of Israel in the Decalogue and other texts were written after the Babylonian exile and are related to the rise of monotheism. During the Persian period Yhwh became the “only” and transcendent god who could no longer be represented by statues or other symbols as were the Mesopotamian gods. However, the Menorah,

the candelabra, which was placed in the Second Temple is, in a way, a representation of the divine presence.

Aniconism is, however, not a pure invention of nascent Judaism. There are apparently in the Ancient Near East aniconic tendencies that are nevertheless compatible with iconic representations of the deities. This may be explained by the facts that ancient people were aware that statues and other images should not be identified with the deities.

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Chapter 15

The Representation of God in Islam and Its Prohibition: Strategies Used by Iranian Children When Asked to Draw God



Zahra Astaneh 

Abstract Traditionally, the act of drawing, and specifically drawing God and the prophets, is forbidden in Islam. No verse in the Qur'an indicates a prohibition against drawing in general; however, Muslim scholars do interpret some verses of Qur'an and other prophetic writings as prohibiting the representation of God. In this research, I tested the degree to which children are conscious of this prohibition by asking them to draw God. We collected over 3000 drawings from six cities in Iran. The participants ranged in age from 7 to 14 years. Here, I explore religiosity in the context of contemporary Iran, and present my findings describing various strategies used by Iranian children to accomplish the task of drawing God. Only nine children used the words "sin" or "not permitted" in their descriptions. I found that as participant age increased, so did the likelihood that the participant would indicate that he/she could not draw God, giving reasons such as "God is supreme, incomparable, and beyond imagining," or, "God is not able to be drawn." My findings show that children demonstrate increased awareness of this prohibition as they age; this increased awareness potentially reflects a parallel increase in exposure to Muslim teachings on this topic.

Keywords Islam · Drawing · God · Iran · Religion

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Islam is a monotheistic religion in which, contrary to the Christian Orthodox and Catholic traditions, for example, images have no place. God¹, the Greatest and only Creator of all things, is beyond human imagination and Muslims deem that they are not allowed to represent him. According to Shadghazvini (2014), this prohibition does not derive directly from the Qur'an: there is no Qur'anic verse that prohibits either drawing, or representing God. The prohibition against figurative representations arises mainly through the hadiths, which are collections of oral teachings from the prophet of Islam. The prohibition aims to prevent any worship of images or statues and to avoid any distraction from prayers. The prohibition is intended to guard believers during the time of worship and/or prayer so that they may focus (as required) on the worship of God. Shadghazvini (2014) also describes how Muslim art has developed as a result of this concept and how it has grown mainly through other artistic forms such as calligraphy. For centuries, Muslim artists have tried to rely on their imaginations—instead of emphasizing the real world—in order to represent the world beyond and to give spiritual meaning to all things. Persian miniature, which was introduced and developed in Iran, is an example of this reliance on imagination and reflection.

In this work, I analyse the strategies that Iranian children use to accomplish the task of drawing God while they strive to remain true to the teachings of their faith. Do they explicitly refer to the prohibition of figurative representations of God in Islam? Alternatively, do they find other ways to avoid making a pictorial representation without explicitly speaking of the prohibition? Before presenting and discussing the children's drawings, I will explain how the representation of God in Islam is considered, both in the Qur'an and in the prophetic writings.

The Islamic Prohibition Against Representing Allah

Islam originated in the seventh century and carried its core message, namely pure monotheism and the existence of one God as the one and the great creator of all things, to the peoples of pagan Arabia. The most important Surah in the Qur'an that is entirely devoted to this message is Surah 112, Al-Ikhlâs (Sincerity in Faith):

1. Say [O Messenger!]: "Allah is the One and the Only Creator";
2. Allah is the Absolute Independent, [Free from all attachments]
3. "Neither He has a kid, Nor He is born of any

¹Why the term *god* begins sometimes with an uppercase letter G, sometimes with a lowercase letter g, and why it appears sometimes in the singular and sometimes in the plural, is explained in the introductory chapter of this book (Chap. 1, this volume).

other being”, 4. “And there is no equal, no match and no Mate for Allâh, the Almighty” Saffarzadeh (2005) (Qur’an 112:1–4)²

Mohammed defeated all forms of idolatry and any ritual practices that were directed at statuettes. In the Qur’an, there are verses that are related to the statuettes, such as verse 90/5 *Al-Maidah* (the feast). In this verse, there is the word “الانصاب” (which translates to “the innards”) on which they made animal sacrifices for idols, and which were considered sacred. According to Silvia Naef (2004), it is this verse from the Qur’an that could be interpreted as a ban on images in Islam. There are other verses in the Qur’an upon which several scholars of the Muslim religion base their interpretation that even the decorative use and creation of statutes is an act forbidden in Islam (Qur’an 49:3, *Al-Imaran*, the Family of Imrân; 7:152, *Al-A’râf*, The Lofty Barrier between the Inhabitants of the Paradise and the Hell, 34:13, *Saba*, The City of Saba). Other scholars, however, interpret these verses differently and say that building statutes for artistic purposes and their decorative uses are not forbidden. In the interpretation of these scholars, these actions are prohibited only if the resulting works of art are used for the purpose of worship. Thus, in this case, purpose and intent define the legality or illegality of an act. Nevertheless, in the Qur’an itself, I do not find any verse related to drawings, the prohibition of drawings, or the prohibition of the act of drawing. The word derived from the verb “صورة” (Sawwara) which means “give it a shape, create” appears four times in Qur’an. In all instances, this word is about the creation of human beings (Qur’an 3:6, 7:11, 40:64, and 64:3).

Since the subject of this research is the act of drawing God, I should not only explore what the Qur’an says about drawing; I should also explore what the Qur’an says about the entity of God. One of the most important verses in the Muslim faith and for its scholars is found in Qur’an 42 *Al-Shûra*, the Consultation:

Allah is the creator of the heavens and the earth. He has made you mates of humankind; and for the cattle also mates; for Allâh **there is no similar**, no mate: He is the One and the Only and He is the Knowing Seer.

According to the collection of Nemouné³ which is one of the basic sources of the Shiite tradition, gathering all the interpretations of the Qur’an verses, this verse is the basis for the knowledge of the qualities of God. “Nothing looks like him”. In other words, He is an infinite Being, unlike all other things (which are limited and finite). He has existed forever and will continue to exist. Because nothing resembles him, one can have no imagination of him. All Muslim scholars agree with this verse, and on the inability of human beings to represent the image of God. Scholars further

² Unless otherwise noted, all Qur’anic quotations are taken from The Holy Qur’ân, Saffarzadeh, Tahereh, The Holy Qur’ân English & Persian translation with commentary, Tehran. Kalhor. 2005.

³ <http://quran.anhar.ir/tafsirfull-14179.htm>

interpret this to mean that the drawing of God is prohibited in Islam because nothing looks like him.

On the other hand, Qur'an 24:35 *An-Nûr*, the Light, states, "Allah is the Light of heavens and the earth [...]"⁴ However, He is a Light that exists beyond our realm of understanding. Therefore, on one hand, the Qur'an says that nothing looks like God and on the other hand, it defines God as a particular type of light. In addition to these verses, the Qur'an enumerates various qualities of God through references to God as the Omniscient, the All-Merciful, the Almighty, the Infinitely Great, etc. Through these verses and similar verses, one may conclude that the Qur'an does not express a precise position with regard to drawings.⁵

The Question of Images in the Hadiths (The Prophetic Words and the Words of the Imams⁶)

In addition to the Qur'an, the *Hadith* is an important and fundamental source in Islam. The word *Hadith* means *prophetic tradition* (Naef, 2004). The Hadith plays a very important role in Islamic jurisprudence. The various words and gestures of Muhammad were collected in six canonical volumes and another four volumes were added supplying the teachings of the twelve Imams of the Shiites (the descendants in direct line of Mahomet by Fatima, his daughter, and Ali, his son-in-law and cousin.) The Sunnis, however, do not refer to these last four collections.

Muslims base their way of life and thinking on the Qur'an and the Hadiths. In none of the collections is there a chapter devoted entirely to the image of God. "There are various sections, related to prayer, clothing or other subjects" (Naef, 2004, p. 17). Among the collections of hadiths, there are two that are more important than the others: Sahih of Al-Bokhari and Sahih of Muslim. In these collections there are hadiths concerning Muhammad's attitude towards images and drawings. Some of these hadiths are quoted below:

⁴"The similitude of Allâh's Light is a niche in which there is a lamp, and the lamp-shade is a shining star lit from a blessed olive tree which does not belong either to the East or to the West. The oil which does not need to be kindled by matches or any fire; its light stems from the Supreme Light: Allâh does guide with His Light whomever He Wills. And Allâh sets parable for men to understand the meaning of the Message; and Allâh is the Knower of all things." Translation from the site: <http://www.coran-en-ligne.com/Sourate-024-An-Noor-La-lumiere-francais.html>

⁵According to Elias (2012), the prohibition against graphic representations of God comes not from the Muslim scriptures, but rather from the writings of Judaism and Christianity. In the Old Testament, there is this prohibition against the creation of images, whereas in the Qur'an there is no verse about it.

⁶Imams, descendants of Fatima and Ali, the daughter and the cousin and the son-in-law of Muhammad.

Narrated by Ibn Abbas:

I heard Muhammad saying, “Whoever makes a picture in this world will be asked to put life into it on the Day of Resurrection, but he will not be able to do so.” (USC-MSA web [English] reference: vol.7, book 72, Hadith 846) (Sahih al-Bukhari 5963, retrieved from: <https://sunnah.com/urn/55960>)

Narrated by Aisha:

Allah’s Messenger returned from a journey when I had a picture of a mine. When Allah’s Messenger saw it, he said, “The people who will receive the severest punishment on the Day of Resurrection will be those who try to make the love of Allah’s creations into one or two cushions”. (USC-MSA web [English] Reference: Volume 7, Book 72, Hadith 838, Sahih al-Bukhari 5954)

Hadiths

Narrated by Abu Zur’a:

I entered a house in Medina with Abu Huraira, and he saw a man making pictures at the top of the house. Abu Huraira said, “I heard Allah’s Messenger saying that Allah said,” who would be more unjust than the Creature? Let them create a grain: let them create a gnat. “[...]” (USC-MSA web [English] reference: vol 7, book 72, Hadith 837, Sahih al-Bukhari 5953)

Narrated by Sa’eed ibn Abu al-Hasan:

A man came to Ibn Abbas and said, “Indeed, I am a man who makes pictures so give me a judgment about them.” Ibn Abbas said, “Come closer!” The man came closer and he said again, “come closer!” The man came close enough to touch his head and Ibn Abbas said, “I will tell you what I heard from the Messenger of Allah [...] He said: Every picture maker will be in Hellfire, for image of every creature that has soul “Ibn Abbas added,” if you want to do so, make pictures of trees or whatever that does not have a soul.” (Sahih Muslim, 2110)

In the hadiths, the image is rejected, as well. Nevertheless, I can see two contradictory tendencies: “one condemns the creation of images in all circumstances and the other admits them under certain circumstances and under certain conditions” (Naef, 2004, p. 22).

Today, mainly among Sunni scholars, those who totally reject drawings and the act of drawing say that according to the hadiths, the act of painting is doomed because the one who creates by painting something that did not heretofore exist imitates, in a way, an activity that is reserved for Divinity, namely the act of creation. Some scholars reject this and say that drawing of soulless creatures like trees and nature in general is allowed and is not a sin. Most Islamic theologians do agree that it is a sin to draw human beings and animals because they are believed to possess a soul, but one, Shaykh Ibn Uthaymeen, a Sunni theologian, indicates that it is

permissible to draw an image that is fuzzy or to draw organs of the body and face that do not appear clearly.

On the other side, there are other scholars, especially among Shiite adherents, who interpret these hadiths differently. They say that the act of drawing is not a sin if neither the act nor the resultant work is used as an object of worship. According to these scholars, the act of drawing is in accordance with Islamic values and the use of images is also legal.

Both Sunnis and Shiites agree that the presence of the image of living beings and/or statues in front of a person who is praying is forbidden because it is a source of distraction and it may be a sign of idolatry.

The Literature

Studies Done in Iran Concerning Children's Understandings of Religious Concepts

Now, following this explanation concerning the question of the representation of God from the perspective of Islamic religious texts, I turn to various ways that this topic is understood and expressed by children and adults. In this part, I review some studies done in Iran on two main themes: the understanding of religious concepts, and the understanding of the concept of God.

Studies on the Comprehensions of Religious Concepts

Iranian scholar Ezzat Khademi's (1991) article describes one of the first psychological studies that focuses on children's cognitive development as it relates to religious concepts. He conducted research with children between the ages of 7 and 12 in order to illustrate the development of children's understanding of religious concepts. He told them the story of Moses and his encounter with God on Mount Sinai. He then asked the children to answer several questions and requested that they elaborate the reasons for their answers. The results of his study correspond to what the literature tells us about the cognitive development of children. It shows that children's imagination about God begins with a very anthropomorphic visualization. In a later stage, children add or remove characteristics from their mental picture of God, but their thinking is still materialistic. A child's understanding of religious concepts develops until he/she attains the capacity for abstract reflections.

Tabatabaei's (2016) study explores the religious education of children from birth. It is important that he, and other Iranian scholars, note that before age 10, the

religious education of children focuses on God's merciful characteristics, rather than his vengeful characteristics. Culturally and traditionally in Iran, I understand that the loving side of God is more appreciated and has a more positive influence on children than his inexorable or wrathful character. The religious training of children must be adapted their age, so abstract representations should be avoided during early childhood religious education. Highlighting the God's blessings and "encouraging children to have hope for the mercies of God" (Tabatabaei, 2016, p. 16) help to create a stronger bond between the child and God.

Studies on Children's Understandings of the Concept of God

Olyanasab, in his 2012 study, "The Mental Picture of God and Its Source," recruited 382 students (young adults—not children) from the city of Qom.⁷ Participants filled out a questionnaire, and provided researchers with information about their mental picture of God, and other things such as age, sex, level of education, relationships with parents and other family members, etc. Olyanasab found that many elements, including the quality of the participant's relationship with their parents, impacted their image of God. However, the image was built indirectly through religious experiences. Other studies have shown that mental images of God are more positively related to maternal images. "The study shows that with regard to the image of God as the one who gives blessings, there is a link between good and bad relationship between parents and other family members" (Olyanasab, 2011, p. 12). Stronger relationships between parents and children result in stronger beliefs in God as the one who gives blessings.

Another study done in Iran concerns teachers' knowledge when called upon to answer children's questions about God (Nozari et al., 2013). The results of this study showed that female teachers demonstrated the highest level of knowledge when answering children's questions about God and showed more skill in providing their responses. However, in the overall evaluation (when including other areas, such as the content of the teaching and the method of teaching the concept), male teachers received better results than female teachers did, but the differences were rather small.

Dawoudi et al. (2016), conducted another interesting study on the principles and ways of answering children's questions about God. According to these psychologists, the way in which children imagine God is influenced by culture and it is changeable. In addition, they argue that the evolution of religious concepts in children parallels the cognitive evolution of the human being. According to this article, in order to be able to answer children's questions it is necessary to respect certain

⁷A sacred city in Iran.

principles such as: maintaining active social conditions, providing understanding and attention, creating and supporting basic concepts. The authors offer teachers four ways to answer children's questions: (1) Give simple examples from life, (2) Question and respond step-by-step, (3) Tell a story, (4) Lead an interactive discussion with a group.

According to the writers in the Qur'an and the hadiths, there are several stories that are key to developing a clearer understanding of God, but one must adapt them to the children's levels of thinking. One can begin to see links between these ways of presenting information about God to children and the drawings of God made by children. Dawoudi et al. state that children's imaginations about God depend on their religious and cultural socialization and "the symbol that every society uses to represent God" (2016, p. 111). The authors suggest that Iranian children are more likely to draw a form of light to represent God. According to their study, children, in their imagination, replace the concept of God (or anything abstract) with concrete experiences from their own lives, such as interactions with parents. The authors suggest that one way to respond to children's questions about God is to explain to them that we (as humans) are limited beings and our brains are also limited; by contrast, God is an infinite being. Taking this further, we can acknowledge the question this contrast raises, namely: How can we, with our limited brains understand God who is an infinite being? The children are not able to comprehend that a being can be both the All-Merciful and the Compelling One at the same time; their experience of human beings does not allow them to have this understanding. It is easier for a child to grasp some adjectives such as nice, beautiful, generous, etc., than other adjectives such as fair, just, etc. The understanding that God has all these qualities in an absolute way becomes more comprehensible throughout an individual's life. Dawoudi et al. also provide an example of a discussion between a 9-year-old girl and an adult. When the child asks a question about how God sees everything, the adult answers, "God is omnipotent but we cannot know how he sees everything, and should not ask ourselves the question about the entity of God" (Dawoudi et al., 2016, p. 125). This shows, in my opinion, that at a certain moment one must close the discussion with the child by making him understand theological dogmas. These studies help us to better understand the strategies of Iranian children regarding visualizing and graphically representing God.

Lesli Smith's (2006) book, *Norms in Human Development*, also helps with this understanding. In Smith's view, the norms are rules. However, everything that is normal is not a rule. Therefore, the norms are not part of psychological developments. Norms are the behaviours deemed normal, the rules that must be followed, according to society. There are standards that are written, such as traffic rules (not passing the red light), but there are also standards that are not necessarily written but are ethical standards or customs. Refraining from drawing God is a custom among Muslims, as a part of our ethical code; we do not allow ourselves to draw God. Thus, the current study explores this particular norm of not making figurative

representations of God. Standards can be learned through socialization and one must reach a certain age to be able to apply them (Hajidehabadi, 2004). The religious education of children, according to Shiite teachings, is an ongoing process and children must be taught to practice their religion starting at the age of 7–8. However, those providing instruction must take into consideration the physical and moral capacity of each individual child. According to various Iranian studies on the religious education of children, it is necessary to begin instruction in childhood, before the age of puberty. Providing religious teachings to children in the early years helps equip them to better fulfil their religious practices and obligations once they reach puberty; they will already be familiar with their tasks and they will not be suddenly overwhelmed by their responsibilities.

Studies on the Norm and Children’s Understandings of the Prohibition to Draw God

Mordecai Nisan (1987) presents a comparative study conducted in Israel involving two groups: one consisting of urban Jewish children and a Jewish secular kibbutz, and another consisting of Arab children from a traditional village. Researchers asked participants about the distinction between moral and conventional standards. The author reports that, in general for all groups, moral violations are regarded as more serious than conventional violations. However, for urban children and those from the kibbutz, non-prohibition by law is stronger for conventional standards than for moral standards.

Nisan’s study also reminds us that in some societies there are behaviours that are allowed by law or convention, but some social groups perceive these behaviours as bad and want them to be prohibited by law. Thus, we need to make a cultural distinction between morality and convention, and in order to be able to distinguish these two, we must see the importance and rigor of the norms that are imposed (Turiel & Smetana, 1984; cf. Nisan, 1987). The distinction between moral and conventional standards is based on the importance of standards and the rigor with which they are imposed. So, “according to this hypothesis, a young child will perceive behaviour that is strongly and consistently prohibited as intrinsically bad and behaviour that is not as conditionally bad” (Nisan, 1987, p. 719). In this context, age and social subgroup play a part. The gravity of conventions decreases with age among modern subjects. Furthermore, among children who are not traditional, as age increases, the percentage of those in favour of banning the behaviour perceived as bad also decreases. Nisan also found that for “the modern subjects the seriousness of conventions decreases with age but the seriousness of moral norms slightly increases, whereas among the traditional the seriousness of conventions increases with age, with no change in that of moral violations” (Nisan, 1987, p. 721).

Howard Gabennesch (1990) explains that according to Piaget, at the age of 4 and especially between 6 and 10 years, children see rules as absolute realities: sacred,

immutable, and impossible to touch. By the end of childhood, children can grasp the relativity of the rules. Children are more likely to consider moral rules (as opposed to conventional rules) as absolute and universal. When one is young (4–6 years), the moral violations are very serious but when one becomes older (11–14) the conventional violations are taken as seriously as the moral violations are.

Gabennesch (1990, p. 2052) cites Turiel and Smetana saying, “with regard to conventions individuals are relativistic...With regard to morality individuals are universalistic” (1984, p. 272) and Nucci is quoted by Gabennesh saying, “individuals view conventional standards as culturally relative and alterable, while moral prescriptions are viewed as universal and unchangeable” (1986, p. 139). This holds implications for the current study; I can see that refraining from drawing God is perceived by Iranian children as either a cultural convention or a moral prescription. Analysis of the drawings by Iranian children reveals that many of these children feel unable to draw God, and they understand this to be a universal rule because “no one ever seen God”.

Muslims, as well as Iranian scholars, believe that humans have the innate ability to seek God from birth. For this reason, the existence of God, his uniqueness, and his greatness constitute a foundational consideration when doing such research.

Iranian Children’s Drawings of God: Context, Research Question, and Hypotheses

My study is part of the international and interdisciplinary *Children’s Drawings of God* project, conducted under the supervision of Pierre-Yves Brandt at the Institute of Social Sciences of Religions at the University of Lausanne. My research concentrates on the Iranian sub-collection. Mohammad Khodâyarifard from Department of Psychology of Tehran University supervised the collection (Chap. 12, this volume). The collection includes more than 3000 drawings from six cities (Tehran, Tabriz, Neyriz, Sanandaj, Sâvojbolâgh, Sâri) in Iran. Participants (girls and boys) ranged in age between 7 and 14 years old. I had the responsibility of digitizing the drawings. Following an agreement between the University of Tehran and the University of Lausanne, the Iranian collection was sent to University of Lausanne in order to be kept with the drawings collected in other countries. The entire collection presents a variety of drawings showing the influence of the society in which the child lived. I found this influence to be especially clear in the case of Iranian children who live in the context of a strong projection of religious (Islamic) values when compared to children in European countries where religion is much less present in daily life.

The drawings can serve as a methodological tool to understand how people acquire and develop their concepts of God. Yet few empirical studies have been conducted to investigate the representation of God/gods. Through the research conducted to date, various factors have been identified by researchers concerning the religious development of children. Among these, I mention the social and

contextual factors. Hanisch (2002), who studied children growing up in East and West Germany in 1996, showed the influence of social, religious, and cultural contexts. He proved that all children up to age nine have a private psychological development that draws strongly on their imaginations. However, from the age of 10, their cultural and societal contexts exert a strong influence. He found that children growing up in a religious environment had more highly developed and modified images of God, while children growing up in a non-religious environment retained their early and childhood imaginings of God. Slater worked with evangelical children (2016). He showed that many factors such as family, culture, movies, cartoons, etc. influence children's understandings of God. In addition, he described the development of the concept of God in children. According to his findings, children up to the age of about three are not able to imagine non-physical beings. He also observed that as children's age increases, their drawings become more abstract. Pitts (1977) collected drawings by children from several Christian denominations and was able to show how much the environment influences children's ideas about the concept of God. According to Pitts, parents are the first and often the largest influence on children's concepts of God.

In this work, I discuss the case of Iranian children. Children most often produce drawings that reflect their society. To understand this facet of the drawings by children in Iran, it is useful to contextualize Iranian society. Iran, formerly known as Persia, is in the Middle East. From the seventh century, after the invasion of the Arabs, the country adopted the tenets of Islam. Before that, Zoroastrianism was the religion of most Iranians. Since the fifteenth century, Shiism has served as the national faith. The last kingdom dynasty, Pahlavi, was secular. However, after the 1979 revolution, Iran became the Islamic Republic of Iran. Since then, there have been profound changes in the constitution and all policies unrelated to the Islamic faith have been ruled unacceptable. Thus, in today's Iranian society, religion and politics are closely related and the laws ratified by the parliament must be compatible with the principles of the Islamic religion. Iranian children live in a country where religion is present in everyday life. Religion and particularly the values of the Shia tradition surround them daily through newspapers, audio-visual media, and subjects taught at school. Indeed, schools are established under certain conditions to respect and promote Islamic values. Shiism gives considerable importance to the family of the Prophet Muhammad and the descendants of his daughter Fatima. There are various religious ceremonies organized during the year throughout the country. In this situation, children become quite familiar with religious concepts. Through my work, I seek to discover how a particular religious precept, the prohibition against drawing God, manifests itself in the drawings of Iranian children.

The drawings show that children can move beyond religious prohibitions, but this raises the question: How is it that Islam forbids drawing of God, but the drawings of Iranian children do not indicate this? Possibly this occurs because in Iran they explain to children that God is beyond our human capacity to imagine, instead of explaining to them, theologically, that drawing God is forbidden. In addition, Iranian children grow up in a sociocultural environment where there is no image of God.

Drawing of Prophets and Imams

Both Sunni and Shiite theologians believe that it is forbidden to draw and represent the prophet Muhammad or the other prophets, because no one alive today has seen their faces and consequently, no one can say how they looked. According to theologians, figurative representations of these people are a contempt to them, a lack of respect that lowers them, trivializes them, and exposes them to criticism. It is not acceptable to treat the prophets in this manner, because they have been chosen by Allah. For this reason, the faces of the Imams and the prophet are not drawn but are replaced by light when they appear in textbooks (in order to illustrate and supplement the textual content of the volume).

Research question

My main question:

- How do Iranian children deal with the prohibitions of Islamic pictorial representations when they are asked to draw God (“*Khoda*”)?

Sub-questions:

- Is there an explicit reference to such prohibitions? If yes, how is it shown?
- How do the children internalize religious teachings concerning God?
- Do children keep the page blank?
- Knowing the status of images in Islam, particularly the image of God, will the researchers encounter difficulties when conducting research in an Islamic context?
- Can I interpret the children’s approach to the task as an implicit way of acknowledging such prohibitions (avoidance of a pictorial representation of the divine figure as such, etc.)?

Starting Points:

- The children are socialized to their religious cultures, they follow the rules for representing God that are peculiar to their religion; their drawings reflect their religious cultures. So before collecting the drawings in Iran, I supposed:
 - This is difficult research to do in Iran because it is a sensitive subject.
 - In Islam, there is no representation or image of God.
 - Theologically speaking, drawing God is a sin in Islam.
 - Nearly half of the children would not draw anything and would return blank pages, explaining “we cannot draw God because it is a sin.”
 - Nearly half of the children would draw light.
 - Few children would draw anthropomorphic figures.

Although Muslim theologians discuss the issue academically, there is no psychological study that specifically addresses the issue of the prohibition against representing God. Hence, the current study is highly relevant. In addition, it gives insight into the way children deal with religious prohibitions and perceived religious standards.

Methods

Educational and Cultural References (Textbooks and Other Media)

Step One

To find the sources that influence the drawings by Iranian children, I look to the religious resources that are accessible to children in everyday life. In Iran, religious teachings are in the school curriculum for children from the age of 7–18 years. Religion manuals have been written and are used in the schools for the purpose of training children and adolescents in their knowledge of God. These textbooks are written at different levels and are designed to be age appropriate. I purchased the Iranian religion manuals for the academic year 2015–2016 (because the drawings were collected in Iran in that year) and I particularly scrutinized textbooks for children aged 7–14 years, the age range of the children who participated in the data collection in Iran.

The media provides another source of religious education in Iran. Therefore, audio and visual sources, such as television, became objects of study for me in order to better understand the drawings by Iranian children. According to the law, in Iran it is necessary that the programs broadcast on television reflect the Persian and Moslem culture. I watched different programs, intended for children, that were broadcast through national channels in order to learn what they offer about religious education.

The Media (Television)

Since the 1979 Islamic Revolution, laws require that audio-visual media and other institutions in Iran demonstrate compatibility with Islamic laws. Television, as one of the most influential forms of media, plays a very important role. In 2017, Karimi and Ghavimi published their article “The role of the media in the religious education of children.” They provide interesting results on the role of television in the religious education of children and adolescents. They studied 8- to 12-year old students of a region of Tehran city. According to this study, the Islamic Republic of Iran is founded on religious principles and “the content of audio-visual media must include religious content” (Karimi & Ghavimi, 2017, pp. 114–115). I read that “the

spread of Islam” and the “Consolidation of the Islamic Revolution” is listed among the various responsibilities of the national media in Iran. It is also necessary to know that “the media is at the service of religion and it is a means to propagate the message of religion” (Azari (1337) [1998] “Research in mass communication”, as cited in Karimi & Ghavimi, 2017, pp. 114–115). The authors confirmed support for their three hypotheses at the end of the study: “(1) The direct education of television is influential in the learning of religious teachings. (2) The training and education of religious concepts are related to television. (3) Television as a means of informal education of religious teachings has an important place” (Karimi & Ghavimi, 2017, p. 121). Another article (Torkashavand, 2012) explains the different ways and means of educating children about religious concepts through the media. This article lists 13 ways of carrying out religious educational programs for children. Common to all 13 ways is the emphasis on the merciful characteristics of God, rather than on God’s binding characteristics. Another very important consideration, according to this article, is the psychological development of children and their ages, because this factor defines their ability to understand religious concepts.

Step Two

In a second step, I studied religious textbooks for children aged 7–14 years by focusing on the different topics addressed and taught in each age category. When I look at the content of these books, I notice the presence of many childish drawings or images that accompany the lessons and exercises. The lessons have different themes such as the stories of the lives of the Shia Imams and the prophet of Islam, the rules of religion, the rights and duties of each believer, the religious obligations (how to do the prayer, duties of the young during the month of Ramadan), how to behave in private and public life according to the Moslem religion, the feasts and religious ceremonies, their meanings, the existence of God, the unicity of God, submission to God, the blessings of God, gratitude and thanks to God, the different qualities of God as “the omniscient, the omnipresent, the omnipotent, etc.”, the Qur’an as the sacred book, heaven and hell, the consequences of our actions on earthly and heavenly life, the teaching and practice of hijab (for girls, especially), life after death, and the purpose of creation, etc.

I watched various Iranian TV programs on different national channels, and I saw that the programs broadcast for children are compatible with the teachings of the Islamic religion. They are often dynamic enough and joyful enough to attract the attention of children, and are constructed to foster connections with religious festivals and national events, etc. At the time of the calls to prayer, there is a recitation of the Qur’anic verses accompanied by different images and films of nature, Mecca, Kaaba, mosques, people who are preparing to pray, etc. which are broadcast on television. A child watching these images and hearing the calls to prayer and the Qur’anic recitations makes a connection between them.

After studying the different lessons of the religious textbooks and watching the different channels of Iranian national television, I decided to categorize the

collected drawings and analyse them according to these educational and cultural sources. As I mentioned earlier, the religious manuals teach different themes. Through these themes and the themes found in the drawings themselves, I created categories and tables to show distributions across categories by county, and by sex of the participant.

Results

In this paper, I tried to better understand the strategies used by Iranian children in a socio-cultural and religious context.

From the 3032 drawings collected in Iran, I found that 7% of the Iranian children chose the figurative representations of the imams and the Prophet with a lighted face as their theme for their drawing, 13% of them chose the mosques and the Kaaba⁸ and other Muslim objects, 14.5% of them chose the light for representing God, 7% of them chose to represent scenes of daily prayer or other type of prayer, and 25.5% of them chose the depict the blessings of God.⁹

The different themes vary according to the ages of the children. Anthropomorphic representations decrease with age, while drawings of the landscape and depictions of the blessings of God exist in all age groups, and even increase with age. The theme of the blank page also varies with age; in the older age group, I see an increase in the number children who refuse to draw God, choosing instead to return a blank page to the researchers.

What strategies are the children using when they are asked to draw God? I find that I can trace a large majority of the children's representations to sources of religious education in Iran such as textbooks and the media. The drawings for which no source could be found are very few. I must not neglect the powerful role of parents, who tell their children about the prophet and who teach their children about Islam and, through their manner of living, supplement their children's religious education. Their influence is apparent and both their teaching and the sources on which they rely transmit images to their children. The children recall these transmitted images when building their mental picture of God. In addition to these sources, mosques and other religious places frequented by these children provide other examples of religious representation. These examples serve as sources for the children. In the mosques there is no figurative representation of God and most of the time, the mosques are decorated with Arabic calligraphy and mosaics depicting nature. Often the mosques also contain pictures of religious things (such as the Kaaba, or the tomb of the Prophet) or people (such as the Shiite Imams).

⁸The Kaaba is a cubic construction in the holy mosque in Mecca, which is a place of pilgrimage for Muslims.

⁹I provide tables showing the various distributions in the appendix, below.

With this theological understanding about the representation of God, I evaluated more than 3000 drawings collected from Iranian children ranging in age from 7 to 14. Of all the drawings, I selected 2786 for analysis. Only 177 of these contain no drawing (the children returned blank pages). Therefore, despite the prohibition against drawing images of God, 2606 children chose to draw something to represent God rather than to return blank pages. However, without having a description of the drawing (or lack thereof) by the children on the back of drawing pages, it is difficult to interpret the drawings or analyse the children's decisions.

Among the 177 children who returned blank pages, 90 children simply wrote, "I cannot"; 11 of these children were 8 years old. Other children provided more specific reasons for not drawing a representation, such as "God is invisible and we are not able to see him", "He is everywhere but we cannot see Him", "He has no physical form, so we cannot draw it", "Nobody can draw God because no one has ever seen it", etc. Most of the children who returned blank papers were between 11 and 14 years old. I see in their justifications that they are aware of the existence of a God who is invisible. When they were requested to "draw God" they avoided drawing God, and did not draw anything else, either. However, when I read the explanations provided by children who did make drawings, I found that they used same reasoning reported by children who returned blank pages, yet these children chose not to leave their page blank. They fulfilled the task, but often they did so by drawing something other than a figure of God. They provide explanations such as, "I could not draw God, so I drew his blessings", "I do not know how to draw God because I've never seen him. But I see his creation and I drew his creation", "I cannot draw God and I drew Imam Hussein".

Here I can repeat the question I asked at the beginning of the work: Are there children who explicitly follow the prohibition against drawing God? If yes, how? To answer this question, I read the descriptions of the drawings of the Iranian children to see how many children indicate consciousness of the prohibition, how old they were, and if they used the words *sin*, *not allowed*, and/or *blasphemy* in their description.

Only nine children out of 2786 said that drawing God is a sin or that it is not allowed. Among these nine, four children returned blank pages and referred to the prohibition to draw God explicitly in their explanations. These children wrote that drawing God is a sin. The other five children wrote that they were not allowed to draw God. This wording refers to a restriction by religious authorities: a lack of permission, rather than an act of sin. Below I provide descriptions of the nine children who use the words *sin* and/or *not allowed* and did not draw God:

Boy, 10 years, and 10 months, Tehran, Iran (ir14_te_m_pot_10_10_mol)¹⁰.

"I did not draw God, because he is very great and imagination of his greatness and drawing of God are sins."

Boy, 11 years and 9 months, Tehran, Iran (ir14_te_m_pot_11_09_alh).

¹⁰Links to quoted images that are not reproduced in this chapter can be found in the index at the end of the book.

"I did not draw anything, because God could not be drawn and it's unacceptable religiosity. (I would never do that)".

Boy, 12 years old, Tehran, Iran (ir14_te_m_pot_12_xx_moh).

"In the name of God. I did not draw. Why? Is it the right thing to draw when it is sinning to draw God and imagine God?"

Boy, 13 years and 7 months, Savojbolagh, Iran (ir14_sh_m_pai_13_07_has).

"I drew about nature and God's creatures: sea, tree, flower, cloud, sun, mountain, human being. I'm not allowed to draw God at all, because I cannot see him, but I can see his creatures."

Boy, 13 years and 5 months, Savojbolagh, Iran (ir14_sh_m_pai_13_05_mox).

"I drew a jungle beside a street, and I drew beautiful trees that was one of the signs of God. I'm not allowed to draw God. I drew God's creatures which are as beautiful as him."

Girl, 12 years and 9 months, Savojbolagh, Iran (ir14_sh_f_pet_12_09_mxz).

"I did not draw God, because I am not allowed to draw God."

Girl, 11 years and 10 months, Neyriz, Iran (ir14_ny_f_pkh_11_10_far).

"But no one saw God, but I imagined that God is a light. Nobody has seen it and imagining about God is not a good act. End."

Boy, 12 years and 1 months, Tabriz, Iran (ir14_ta_m_pki_12_01_amo).

"It is a sin to draw God or to say God resembles someone because we have not seen God."

Boy, 14 years and 6 months, Sari, Iran (ir14_si_m_par_14_06_alb).

"I drew God imaginary. I do not know what God looks like. God, forgive me."

Two girls and seven boys said that the drawing of God is not allowed. Three of these boys come from the same school. When I gathered more information about this particular institution, I learned that it is a school where religious teachings are taught in a harsher and more rigorous way.

With these results before us, I can recall and evaluate the suppositions I held as starting points. Below I present my initial suppositions (regular font) and my actual findings (italic font):

- This is difficult research to do in Iran because it is a sensitive subject. *Yes, but it was not as difficult as I thought it would be.*
- In Islam, there is no representation or image of God. *It does not exist.*
- Theologically speaking, drawing God is a sin. *Yes, according to Muslim theology, it is a sin.*
- Nearly half of the children would not draw anything and would return blank pages, explaining "we cannot draw God because it is a sin." *Six percent of the Iranian children did not draw anything. They returned blank pages and explained that they could not draw God because it is a sin. Most children (2915) made drawings and only 177 children returned blank pages. These findings do not confirm my initial point.*
- Nearly half of the children would draw light. *439 children drew light (Table 15.5). There were children who drew God as light, but they were not as numerous as I initially had supposed.*
- Few children would draw an anthropomorphic figure. *38% of the Iranian children drew anthropomorphic figures (Table 15.10). Compared with the other countries from which drawings of God were collected, there were fewer drawings of anthropomorphic figures, but the number of anthropomorphic figures in the Iranian collection was higher than I had anticipated.*

Discussion

First, I would like to highlight what this is specific about this research compared to previous studies. In fact, the idea of drawing gods is not new to Muslim societies. In other Muslim countries and in Iran, different studies had already been conducted on different religious notions, taking the form of answering questionnaires or drawing. For example, there have been studies done with Turkish children as “Image of prophet German-Turk children” (Kahraman, 2015) or “A Semiotic perspective on the image of ‘Heaven’ in Turkish children in Germany between the ages of 7 and 15” (Türkmen, 2015). The present study is the first one to ask Muslim children in a Muslim country to draw God. Such research has not been conducted in any Muslim country except Iran. The present study is the first study on the theme of the prohibition of the representation of God in Islam.

Conducting this research was difficult in Iran because it was considered as a sensitive subject. However, it was not as difficult as I imagined. The Iranian researchers had to take several steps in order to obtain necessary authorizations from the Ministries of Education in Iran. The directors of the schools had to respect this authorization and allow the researchers to collect the drawings. However, I think that in other countries, researchers were required to go through similar steps. My Iranian collaborators and I have been able to do such research in Iran because the Iranian society and the academic world in Iran are open to science and they are willing to carry out research for scientific reasons.

The main question raised by the data is: Why did a huge number of Muslim children produce representations of God and only few children mention the prohibition of representation of God, even though they are all receive education of faith in one creative and improbable God?

To answer this question, I note that even though a negative opinion is disseminated by theologians towards the creation of images, it has not been resulted in an absolute prohibition. I see evidence of this in the forms of art, in the painting of humans, animals, and nature, in the royal palaces and objects produced in the Muslim world, and especially in Iran under the kingdom of multiple dynasties. Other artistic forms, mainly the art of calligraphy, have been widely used to decorate mosques and sacred spaces where all figurative representations are absent. In Iranian Shiite culture, if the image or statue is not hostile to Muslim religion and values, its use is not prohibited. A large majority of children drew the blessings of God in the form of nature. This means that the children had learned that they could not see God, or, perhaps in the sources at their disposal they had not been exposed to a figurative representation of God. It also indicates that these children see nature as a creation of God. But, on television, at the time of prayer or during the recitations of the Qur’an, images of nature, Kaaba, mosques and so forth are shown. In addition, images of prophets and Imams are shown with luminous faces.

Even after the 1979 Islamic Revolution, despite radical positions at the beginning of the revolution, art and figurative representations continued to exist by adapting to new ideologies that were especially designed to aid in the transmission of Islamic values. That explains how all kinds of illustrations are permitted in children’s books,

cartoons, movies, newspapers, photo galleries and paintings, etc. Iranian children grow up in an environment where, on one hand, religion (which prohibits representations of God and discourages figurative representations) is a strong presence in everyday life, and on the other hand, art and painting are very much admired. In addition, Hanisch, through his study shows that all children up to the age of nine have a private psychological development that draws strongly on their own imaginations. However, from the age of 10, the cultural and societal context exerts a strong influence on their imaginations. In the drawings of Iranian children from six cities in Iran, I found that children up to the age of eight or nine do not have problems in carrying out the task they were asked to do. Most children who had a more reflective reaction to the request to draw God were older than 10 years. The nine children described above (those who explicitly referenced the prohibition) were all between 11 and 14 years old. The majority of children made drawings; however, we cannot conclude from this that the children are unaware of the Islamic rules prohibiting the representation of God. They may not have referenced the words *sin* and/or *not allowed*, but they used other wording phrases in their description such as: “I do not know what to draw”, “I cannot”, “It is not possible”, “God is invisible”, “God is undrawable”, “God is the light”, and so forth. Although most of the children aged 10–14 have not written explicitly that drawing God is a sin, yet in their drawings, by drawing other things than God himself, the children demonstrate that they may have considered this prohibition. This observation does not apply to the children aged 7–9.

In my research on the study of the concept of God in Iran, I have not been able to find a study on the prohibition of drawing God in Islam. Through the studies that I have mentioned, it becomes apparent that the prohibition against drawing God in Islam is not even a subject of research. This may be because not making figurative representations of God is part of social and cultural norms among Muslims; avoiding creation of figurative representations of God is the norm and it does not capture the attention of scholars as a topic that requires study. According to Islamic instruction, every person has the right to use his/her own imagination to regard to his/her mental image of the great creator; if one creates an actual representation of God, then one limits one’s future imaginings of that concept.

The studies I found concern God’s entity, his absolute qualities, and how to explain them to children. My study focuses on a theme that is more frequently discussed in Muslim theology. Through this work I sought, first, to know the perceptions of children growing up in social and cultural contexts where there is a strong presence of religion, and, second, to present the context of Iran as a country that wants to advance in science and is willing to cross the boundary of that which is “forbidden”, for the sake of scientific exploration. In Western countries, the distinction between moral norms and legal statues is clear-cut; however, in a country like Iran this distinction is not so clear. The studies on norms tell us that repeating to children, systematically, the prohibition of a moral norm teaches them to consider behaviour related to this norm as bad. When providing instructions during data collection, I did not repeatedly tell the children that the act of drawing God is a sin, so most of the children, when asked to do this act, did not think of sin. Nevertheless, because they had never seen an image of God, this work was unusual for them. Consequently, it follows that if there was a law in Iran about the prohibition of

drawing of God, and if it was consistently presented to young Iranian children, then I could expect other behaviours when requesting that they draw God.

Conclusion

How do Iranian children consider the Islamic prohibition against pictorial representations when they are asked to draw God (“*Khoda*”)?

Through the education they receive via their family, schools, and media Iranian children learn from an early age about the existence of a single creative God who possesses high qualities and who is beyond our imagination. In addition, they are exposed to places of worship that are empty of figurative representations. When children do not see any image or statues connected with the name of God, I found that they do not refer to a particular image in their drawings. Instead, they draw landscapes, pictures of rituals and customs, figurative representations of the imams and the Prophet (with light in the place of faces), the mosques and the Kaaba, the light, etc.

As I saw in this study, few children provided explanations related to the prohibition. However, other children who did not necessarily use the word *sin* but made different types of drawings are also aware of the impossibility of drawing God. Their strategy, an avoidance of a pictorial representation of the divine figure as such, can be interpreted as an implicit means of dealing with such prohibitions.

The prohibition against drawing God is not one of the direct teachings given to children from a very young age, because, according to the studies I reviewed, religious teachings begin with what is more understandable and easier for children to comprehend. Recognition of the impossibility of drawing God comes to children through explanations that are given to them about the entity of God and occurs when children begin to grasp abstract concepts, around the age of 11–12 years old.

The participant’s descriptions show that as age increases, it is more probable that a child will say that the drawing of God is forbidden. Based on this, I could also assert that religious teachings are better understood from the age of 10 years. In the children’s descriptions, I sometimes found the same reasoning provided by different children from different age categories. For example, when an 8-year-old girl and a 14-year-old girl write that they do not know how to draw God, they may not come to this statement by the same path of reasoning. The first girl does not know how to draw God because she has never seen God; the second cannot do it because God is bigger than her imagination and “He is undrawable”.

Here I can return to my first hypothesis, which was that children, being socialized to religious cultures, would follow the rules of representation of God specific to their religion; their drawings would reflect their respective religious cultures. The drawings of Iranian children show the strong presence of religion and religious practices in Iran. They suggest that the media and religious events have a strong influence on the imagination of children. The descriptions on the back of the drawings show us that the religious teachings given to children by their families and schools do not explicitly support the prohibition against drawing God, but instead, they explain to the children the great qualities of God. These qualities show God to be ultimately unimaginable and beyond the comprehension of our sensing capabilities.

In 2006, for the first time the International Children's Drawing Festival of the Muslim World was held. Its theme was "Me and God".¹¹ When I read the story of this event, I learned that many children drew the blessings of God, religious symbols, the Kaaba, mosques, etc. They saw the same themes that I found in the sample of drawings by Iranian children. The story about the festival provided no information on the prohibition against representations of God.

Websites Consulted (Last Viewed 5 March 2019)

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<http://quran.anhar.ir/tafsirfull-14179.htm>
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<http://www.islamquest.net/fa/archive/question/fa3338>
<https://islamqa.info/fr/9473>
<https://islamqa.info/fr/158232>
<https://islamqa.info/fr/220161>
<https://www.noormags.ir/view/fa/articlepage/836762>
<https://www.sunnah.com/urn/55960>

Appendix

Tables 15.1, 15.2, 15.3, 15.4, 15.5, 15.6, 15.7, 15.8, 15.9, 15.10, 15.11, 15.12, 15.13, 15.14, 15.16, 15.17, 15.18, 15.19, and 15.20

Table 15.1 Number of participants by sex and county

County	Total participants	Female	Male
Tehran	503	251	246
Tabriz	497	253	250
Savojbolâgh	512	260	252
Sanandaj	501	252	249
Neyriz	515	253	262
Sari	504	252	252

¹¹ <https://www.noormags.ir/view/fa/articlepage/836762>

Table 15.2 Themes gathered from drawings

Themes	Codes
Blank	Children who draw nothing or sometimes wrote a word or a sentence to explain their argument that they are not going to draw anything for any reason
Prophet and Imams	Children who draw the Prophet of Islam (Mouhammad) or one of the twelve sacred Imams of Shiism or the members of their sacred family
Light	Children who draw light and wrote that their drawings represent God
The God blessings (the nature particularly)	Child who draw nature as creature of God
The God blessings (other things)	Children who draw things other than the nature
The traditional Islamic symbols	Children who draw the traditional Islamic symbols for example the Kabba, the mosque, the Quran, Alam which is used as a religious symbol in religious ceremonies
Paradise or/and hell	Children who draw things related to the life after death
Anthropomorphic drawings in general	Children who draw a human in different positions
Anthropomorphic drawings (Excluding the drawings of prophets, Imams, God and people praying)	Children who draw human portrait but implicitly mentioned that this is not God or prophet or a person doing a prayer
Angel	Children who draw a human particularly with wings, some time with a lighted face and in most of the cases, this human is female
God as an Angel	Children who wrote in the description that they draw God as an angel
Calligraphy	Children who didn't draw a picture but wrote a sentence or the name of God in Persian or in Arabic
God with a human base	Children wrote in the description that they drew God and we can see a depiction of human body
God with a no-human base	Children who write in the description that they drew God and we can see depiction of an animal, a plant or a ghost
The lighted head or face	Children who draw a human figure with the lighted head or face. These drawings could be the drawing of God or the drawing of prophet or Imams
The scene of prayer (daily prayer)	Child draw a person who do the daily praying, these drawings are consisted of a person, a small carpet (Sajjâda), a piece of stone
Other type of prayer	Children who draw a person who do not the daily prayer, the person is shown doing a meditation, reading the Quran
Other	These drawings can't be placed in any previous categories, for example in one case, a child wrote that the God is in my heart and draw a person with a red heart

Note: There are many drawings that are labeled based on their similar themes and common elements. For example, a drawing which depicts a person doing the prayer next to the Kaaba is labeled as “daily prayer” and “traditional Muslim object”

Table 15.3 Number of blank sheets returned by county and by sex of participant

County	Number	Total	Female	Male
Tehran	64	177	29	35
Tabriz	30		10	20
Savojbolâgh	12		9	3
Sanandaj	6		0	6
Neyriz	14		11	3
Sari	51		49	2

Table 15.4 Number of Prophet and Imams by county and by sex of participant

County	Number	Total	Female	Male
Tehran	33	211	23	10
Tabriz	47		13	34
Savojbolâgh	38		18	20
Sanandaj	44		32	12
Neyriz	19		8	11
Sari	30		15	15

Table 15.5 Number of drawings showing light by county and by sex of participant

County	Number	Total	Female	Male
Tehran	70	439	27	43
Tabriz	64		31	33
Savojbolâgh	42		21	21
Sanandaj	13		0	13
Neyriz	132		68	64
Sari	118		38	80

Table 15.6 Number of drawings showing God's blessings (nature particularly) by county and by sex of participant

County	Number	Total	Female	Male
Tehran	103	712	68	35
Tabriz	60		37	23
Savojbolâgh	124		68	56
Sanandaj	203		115	88
Neyriz	126		51	75
Sari	96		38	58

Table 15.7 Number of drawings showing God's blessings (other than nature) by county and by sex of participant

County	Number	Total	Female	Male
Tehran	11	59	9	2
Tabriz	2		2	0
Savojbolâgh	9		2	7
Sanandaj	17		13	4
Neyriz	13		11	2
Sari	7		3	4

Table 15.8 Number of drawings showing traditional Islamic symbols by county and by sex of participant

County	Number	Total	Female	Male
Tehran	30	388	7	23
Tabriz	61		15	46
Savojbolâgh	130		36	94
Sanandaj	117		29	88
Neyriz	32		8	24
Sari	18		5	13

Table 15.9 Number of drawings showing paradise and/or hell by county and by sex of participant

County	Number	Total	Female	Male
Tehran	13	68	9	4
Tabriz	4		2	2
Savojbolâgh	7		4	3
Sanandaj	25		25	0
Neyriz	2		1	1
Sari	17		13	4

Table 15.10 Number of drawings showing anthropomorphic drawings (in general) by county and by sex of participant

County	Number	Total	Female	Male
Tehran	174	1141	98	76
Tabriz	328		164	180
Savojbolâgh	165		105	60
Sanandaj	164		85	79
Neyriz	133		84	49
Sari	177		81	96

Table 15.11 Number of drawings showing anthropomorphic figure (excluding drawings of prophets, imams, God, and people praying) by county and by sex of participant

County	Number	Total	Female	Male
Tehran	7	61	5	2
Tabriz	7		6	1
Savojbolâgh	20		16	4
Sanandaj	14		11	3
Neyriz	5		4	1
Sari	8		4	4

Table 15.12 Number of drawings showing angel figures by county and by sex of participant

County	Number	Total	Female	Male
Tehran	3	88	0	3
Tabriz	14		9	5
Savojbolâgh	8		5	3
Sanandaj	21		15	6
Neyriz	9		6	3
Sari	33		20	13

Table 15.13 Number of drawings showing God as an angel by county and by sex of participant

County	Number	Total	Female	Male
Tehran	0	20	0	0
Tabriz	4		1	3
Savojbolâgh	0		0	0
Sanandaj	1		0	1
Neyriz	2		1	1
Sari	13		3	10

Table 15.14 Number of drawings showing calligraphy by county and by sex of participant

County	Number	Total	Female	Male
Tehran	7	41	3	4
Tabriz	2		1	1
Savojbolâgh	20		11	9
Sanandaj	4		0	4
Neyriz	4		1	3
Sari	4		3	1

Table 15.16 Number of drawings showing a non-human-based God by county and by sex of participant

County	Number	Total	Female	Male
Tehran	26	125	8	18
Tabriz	15		6	9
Savojbolâgh	0		0	0
Sanandaj	4		0	4
Neyriz	55		21	34
Sari	25		8	17

Table 15.17 Number of drawings showing a lighted head or face by county and by sex of participant

County	Number	Total	Female	Male
Tehran	78	709	43	35
Tabriz	237		114	123
Savojbolâgh	100		59	41
Sanandaj	77		38	39
Neyriz	100		61	39
Sari	119		54	65

Table 15.18 Number of drawings showing a daily prayer by county and by sex of participant

County	Number	Total	Female	Male
Tehran	21	176	12	9
Tabriz	15		10	5
Savojbolâgh	58		37	21
Sanandaj	66		32	34
Neyriz	6		2	4
Sari	10		8	2

Table 15.19 Number of drawings showing other types of prayer by county and by sex of participant

County	Number	Total	Female	Male
Tehran	0	36	0	0
Tabriz	0		0	0
Savojbolâgh	12		9	3
Sanandaj	17		9	8
Neyriz	1		0	1
Sari	6		2	4

Table 15.20 Number of drawings not categorized (other) by county and by sex of participant

County	Number	Total	Female	Male
Tehran	24	49	11	13
Tabriz	7		3	4
Savojbolâgh	1		1	0
Sanandaj	1		0	1
Neyriz	7		2	5
Sari	9		7	2

Table 15.15 Number of drawings showing a human-based God by county and by sex of participant

County	Number	Total	Female	Male
Tehran	113	657	58	55
Tabriz	259		135	124
Savojbolâgh	37		25	12
Sanandaj	23		1	22
Neyriz	102		70	32
Sari	123		52	71

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Part VII
Focus on Comparison with Other
Supernatural Agents

Chapter 16

Natural and Supernatural Agents: Children's Representations of Gods and Dead Entities



Ramiro Tau 

*[...] death, which of all human events is the most
upsetting and disorganizing to man's calculations,
is perhaps the main source of religious belief.*

Bronisław Malinowski, 1931

Abstract When children face the task of having to draw something related to human death, their drawings are based on imaginary, figurative and schematic resources. These representations usually reveal children's resolution of two fundamental problems regarding the comprehension of death; (a) which type of entity dies with death? (b) what are the characteristics of the space of the dead? From child's perspective, what dies with death, and the place of the dead, are regulated by a specific legality, different from the one prevailing in his daily life. The physical, biological and psychological principles that children recognize as necessary in everyday experience are cancelled, inverted or alternated with death. This subversion becomes evident in drawings and is analogous to the one found in children's representations of deities, supernatural agents, and divine spaces. The cognitive and figurative correspondence between the attributes children confer to the dead, the gods and the spaces they inhabit are analysed and discussed using data from two exploratory studies conducted in Argentina, with children from agnostic, atheist and Christian families. We address three broad axes: *what*, *where* and *how* children draw dead and supernatural entities, highlighting the *te Luoreda Lamas, 2001*; ndency towards anthropomorphization, the inaccessibility of the places inhabited by these beings and the attribution of non-normal capacities.

Keywords Drawing · Representation · Children · Death · Dead · God · Supernatural agents

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In this chapter, we will present a brief analysis of drawings of gods¹ and dead entities, which were made by children and young adolescents. These drawings have some particularities due to the objects to which they refer. They are paradoxical objects because gods and dead entities are, simultaneously, outside and inside the sphere of the daily experience of the participants. Death and God are highly abstract notions, although, at the same time, they have an objective anchorage in a series of phenomena of everyday experience: instituted practices, myths, rituals and social representations. In this sense, they are built from ordinary knowledge, which involves interactions always mediated by other objects that, in turn, orbit the periphery of an inaccessible nucleus. More so, even though they are the result of particular and cultural constructions, they appear with the universality of nature: they are unavoidable and almost necessary notions.² Indeed, there are no known cultures that have not taken a stand on the afterlife and on some variety of the divine, through more or less sophisticated shared meaning systems.

As we will try to show, children appropriate representations, discourses and practices around these issues from early on in development. Before they have a clear idea of what death implies from a biological point of view, or what God can mean to an adult, children are able to represent these notions in drawings. Some aspects of these representations show a developmental rising curve in their understanding and, consequently, it would be possible to identify stages of progression. From a figurative and conceptual perspective, these transformations are remarkable and, in very general terms, advance towards greater complexity and abstraction. However, it is not possible to establish an evolutionary pattern or some kind of overall hierarchy in general terms, since notions about death cannot be reduced to knowledge about biology. The same can be said about ideas with reference to gods, which do not correspond to an exhaustive understanding of the principles of the natural world that would give rise to the characterization of a supernatural, creative, or omnipotent being, among other aspects. Different dimensions of the understanding of death or God do not present an increasing transformation. In fact, beyond knowledge about the body and certain physical-biological laws, these beliefs assume ideological values and elements that do not show development. The acceptance, or not, of the existence of God or of some kind of post-mortem continuity is a clear example of this and it is enough to remember that these are not homogeneous concepts. Such notions, in fact, configure fuzzy areas of polyphasic and contradictory meanings. Consequently, we characterize the knowledge about death and God not as

¹Why the term *god* begins sometimes with an uppercase letter G, sometimes with a lowercase letter g, and why it appears sometimes in the singular and sometimes in the plural, is explained in the introductory chapter of this book (Chap. 1, this volume).

²This universality is obvious with respect to death since it supposes a fundamental and unavoidable biological phenomenon that requires a meaning-making process: the cessation of the homeostasis of the biological systems. On the other hand, the reasons and motors of religiosity and spirituality in psychological terms are not so evident—although psychoanalytic theses seem to be the ones that have most contributed to understanding this; one particular proposition for this problem has been the idea of an original alienation that implies the emergence of the subject in the field of the Other.

advancing towards coherence, but as zones of knowledge, beliefs, values, and social meanings of different order. In other words, they are *systems of objects* that gravitate around the *observables*³ of the subject.

There is no doubt that children's characterizations are partly dependent on the representations of the culture, as well as the practices of the group they belong to. In the cases analysed here, the drawings represent a particular graphic resolution, which is not completely independent of social representations and meanings. Admitting this thesis implies recognizing that drawings are a way to explore semi-otic dimensions that are, simultaneously, individual and social. In fact, when children face the task of having to draw something related to human death or God, in an interview, their drawings are based on imaginary, figurative, and schematic resources offered by culture and the peer-group's social representations. This is done in the process of generating an original image, modulated by the participant's own knowledge. But at the same time, a drawing is never a copy of an external model because, even in quasi-photographic images, there is always a selection that preserves and excludes, and that fixes relations and points of view that account for the original activity of its author. This is even more evident in a child than in an adult because "[...] he does not draw what he sees, but the idea that he has made; he draws what he knows; in other words, he draws his interpretation" (Piaget [Yale] 1977 [t]⁴). This is one of the central reasons that justify the reference to a theory from which the processes of meaning making are considered always in a certain context.

Beyond the complexity pointed out and the levels of development that could be recognized in some of the implied notions, we will show that gods and the dead are represented by children as consistent agents who inhabit an inaccessible space with similar qualities. At the same time, we will argue that the properties conferred to these entities are distinguished from those characterizing the living and inert objects of our everyday world. We will do this by examining, in the drawings, the relationship between the attributes of these supernatural agents and the places they occupy, spaces where the principles of ordinary experience are subverted or transgressed. This will be done in order to contribute to understanding the complexity of children's thinking about social and cultural objects.

We will, thus, present the systematization of some results achieved in two studies through which the drawings of God, death, and dead entities were obtained. Specifically, *what* the children drew, *where* they placed it, and *how* they presented and described it. The objective will be to discuss some hypotheses about the common psychic processes involved in these visual productions. To do so, we will also explain the theoretical approach and justify the use of drawing as one of the ways of exploring children's thinking and its relation to culture.

³An observable, even if it implies a sensory register, is the empirical verification of the subject's knowledge, guided by his schemes of action. In other words, it is what the subject believes to find in the facts (Piaget, 1974, 1975; Piaget & García, 1982) and it is not confused with something "perceptible" as a passive register of experience.

⁴[t] signifies that this is the author's translation.

A Theoretical Approach to Explore Children's Drawings

Research on notions and representations (Gaillard & Urdapilleta, 2013), such as death or God, can be conducted through the adoption of many different methodological strategies and the use of several instruments for the collection of data. These depend on the theoretical framework, the research questions and the ontological assumptions of the researcher. In order to justify the decisions of our empirical inquiry, we will briefly refer to our the selected conceptual framework.

Our theoretical perspective belongs to a constructivist psychology of social knowledge development. This field can be characterized by its focus on three broad problems: (a) the explanation of the *emergence of psychic novelties*; (b) the *characterization of changes* that occur in a complex system—i.e., what changes and how it changes, in a system of irreversible time (Eddington, 1929; Valsiner, 1994); and (c) the *identification of non-teleological orientations* of transformations (Chapman, 1988; Lenzi et al., 2011; Munné, 2007; Overton, 1994, 2003; Valsiner, 2006). Within this general approach, we follow the fundamental theses of the Piagetian genetic psychology (García, 2000; Piaget, 1970) in its “critical version” (Castorina, 2010). From this approach, it is assumed that knowledge is the result of a progressive construction that emerges from the culturally guided interactions between the subject and the object (Castorina et al., 2003, 2005; Valsiner & Winegar, 1992). These perspectives do not constitute a “literal” extension of the Piagetian program, based on the development of physical or logical-mathematical knowledge and projected towards the field of social objects (Castorina, 2005). On the contrary, in line with the latest developments of the “functionalist” period of the School of Geneva (Martí, 1990), current constructivism is interested in the processes and mechanisms of production of meanings, as well as in the inquiry of the relations that these maintain with the epistemic frameworks, values, representations and socially instituted practices (Becerra & Castorina, 2016; Campbell, 2009; Castorina & Carretero, 2013; Piaget & García, 1982, 1987; Valsiner, 2006).

On the other hand, as we mentioned before, the data that we will discuss in this chapter is mainly made up of images: children's drawings about death and gods. In psychology, the employment and analysis of graphic productions is quite frequent (Baldy, 2010, 2011; Wallon et al., 1990), although their use to explore children's knowledge requires some justifications. Indeed, “the activity of children's drawing has been described as everything, from a child's physical exercise, or a first language system, to a genuine art form” (Kelly, 2004, p. 4). Within this wide range, two broad paradigms of research can be recognized at both ends: the “psychological mirror” and the “aesthetic window” (Kelly, 2004, p. 5).

The first of the two traditions, the *mirror paradigm*, refers to psychological explorations that do not recognize any aesthetic or social attribute in drawings. As if it were a reflection, a projection, or an externalization, the traces of children would produce an image of the *identity*, of the *personality* or of the essential, deep and not evident aspects of subjectivity. In this way, drawings would offer, in a visual product, something central and rather hidden of psychic life. This approach

emphasizes the singularity of the drawings and the need to interpret them as a whole, while objecting any system of equivalences or hermeneutic code to understand culture.

The second paradigm, the *aesthetic window*, implies philosophical, psychological and historical trends. Such trends eventually show themselves via subjective expression in drawing, but scholars mainly consider this paradigm as a way to access to the values, meanings or aesthetic and cultural parameters of an era (Pearson, 2001).

It is evident that the subjective dimension of the drawing does not contradict the possibility of recognizing some shared meanings of the participant's group (Baldy, 2011; Milbrath & Trautner, 2008). Indeed, both paradigms can be coordinated and complemented within a dialectical psychology in which individual knowledge-constructions activities are always carried out as part of social processes of production and reproduction of culture (Castorina & Lenzi, 2000; Piaget & García, 1982). This relationship is unavoidable in drawings of death or God. These images are always an original expression of each participant, although they are composed by "readymade" representations and semiotic resources offered by culture (Kaufmann & Clément, 2007).

Now then, whether as an expression of the subjectivity of an era or of an individual subjectivity, the drawing used in the framework of a psychological research has, for us, a series of fundamental characteristics that we would like to underline.

First, a drawing is a metacognitive synthesis. Like all external representational systems (Martí, 2003), it offers objectified relations and meanings, usually supported on the characteristics ascribed to a referent (Pérez-Echeverría et al., 2010). In these relations, a summary reorganization is usually observed and it results from focusing on figurative aspects or in connections between elements (Klepsch & Logie, 1982). Its synthetic aspect consists in preserving or suppressing certain relations, while the meta-referential function takes place when the drawing acts as an instrumental support for the thought to be directed on itself or on social meanings (Alba, 2010).

Second, visual images offer a synchronic representation of ideas. The spatiality of the sheet imposes coordinates and topological relations that the trace expresses in a relatively synchronic production (Berger, 2008).⁵ It is possible to recognize, in drawings, elements that can differ in number and can be combined in a diverse way (Goodnow, 2001), metaphorizing the relations between ideas, through topological resources such as distance, density, or positioning (Lange-Küttner & Vinter, 2008; Luoreda Lamas, 2001; Matthews, 2003), as well as contours and proportions. In that new system, we can rediscover properties of the represented thought or mental images, although new meanings emerge from it. Indeed, drawing is not a transcription or a sub-product, but a genuine meaning-creation tool in the domain of simultaneity. Even in the case of iconographic representations, that appeal to usual

⁵Although drawings, photographs and other static images are traditionally considered as synchronic, many scholars believe that the constant shifts of the eye focus on different areas that result in a necessarily sequenced and diachronic perception.

schematisms or *clichés*, specific principles, such as extension and coincidence in space, prevail (Martí, 2003).

Third, based on the abovementioned, drawings can also be a way to extensively represent ideas and notions that do not have a substantial referent in “real life”. In other words, drawings are one of the representational ways of what does not belong to the domain of concrete experience. And, for this very reason, they are one of the sources for the creation of possible representations that go beyond the real (Piaget, 1981). They are, primarily, motivated systems of spatial relations (Pérez-Echeverría et al., 2010).

The representation of an object to be drawn must be translated into the drawing by lines that go to the eye, it necessarily takes the form of a visual image, but this image is not the servile reproduction of any of the perceptions provided to the drawer by the sight of the object or of a corresponding drawing. It is a refraction of the object to be drawn through the soul of the child, an original reconstruction that results from a very complex process in spite of spontaneity. (Luquet, 1978, p. 57 [t]).

Whether it is a material object with which the drawing bears a relation of figural homology, or an insubstantial and abstract object, the drawing fulfils its function of extensive re-presentation (Landy, 2001). In other words, drawing re-inscribes what is represented in the domain of sensorimotor knowledge.

Fourth, a drawing is not a mere visual translation of oral language. This statement is an objection to the thesis according to which oral language (or narratives) is always the privileged source to explore knowledge and beliefs. If the drawing performs some kind of “translation” (Luquet, 1978), it consists in a projection of certain relations, but not in an equivalence between traces and signifiers. The rules and resources for visual expression are different from those of verbal expression. Thus, the properties of the image as a system cannot be equated to the attributes of language, even though the latter is the broadest semiotic system and can also function as a meta-language of itself (Freeman & Mathison, 2009; Lange-Küttner & Vinter, 2008).

At the same time, drawing implies relating one’s own perspective to that of the others. Before the age of 7 or 8, approximately, the child draws according to a series of intuitive spatial relationships, such as the distance between elements or overlappings (Piaget & Inhelder, 1967). Later on, children not only draw what they know or imagine, but also what corresponds to a particular point of view; this has been called *visual realism* (Luquet, 1978; Matthews, 2003). In this way, the drawing implies coordinations between parts, according to an overall plan (Lovell, 1977). When the child finally manages to arrange in a single system the possible and necessary disposition of elements of the trace, and also the gaze of the observer, s/he avoids overlappings and impossible viewpoints (Matthews, 2003). Likewise, once the child has mastered the basic technics of perspective and superpositions, the transgressions to these parameters tend to be intentional attempts to represent inconsistencies, paradoxes, or contradictions and, for that reason, they are extremely interesting for psychological analysis.

Finally, with regard to its use in the context of a research interview, drawings can be considered a semiotic resource that complements oral language: it is a

production of meanings, “inscribed halfway between symbolic play [...] and mental image” (Piaget & Inhelder, 1967, p. 70). Although classical authors, such as Luquet (1978) emphasized its playful dimension, drawing also has a purpose and directionality, partially equivalent to those of spoken language. When drawing is the answer to a requested task, children usually begin the activity with an intention that culminates in an interpretation. Between these two moments, they direct their actions according to something that they want to represent or that they believe they recognize in their strokes as they move forward. In a dialectical interplay of searching for coherence between what has been tried and what has been found, something readable and intelligible emerges (Bohnsack, 2008; Sainz Martín, 2002). For this reason,

[...] all psychologists agree that the child has to discover that the lines he draws may mean something. Sully illustrates this discovery using the example of a child who, by chance, drew a spiral line, without any meaning, and suddenly caught a certain resemblance to something, joyfully exclaiming, “smoke, smoke!”. (Vygotski, 1935, p. 170 [t]).

When the child draws, s/he does so “as a narrative, telling a story, just as he would do it by speaking”, so drawing is a sort of “graphic language” (Vygotski, 1935, p. 169), but with its own rules and constraints. For this very reason, it is a resource of thoughts that provides the subject with semiotic elements for cognitive action (Fernández et al., 2003). In this way, “it allows the child to express himself in personal symbols that are more hidden than those of the word; being able to deal with topics that would otherwise be difficult for him to address” (Frank de Verthelyi, 2005, p. 75). This process involves a complex relationship between the intentionality of the child, the image, the observer, and the world (Freeman & Sanger, 1995).

The Use of Graphical Representations in Two Methodological Designs

Based on the above, we will now discuss some specific features of children's drawings about God and death. For this, we will first mention the general strategies for data collection in two different studies. Given that the main purpose is just to present a general overview of the procedure, we will omit the methodological details and the reasons why we make certain decisions to establish our design.

Study 1: Children's Comprehension of Human Death

In a first study, we explored the development of children's understanding of human death (Tau, 2016, 2018). The sample (non-probabilistic) was composed of 60 children from 5 to 10 years old from atheist, agnostic, and religious families that belong to middle-class sectors in Argentina. To address this broad problem, we designed a model of semi-structured individual interview, following the dynamics of the

clinical-critical method (Castorina et al., 1984; Ducret, 2016; Tau & Gómez, 2016). Each interview had three phases: an oral moment of thematic inquiry; a graphic production phase, in which a drawing “related to what we spoke of before” was requested; and, finally, a second verbal exploration, based on the drawing produced by the child. We provided the children with white A4 size sheets of paper and 12 coloured markers. Among others, the notions of causality, universality, irreversibility, and inevitability of death were explored, as well as alive-dead continuities and discontinuities, and representations about the “after death” (Bonoti et al., 2013; Tamm & Granqvist, 1995; Yang & Chen, 2002). In this chapter we will exclusively focus on the drawings obtained during the interview, which are, however, considered under the light provided by children’s verbalizations.

Study 2: Children’s Drawings of Gods

In the second study, and following methodological guidelines for cultural research on the development of the notion of God through the analysis of graphic representations (Dandarova-Robert et al., 2016; Brandt, 2009), we collected the drawings of 140 participants from 7 to 16 years old. The sample was non-probabilistic (convenience sampling) with participants from atheist, agnostic, and religious families that belong to middle-class sectors in Argentina. The participants were selected from schools, clubs and sports institutions. Interviews were always individual, without interruptions. Each participant was provided with a white A4 size sheet of paper, 10 coloured pencils and a black graphite pencil. The procedure involved four segments, (1) We started by asking the following question: “Have you ever heard the word god?” With this trigger formula, we asked them to “use the sheet of paper to draw that”. In order to evaluate the understanding of this first activity, (2) they were invited to write, on the backside of the paper, the instruction received. Next, (3) they were asked to describe the drawing in a written form, imagining the explanation they would give, by telephone, to someone of their age who cannot see it, but wants to make exactly the same drawing. To conclude (4), they were asked to respond to a brief survey referring to their religious experiences, practices and beliefs.

The Gods and the Dead on a Sheet of Paper

The drawings obtained in both studies were produced as an answer to the specific instructions of each design, and the problems that guided both inquiries were different. However, on the basis of a series of recurrences in terms of form and content, we believe that it is possible to make a systematic comparison of both samples, in order to introduce some interpretative hypotheses about common processes. To do this, and as we have previously mentioned, we will focus on three main axes: *what* the children drew, *where* they placed it, and *how* they presented and described it.

Each one of these dimensions offers the opportunity to consider the relationships between the produced image and the particular comprehension reached by the subject.

What Did They Draw?

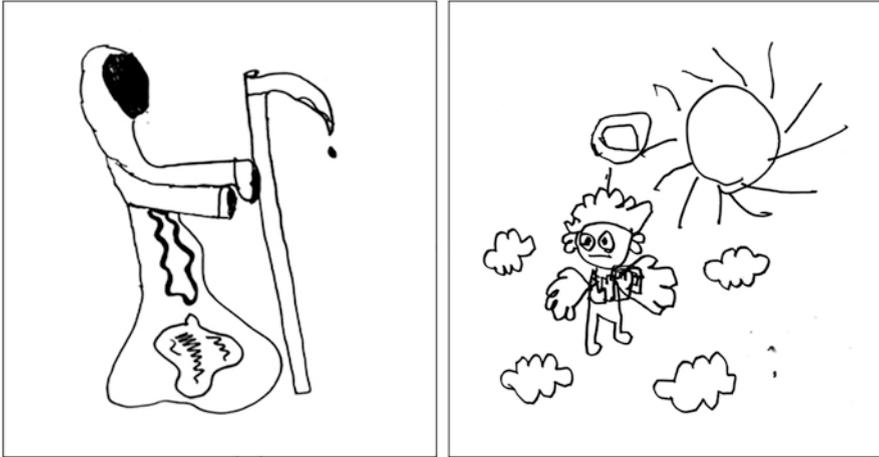
Within the sample from the study of the notion of death, 78% of the images include a human-like figure representing death or the dead—most of them without colour. In the second study, more than 70% of the drawings contain colourful human-like figures that represent the deities (see Figs. 16.1 and 16.2, Figs. 16.3 and 16.4). These values are distributed without considerable variation among children belonging to religious, agnostic and atheist families (Hood et al., 2009).

In accordance with our theoretical framework, any attempt to explain this psychological bias must be complemented with the cultural study of the social institutions in which the participant partakes. Catholic religion is one of the main sources of representations and social meanings of the society to which the participants belong.⁶ The contemporary and consecrated form of the predominant Catholicism



Figs. 16.1 and 16.2 Colorful anthropomorphic representations of God (study 2, above) (<http://ark.dasch.swiss/ark:/72163/1/0105/TIO=FrgvSKKAujbXrfDMFgU.20191211T064541810723Z>, <http://ark.dasch.swiss/ark:/72163/1/0105/OR8fjNkMtI09nXTJ80wXbwF.20191211T06380290113Z>)

⁶Nine out of ten Argentines believe in a God and, furthermore, Catholicism/Christianity is the most widespread religion. It represents 76.4% of the population (Mallimaci et al., 2008).



Figs. 16.3 and 16.4 Black and white representations of death and a dead person (study 1, below) (<http://ark.dasch.swiss/ark:/72163/1/0105/ybfxpQhIQouhXXD1cUwIpQi.20210117T102334340927Z>, http://ark.dasch.swiss/ark:/72163/1/0105/EbpNtFqwRhKuxGUYzeXp_wn.20210117T102041785839Z)

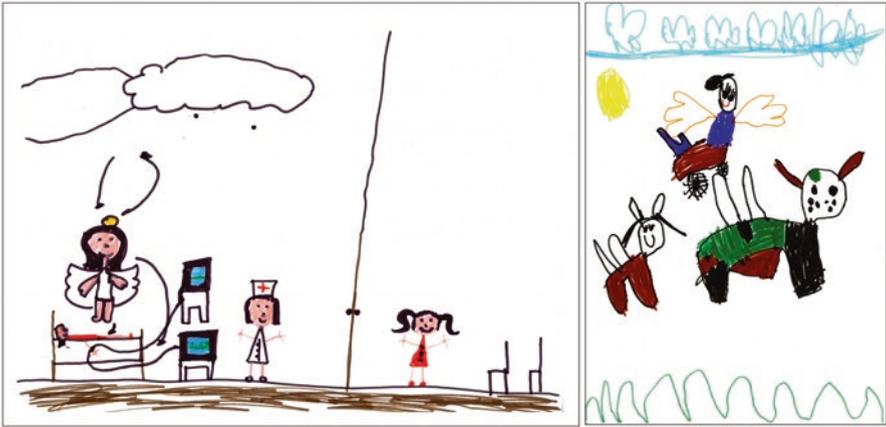
in Argentina is strongly linked to urban life (Di Stefano & Zanatta, 2000; Mallimaci, 2013; Mallimaci et al., 2015), and the corresponding iconography can be found in several religious buildings, as well as in the architectural ornamentation of different public and private secular spaces. Likewise, these signs are found repeatedly in mass media, entertainment activities and, transformed into expressions of the ordinary language. In particular, two central aspects of the Christian tradition, *resurrection* and *exaltation* (León-Dufour, 1985; Mircea, 1995), are typically expressed in anthropomorphic images of God. The *renaissance* as well as the *vivification* and *elevation* use the body of Jesus and the spatial orientations—predominantly the axis above/below—for their representation. These semiotic elements saturate the repertory of local representations and narratives about divinity.

In the case of the study about the understanding of death, illustrations also account for this figurative trend, but in a different way. It is not death represented in an anthropomorphic character, but dead entities in different states and places that predominantly appear. In this regard, Kastenbaum's (2000) observation of the personifications of death—which Nagy (1948) had so frequently noticed in the representations made by Hungarian children, and only rarely found in studies in other contexts—is enlightening: "It is possible that Nagy's respondents were more influenced by folk traditions than subsequent generations of children, especially in the United States, who were far more likely to absorb their stories from television [...]" (Kastenbaum, 2000, p. 53).

In our sample, the preferred recourse consisted in drawing a person, a corpse, or an associated insubstantial entity—soul, spirit, angel, or memory—placed in a context with clear marks of their distance or inaccessibility to the livings (see Figs. 16.5 and 16.6). In addition, it is observed that before children reach some kind of



Figs. 16.5 and 16.6 Dead entities located in a distant or inaccessible space (study 1) (<http://ark.dasch.swiss/ark:/72163/1/0105/es8K4GUuTWOZeP4P3Zb3Igl.20210117T101536346524Z>, <http://ark.dasch.swiss/ark:/72163/1/0105/uVEGpeJgR1uia3YWbvOMsw0.20210117T102135819606Z>)



Figs. 16.7 and 16.8 Cultural signs of death (study 1) (<http://ark.dasch.swiss/ark:/72163/1/0105/O99oYaNtTmujXB6GEot4hQa.20210117T101629463024Z>, <http://ark.dasch.swiss/ark:/72163/1/0105/vMUVfUVLQCiAUJK6UDUPwA5.20210117T101424070829Z>)

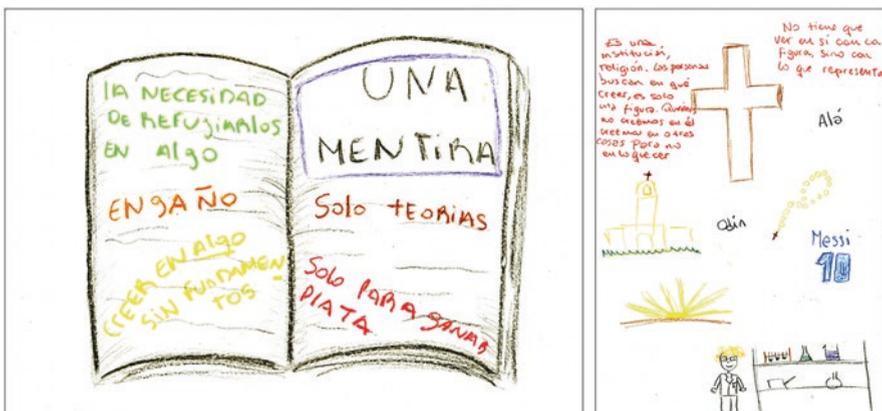
knowledge about biological processes, as well as causality and irreversibility of death, they introduce into their drawings those cultural signs with which the topic corresponds. In this series, hospitals, cemeteries, beds, or blood are distinguished, also including images of the afterlife, such as clouds, stars, heaven, body-soul splitting, or memorial objects (see Figs. 16.7 and 16.8).

Furthermore, the anthropomorphic bias implies a figurative aspect of the representation—referring to somatic figural representation, not agency or intentionality—as well as the attribution of purposes and powers. Many hypotheses have been suggested on the general character of this tendency (Guthrie, 1993; Westh, 2014; see also Dessart, Chap. 3, this volume, and Dessart & Brandt, Chap. 4, this volume). Nevertheless, it should be remembered that a typical phenomenon observed in children is the

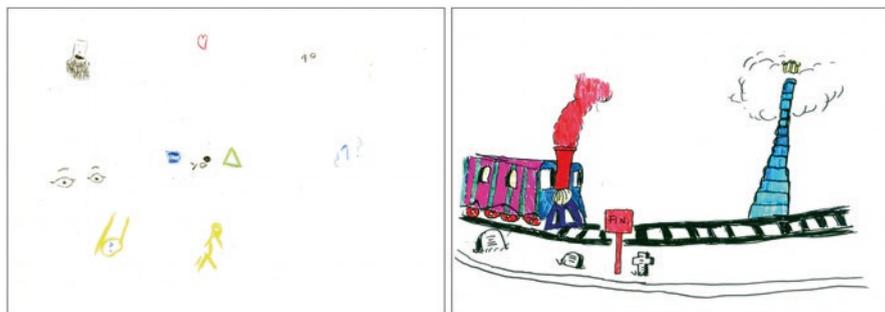
projection of forms and features of living beings on the facts and objects of the world, even those that are inanimate. In a very broad sense, animism is a root present in children's explanations of diverse phenomena (weather, political issues, biological occurrences), and it becomes evident each time they recognize or presuppose the existence of a vital force that imposes will or intention on the observed events. This attribution of agency is also seen in the development of notions that do not have a concrete referent, such as government, homeland, or authority (Castorina, 2005). Indeed, children often characterize these insubstantial notions as being embodied in concrete persons. Beyond the magical-phenomenistic causality of the young child, which is re-edited in adult life through the creation of pseudo-reasons or proto-necessities, animism is also present in forms more or less evident at all ages.

The humanized drawings of gods and the dead seem to reflect these early roots of development, reinforced, in turn, by the representations offered by culture with which they come into resonance. As a whole, these representations may be considered *anthropomorphic supernatural entities* (Boyer, 1996), which share certain characteristics that we would like to highlight: (a) continuity and discontinuity with a previous existence; (b) omnipotence, (c) protection or paternalism, (d) loss or alteration of physical and mental faculties; acquisition of supernatural capacities, (e) specific location in an inaccessible place, regulated by different laws from those of the daily experience, (f) affective saturation—especially love, sadness, or pain—of the supernatural agent and the space it inhabits.

The set of drawings in our sample that did not include anthropomorphic representations shows the typical variability of “original productions” or rejections. Among them, there are explicit oppositions to the idea of God (see Figs. 16.9 and 16.10) or the attempts to graphically present the enigma of divinity and the afterlife (see Figs. 16.11 and 16.12). Although we cannot examine these cases here, it is interesting to note that even in these less frequent representations, there are



Figs. 16.9 and 16.10 Explicit objections to the idea of God (study 2) (<http://ark.dasch.swiss/ark:/72163/1/0105/VUqVhUwrS=q6As0e=ob7ngC.20191211T082709185999Z>, <http://ark.dasch.swiss/ark:/72163/1/0105/Chz47sVNR4GWO6FUuqM30Qd.20191211T081629792962Z>)



Figs. 16.11 and 16.12 Metaphors of the enigma of divinity and the afterlife (study 1, above, and 2, below) (<http://ark.dasch.swiss/ark:/72163/1/0105/qG71fsAjQz2tR8hvBvQdUA9.20191217T094221343034Z>, <http://ark.dasch.swiss/ark:/72163/1/0105/8zXrUMfiTA=9dR58WbOvpAW.20210117T102238248501Z>)

imaginary elements that compose the constellation of canonical cultural meanings about God and death—crosses, journeys or relocations, heavens, bibles, floating objects, yellow lights, beds, and cemeteries, among many others. Moreover, almost all of the drawings obtained are arranged according to some parameters that will be discussed below and grouped along two major axes: (1) the spatiality that belongs to death, the dead or the gods, and (2) the scene or setting depicted in the drawing.

Where Did They Draw Them?

The placement of marks on a sheet of paper, and also the oral and written explanations given through the drawings, tell us about the characteristic of the spaces in which children place gods and the dead. Between both levels of analysis, formal and conceptual, there is a correspondence that shows an effort to use the visual area to express a series of ideas that we will mention briefly.

To understand death is, basically, to face the challenge of making sense of the implied loss: the cancellation of the circuit of ordinary interactions with living beings (Tau, 2016). This is a fundamental restriction imposed by death that children recognize at an early age. By the age of 4 or 5, they usually express that the way to know if a person is dead is by verifying their disappearance or the impossibility of interaction: “we go to his home and we don’t find him”, “we phone her and she doesn’t answer”, “we talk to her and she doesn’t reply”, “he doesn’t move”, “she wants to come, but she can’t because she’s too far”. Death is a form of unavoidable obstacle for almost all previously established interactions, imposed by an irrevocable separation. And this germinal idea is present and expressed long before the acquisition of the biological knowledge necessary to identify organic symptoms of death.



Fig. 16.13 God as an elevated entity, above the Earth (study 2) (<http://ark.dasch.swiss/ark:/72163/1/0105/zHd3YoUPQwWShqakISQg0gZ.20191217T083655404083Z>)

In the same way, the notion of God that we find in our sample refers to an entity that is elevated from the earthly world (see Fig. 16.13) and inhabits a paradise or a kingdom of restricted access. The interactions between the living and God are also deeply limited: “he cannot be seen or heard”, “it is impossible to touch him”, and “we cannot go to the place where he is”. This idea also underlies the conceptions of God as a personal being or as a disembodied and extended nature because connection or interchanges are always indirect or impossible. In addition, in the representations of God made by subjects who reject religious dogmas, the usage of popular idols, real or fictional does not eliminate this fundamental distance. Popular heroes, cartoon characters or idols like football stars also live in a social universe that is not directly accessible (see Fig. 16.14).

These restrictions to interactions are always represented by a distance. The locus of the dead and God defines an unreachable and invariably superior space, both physically and symbolically. However, interactions with the living are not absolutely cancelled and certain ties bridge the gap between the two worlds. Prayers, supplications and other phenomena of communication addressed to the dead or to the gods give an account of a subtle connection modality (see Fig. 16.15). The counterpart of these one-way actions are the interventions of supernatural entities in the sphere of the ordinary life, which must be read, or interpreted in the very facts of human events, as a revelation (see Fig. 16.16). The children from atheist families offer equivalent secularized versions, such as the acceptance of a continuity of



Fig. 16.14 God as a football star, at the upper section of the sheet (study 2) (http://ark.dasch.swiss/ark:/72163/1/0105/E7Dq7_goTX=EzWCefOYurwa.20191217T095523827954Z)

the existence after death, either in the memories of the living, in the form of a collective memory, or in the legacy of material and symbolic works (see Fig. 16.17).

In any case, the discontinuity of interactions is represented by using the graphic resource of distance and by defining a space that, in relative terms, is always above the earthly domain. This top-down axis not only organizes a hierarchy of the world, but it also expresses the distribution of specific legalities and attributes of the entities that inhabit each of these places. In particular, the physical, biological, and psychological principles that children accept and recognize as necessary in their everyday experience are cancelled, inverted, or alternated in the space of gods and dead. This subversion of the order of the real enable transgressions of elementary principles, such as physical conservations and identity of matter, causality, or



Fig. 16.15 Communication between people and God (study 2) (<http://ark.dasch.swiss/ark:/72163/1/0105/q4pSRgn0QnmmsSQIbji56NgQ.20191211T070036241032Z>)



Fig. 16.16 God's intervention in the world of people (study 2) (http://ark.dasch.swiss/ark:/72163/1/0105/2zFgO=spRU29_yGToalQbgT.20191217T094545321019Z)



Fig. 16.17 Continuity of the existence of the dead person in the memories of the living (study 1) (<http://ark.dasch.swiss/ark:/72163/1/0105/1Mt=4BL3TsuLzu6ASBHVZAz.20210117T101951231936Z>)

biological equilibrium. In this way, the interviewees accept and draw transparencies, penetrations, flotations, or multiple deaths of the same entity, in the extra-terrestrial space (see Figs. 16.18 and 16.19), all phenomena and events that are explicitly recognized as impossible in their daily lives.

It is interesting to observe that many of the properties that children attribute to gods and dead, such as the omnipotence of observation and other powers, seem to be the result of their location and not an intrinsic property of the entity. In other words, the supernatural existence of the agent would come from the legality that rules the space in which s/he dwells. In this way, dead entities acquire attributes of gods only when they are recognized and drawn in that distant space, that is, after an ascension. On the contrary, supernatural properties are not attributed to corpses or the dead entities located on earth—such as in tombs, hospitals, or beds (except in the case of a fall following a previous ascension).

How Did They Draw Them?

In addition to the contents and legal aspects of the spaces shown in the drawings, a great diversity of narrative themes or plots are presented. When we focus on what happens in the represented figurative scene or on what the entities are doing, we find a regularity that underlies variations. A certain general recurrence can also be recognised in non-figurative drawings, even if they are representations that are neither



Fig. 16.18 Flotations and other physical transgressions of supernatural agents (study 2) (<http://ark.dasch.swiss/ark:/72163/1/0105/qN6C9abPTHGB2IEeVvNqJQ8.20191204T085233910028Z>)

personified nor anchored in recognisable figures and spaces. Referring simultaneously to the drawings and subsequent explanations of their authors, we would like to mention here only two outstanding aspects that complement the aforementioned axes. Firstly, that which refers to the activities carried out by the entities; the type of actions children select for their illustrations. This dimension is in close relation to the previous ones, since the way in which the entities are presented (mainly, the activity conducted by the figure) is related to the content of the drawing and the spatiality that is assigned to it. In other words, what the drawn figure is showing, as well as its potential attributes or capacities, is something closely related to the place where it is conceived, as if these attributes depended directly on the surrounding space. Second, if we also understand the *how* as a disposition or way of being, the



Fig. 16.19 Transparencies and other physical transgressions of supernatural agents in heaven (study 1) (<http://ark.dasch.swiss/ark:/72163/1/0105/5BSFpdGyR4muv3zdVPHAmQt.20210117T102429632621Z>)

emotional charge that this type of drawing expresses with different shades is remarkable. In this sense, the *how* refers to the emotional tone captured in the scene.

As we have mentioned before, the representation of the actions that gods and dead entities can perform has a common denominator. These are similar activities to those of humans—like cooking or playing—to which certain special powers are added. These faculties consist precisely in the lifting of restrictions, which, as logical necessities, define what the participant considers possible in the ordinary experience. To inhabit two places at the same time, to intervene in the causal series of the world or to protect and observe people remotely are some of the attributes that children draw and make explicit (see Fig. 16.20). Synthetically, supernatural agents are defined by a capacity for action that contradicts the logical necessities and impossibilities (Piaget, 1981) that the participant constructed to explain the daily life experience. To account for this, children use all kinds of graphic strategies that allow them to point out these atypical features, such as yellow colour for the magic illuminations, beams, paradoxical scales, the use of perspective to reproduce a powerful and covering view, wings, or aureoles. Likewise, the kind of activities that these entities carry out always indicate the boundaries of the field of the possible. The entities also appear performing actions that result from volition and not from necessity. They can eat or not, they can play or not, they can sleep or not. In any case, almost everything is potentially performable—translated into omnipotence—something that seems to be a direct effect of the massive suppression of what is necessary and plausible in ordinary actions.

In addition to this, we can recognise signs of intense emotions in the drawings, both in the main figures and in the general scene, or in the later verbal descriptions. Although they are not always expressed through graphic marks, these feelings are alternatively attributed to the characters drawn or to those who do not belong to the



Fig. 16.20 God mastering the time and space of the universe (study 2) (<http://ark.dasch.swiss/ark:/72163/1/0105/B3J2zfA5ScqA3XBrHPPhtQW.20191211T071050900893Z>)

visual scene, but who integrate the story that the drawing tells. We identified the emotional tones by using three general categories: *no evident emotional tone*, *sadness/anger/pain/suffering*, and *love/joy/pleasure/well-being*. The polarity of these categories was not an *a priori* criterion, but the confirmation of the lack of middle shades and the paradoxical superposition of different and extreme emotions.

God, is conceived as a joyful entity, a source of intense and endless love and as kindness or compassion. At other times, s/he is represented as a suffering being, who laments the sins of humankind and the misfortunes of our world. In the case of a dead entity, the prevailing affect is that of sadness that results from the distance



Figs. 16.21 and 16.22 Signs of sadness (study 2) and love (study 1) in the agents (<http://ark.dasch.swiss/ark:/72163/1/0105/KNVPDNDTTTSQV5iYAuPdxAH.20191204T072310054259Z>, http://ark.dasch.swiss/ark:/72163/1/0105/___XSprF4RjmVYJPWtyCYmgN.20210117T101800679673Z)

from the living or the pains and torments that led to death (such as illness or accidents). But there are also many depictions of the dead who are happy to meet God, to end their sufferings, or to be reunited with other beloved dead people. This emotional constellation with a predominance at the extreme ends, love-sadness, is equally attributed to those who are related to the dead and gods. The bereaved in their affliction, the believers in their love and gratitude, or the protected blissful ones, they all show the same radical and intense feelings. The corresponding visual elements are predominantly red hearts, warm tones, or facial expressions of sadness and cool tone-coloured tears (see Figs. 16.17, Figs. 16.21 and 16.22).

Final Comments

Rigorous justification of the cognitive and figurative relationships of children's ideas about the dead and gods requires a detailed analysis at multiple levels. Although this chapter deals superficially with the topic, some lines of inquiry seem to be clear. The constant intertwining of different systems of meaning (e.g., the field of religion with the field of physical-biological knowledge) appears to be one of the key problems for this type of research. Accepting this implies a shift away from the classical tradition that has studied the understanding of death and religious ideas, either as the development of naive biological knowledge or as a passive appropriation of the social representations of the group. Cultural representations of gods and the dead are constantly intervened and limited by knowledge from sensory-motor experience and biological knowledge, and it does not seem reasonable to reduce the problem to one domain or another.

In this sense, an approach to children's thinking through drawing is a necessary way to complement the constraints of oral language. The images allow us to capture some of the naïve representations about bodies, their interactions, and the laws that regulate them, through the relationship of the visual elements, something that introduces a specific dimension for the analysis. The spatiality of the page and the arrangement of the graphic elements quickly highlight the sensorimotor dimension involved in the representations of the participants. As we have seen, the problems related to *what*, *where*, and *how*, open a number of issues that can hardly be fully traced in exclusively oral interviews. Furthermore, drawings are an opportunity for the formulation of questions about temporal sequences, homologies, and figurative differences, relationships between the entities and their context, among many other topics.

Provisionally, we have shown that the representations explored in both studies exhibit a series of common aspects that are in agreement with not only the system of beliefs and cultural meanings—such as icons and established representations—, but also with certain basic processes of knowledge construction, such as the deep relationships between the attributes of an entity and its location in spatial terms. The observed anthropomorphic bias, as well as the spatialization and distribution of different legalities of the real as a function of distance from the earthly world, seem to be the central aspects of this attempt to read our two studies in parallel. Both, the dead and the gods drawn by our children, seem to be regulated by a series of common principles.

The comparisons we introduced here have an exclusively descriptive value. We cannot propose any type of analysis on the development and on the interference of these representations, mainly because the ages of the participants of both samples coincide only partially: Study 1 was based on drawings collected from children aged 5–10 years old, while Study 2 was based on drawings collected from children aged 7–16 years. However, our comparison organized around three common axes—what, where, and how—offers some fundamental clues for future research in those fields. First, the tendency to anthropomorphize God and the dead is clear throughout the sample. In the case of the dead, this anthropomorphization can adopt different forms: a person, a corpse, a skeleton, or an associated insubstantial entity—soul, spirit, angel, or memories. Likewise, these entities are conceived as holders of certain capacities impossible in the field of the participant's daily experience. These attributes are systematically associated with an inaccessible space. The supernatural qualities of an entity correspond to a space that is also supra-terrestrial, in spatial and symbolic terms. This fundamental double split between the living, on the one hand, and the dead and the gods, on the other, seems to have consequences on the way participants present and conceive them. Thus, when referring to the actions, capacities, or dispositions of these entities, children introduce graphically or verbally diverse physical transgressions. The deities and the dead, unanchored from the space of the living, are conceived in a context in which almost any kind of violation of the necessities coming from the organization of participant's experience are possible. Reciprocally, the powers attributed to these supernatural agents can only be expressed in a space that does not impose the restrictions to which the living are

subjected. Nevertheless, beyond this radical division, the connection between the two worlds does not appear to be completely extinguished. Although asymmetrical, a relationship persists: the living can recognise the intervention of supernatural entities, and the gods and the dead can affect the world of the living in different ways. This capacity to influence the universal order, usually conceived in the form of a protection or as an instance of control, domination, observation, or censorship, is always unidirectional and leaves the living limited in their access to the dead and to God. On this fundamental split scenario, extreme emotional tones characterize the affective dimension, corresponding to this way of understanding the relationships with those kinds of supernatural agents.

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Part VIII
Focus on the Research Process

Chapter 17

“Equipping Work” and the Production of a Large-Scale Digital Infrastructure: An Ethnographic Inquiry into the *Children’s Drawings of Gods* Project



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Abstract As data sharing and preservation become a major concern in the humanities and social sciences, more and more scholars are led to produce, organize, and/or manage digital infrastructures. What we call “data equipment” is a major aspect of such work. Our study draws on an ongoing ethnographic inquiry into the *Children’s Drawings of Gods* project, focusing on the production and organization of the project database. We describe how the drawings are “equipped,” i.e. how entities are added to the original material and transformed in order to make the data usable and sharable at different scales. We document the constitution of the data (production and recollection of drawings and metadata, production of further metadata) and the transformation of the drawings during this process. Doing so, we show some important aspects of the project regarding the building of its digital infrastructure.

Keywords Infrastructure studies · Digital humanities · Knowledge infrastructures · Data equipment · Equipping work · Drawing

Digital repositories for the humanities are mainly developing around huge amounts of textual documents. However, researchers in the humanities and social sciences are also struggling to design research tools for corpuses made of pictures, sounds, and objects. There is a real challenge to ensure better access to such resources, as well as to open new opportunities to represent and study them. Some humanities scholars have been using digital tools for more than 50 years: linguists, quantitative sociologists, archaeologists, etc. Other researchers have discovered only recently the possibilities offered by digital tools, exploring, for instance, the use of native data produced by digital technologies and sensors. More and more scholars are

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wondering about the ways they can use digital tools to transform or enhance their work methods, especially with regard to non-textual data. This is the case of the *Dessins de dieux* (DDD), the *Children's Drawings of Gods* project.¹ Its members have been going through the production, gathering, digitization, and analysis of thousands of drawings made by children from different parts of the world. They are using extant digital tools for their research, designing new ones, and setting up a large-scale knowledge infrastructure, i.e. an infrastructure designed, built, and maintained to enhance and further the production and dissemination of knowledge. Our paper documents some aspects of this process, drawing on an ongoing ethnographic inquiry. Doing so, we examine how the notions of “equipment [*équipement*]” and “equipping work [*travail d'équipement*],” terms coined by one of us in previous studies (Vinck, 2006, 2009, 2011; Vinck & Penz, 2008), may shed some light on the shaping of this knowledge infrastructure.

The Sociological Study of Knowledge Infrastructures

If infrastructuring processes are relevant to scholars in the field of Science and Technology Studies (STS), it is because knowledge infrastructures shape the knowledge they help to produce. As far as knowledge depends on data and instruments, knowledge infrastructures are important to look at because they are not passive backdrops. Whether they affect theory, information, or scientific communities, they are core sites of political action bringing forth concerns of inclusion, exclusion, and marginalization (Karasti et al., 2016b). Social scientists have described the mutual shaping of scientific infrastructures, instruments, research collectives, and knowledge (Shankar et al., 2016). Among other aspects, knowledge infrastructures participate in the reconfiguration of academic labor environment.

Studying “Infrastructures-in-the-Making”

Since the seminal work of Star and Ruhleder (1996), STS scholars have witnessed these changes in research and knowledge production (Bowker, 2005; Hine, 2006; Edwards et al., 2007, 2013; Olson et al., 2008; Jankowski, 2010; Dutton & Jeffreys, 2010; Wouters et al., 2013; Mongili & Pellegrino, 2014; Karasti et al., 2016a, 2016b, 2016c). This interest can be easily explained: digital infrastructures are a major part of contemporary scientific work, even though we often hardly notice them. Infrastructure, indeed, is best thought of as a “contextualized ‘relation’” (Star & Ruhleder, 1996) rather than as a thing in itself, as an invisible although constant

¹The international project, *Drawings of Gods: A Multicultural and Interdisciplinary Approach to Children's Representations of Supernatural Agents*, is also known in French as *Dessins de dieux* (DDD), and referred to in this volume simply as *Children's Drawings of Gods*.

work, rather than as an easily defined or delineated artifact. In other words, the notion of infrastructure refers not so much to material entities as to the wider *assemblage* of activities that sustain their existence. To study infrastructures thus means to account for the situated and practical work of designing, developing, building, transforming, maintaining, and using infrastructures. Such activities ordinarily remain invisible—an invisibility that contributes to their efficiency. Users do not want to be bothered with problems related to the functioning and maintenance of infrastructures. They desire immediate access to what they search for and expect the infrastructure supporting the search to be “invisible”.

Invisibility and Infrastructural Inversion

Invisibility has long been a fundamental notion in infrastructure studies (Star & Ruhleder, 1996; Star, 1999, 2002; Bowker & Star, 1999; Bowker et al., 2009) as well as in the study of knowledge infrastructures (Karasti et al., 2016b). Going beyond the usual invisibility of infrastructures is only possible under peculiar circumstances, such as during their production or when they need to be repaired, maintained, or upgraded (Star & Bowker, 2006; Bowker et al., 2009; Karasti et al., 2010; Wouters et al., 2013; Jackson, 2014). An ethnographic methodology called *infrastructural inversion* is required to make visible otherwise neglected things, i.e. to scrutinize “technologies and arrangements that, by design and habit, tend to fade into the woodwork” (Bowker & Star, 1999, p. 34). Of course, the interest in and even the study of infrastructures is not an ethnographer’s privilege; rather, it is constitutive of our ordinary practices (Dagiral & Peerbaye, 2016). As epistemic, institutional, professional, ethical, or political issues associated with knowledge infrastructures are brought to the forefront, some previously unnoticed characteristics of those infrastructures tend to (re)gain some visibility.

Data and Knowledge Infrastructures

Besides the production and/or gathering of machines, protocols, standards, and people, major concerns in the shaping of knowledge infrastructures also include data design, production, sustenance, and circulation. As such, the study of data production cannot be dissociated from the study of knowledge infrastructures. The process by which “raw” data are processed and “cooked” into a new resource and integrated into the infrastructure is not straightforward (Bowker, 2005). Information technology (IT) experts and invisible workers have to face ambiguity and uncertainty as they determine if data are “good enough” to be embedded in a particular infrastructure and used for specific research purpose. Subtle terminological choices, such as the distinction between knowledge and “mere” information or raw data, are deeply significant. Indeed, they often embed competing visions in what should be

seen as knowledge, what the infrastructure should be like, and what one should get from it (Gieryn, 1983; Dagiral & Peerbaye, 2016). In the case of digital knowledge infrastructures, data production often involves conflicting views of future scientific practices (Granjou & Walker, 2016). More generally, data production depends on various technical and social components, including the physical and emotional engagement of science workers, as well as the development of tacit knowledge and socialization to professional standards. This is what makes unusual divisions of cognitive labor challenging, notably in the case of crowdsourcing and the involvement of “citizen scientists” in research projects (Lin et al., 2016; Shavit & Silver, 2016).

New Challenges

As we have seen, infrastructure studies already include a large set of works, many of which target knowledge infrastructures. However, several paths of inquiry remain underexplored. One of the most obvious concerns the scientific areas under study. While most of published investigations have focused on the natural, medical, and engineering sciences, studies of knowledge infrastructures in the humanities and social sciences are still on the rise. Some researchers recently started to study these fields (Kleiner et al., 2013; Wouters et al., 2013; Meyer & Schroeder, 2015). However, very few of them analyze the building of digital tools, data, and infrastructures. This lack of interest is somewhat paradoxical, as digital data sharing has become more and more important in the humanities over the last few years. An increasing number of researchers collect and organize digital data in order to make them searchable. Doing so, they face conflicting situations and *frictional moments* (Edwards et al., 2011; Jaton & Vinck, 2016). This chapter, and more generally our inquiry into the DDD project, aim to fill this gap.

Methodological Approach

The paper draws on data gathered during an ongoing participant observation among the members of the DDD project. The team members themselves furthered our involvement. They wanted to engage with social scientists in order to enhance their reflexivity regarding digitization and interdisciplinary collaboration. As their project appeared challenging in the field of digital humanities, involving ethnographers was seen as a way to document new opportunities—and, maybe, new difficulties—facing researchers. We have followed them as they have shaped a knowledge infrastructure designed to support their own research projects, but also to provide researchers all over the world with access to their unique collection of drawings (which now encompasses more than 6500 drawings). We have also kept track of their efforts in the design and development of digital tools for textual—at least at the

beginning of the project—and iconographic analysis. We have had the chance to observe many meetings and work situations, and to actually record many of them. We have conducted formal and informal interviews with the research group members and also with the IT specialists who have been involved in the project. We have gathered various working documents, including the minutes of team meetings. Some of the research members agreed to write a personal research diary that we later used to conduct interviews.

Among other aspects, we have studied the migration of the data gathered throughout the DDD project from one database to another (for more on this, see the recent work by Serbaeva, Chap. 18, this volume). Indeed, the database that had initially been produced and used soon appeared to the researchers to be obsolete, limiting, and not sustainable for long-term preservation. It supported only simple requests, such as selecting drawings according to various categories (country, year, age, and gender). After the project gained support from the Swiss National Science Foundation (SNSF) in 2014, and following the advice of IT specialists, the project members engaged in the design of a new data model and the transfer of the data to a new digital interface, still under development, aimed at the long-term preservation of humanities and social science research data. Since then, the project members have been building up a digital knowledge infrastructure enabling online deposits, visualization, and analysis of drawings. To accomplish this, they have collaborated with various groups of IT specialists (Oberhauser, 2016). These circumstances enabled us to witness and describe the various stages that lead to the existing digital infrastructure. However, the descriptions and analysis presented here focus mostly on the initial phases of the project, before it was funded by the SNSF.

From Drawings to Data: Some Steps on the “Long and Winding Road” of Equipping Work

In this empirical section, we use the notions of *equipment* and *equipping work* to analyze some aspects of the *Children’s Drawings of Gods* project. More specifically, these notions allow us to analyze the dynamics of producing metadata at various levels. We speak of *equipment* in a mundane fashion to refer to entities that are progressively added to others in order to enable certain actions. As plain as it appears, this notion has a real heuristic value, helping the ethnographer to shed light on issues that would otherwise remain invisible. For instance, one of us has shown in a previous study (Vinck, 2011) how the disagreements and misunderstandings between design technicians and engineers regarding technical drawings lead them to equip these drawings with marks or codes. Such details are central for both technicians and engineers, and they sometimes talk about them with such precision as to surprise (or bore) the inadvertent observer. The proper advancement of a project relies on these easily forgotten signs, e.g. an improperly numbered drawing will jeopardise the integration of each designer’s results. Analysing the *Children’s*

Drawings of Gods project through the lens of *equipping work*, we want to highlight some of the ordinarily overlooked aspects of the building of a digital infrastructure. Due to the limited space available here, this depiction can only be incomplete. We have chosen to focus on two specific aspects of the infrastructuring process: the production of the drawings themselves and the subsequent definition of descriptors for analytical purposes.

Producing “Raw” Data

We could portray the research process as if it had started with data collection. We would then begin our description with the gathering of a first set of drawings in Japan by a graduate student (Kagata, 2006). That was back in 2003. However, even in this preliminary step, the data had already been “framed.” As many authors have pointed out, we never face “raw” data (Räsänen & Nyce, 2013). In this case, the initial framing was scientific. The student’s research took place in the psychology department of a Swiss university. It was supervised by a professor of developmental psychology (Piagetian tradition), and a professor in the epistemology and methodology of psychology. The former would become the leader of the *Children’s Drawings of Gods* project. Drawings had already been used to investigate children’s representation of supernatural agents, in a developmental perspective (Harms, 1944). Additional studies had pursued this developmental approach while trying to identify the influence of such factors as culture, religion, and gender on children’s representations of god² (Hanisch, 1996). However, these studies only analyzed drawings from Western countries heavily influenced by Christianity. Reflecting on this gap in the existing literature, both supervisors saw the project as an opportunity to expand the focus beyond Judeo-Christian representations within Western populations. They were also interested in the use of drawings as an alternative to the quantitative methods that predominated in their field, and which were thought to both orient and limit what respondents could express. They did not want to reproduce what they saw as interpretive “subjectivity” in existing analysis of drawings. Regarding the DEA student’s project, their aim was to come up with a list of descriptors that could offer an unbiased depiction of the children’s drawings. Such objective descriptors would for instance differentiate types of figures in the drawings (e.g. angel, Buddha, etc.), specify their location on the sheet (in the middle or close to the lower or upper edge), or define page orientation (landscape or portrait).

In this context, the student and her main supervisor designed a protocol to produce the drawings they would use as data. The researchers were very concerned by the precise formulation of the instructions to be given to the children. Such concern is usual in their discipline, in order to avoid cultural and gender bias. The children

²Why the term *god* begins sometimes with an uppercase letter G, sometimes with a lowercase letter g, and why it appears sometimes in the singular and sometimes in the plural, is explained in the introductory chapter of this book (Chap. 1, this volume).

were invited to draw on a blank A4 sheet of paper using specific water-resistant wax crayons. The student researcher organized the data collection to work with small groups of children, not to exceed ten participants at a time. Each child was seated at a different desk to ensure they would not see the drawings of their peers or communicate with one another. Once the drawing task was finished, each participant was asked to write on the back of the page: the date of the drawing, his/her birthdate, his/her first name, a restatement of the instructions they received at the beginning of the drawing task, and a narrative description of the drawing s/he had made. Additional material was sometimes collected and gathered with the drawings, such as a list of religious figures provided by the participating institutions. Following this protocol, the student collected 142 drawings in 2003–2004 from children 7–13 years old, out of the Chiba, Fukushima, Kyoto, and Tokyo regions of Japan. Some participants attended public (secular) schools, while others attended religious (Buddhist) schools.

After data collection began in Japan, it was carried on by other researchers. Some of them were members of the Swiss research group, one of whom was a cultural psychologist from Buryatia (Russia). Others were partners from different countries (Russia, Iran, etc.), with various scientific and religious backgrounds, interested in collaborating on the project. The production and travelling conditions of these new drawings soon became a major concern for the research team members. They engaged in multilingual translations of the instructions and questionnaire. They also made thorough investigations about the local contexts and conditions in which the drawings would be made (e.g. if children had tables to draw on or not, if the task was performed in a closed classroom or in open air, if children were talking to each other, or if they worked silently as expected, if adults or older children helped them or not, etc.). The goal was both to stabilize the protocol despite its translations and to identify variations regarding its application. Translation was not only a matter of language, but also of cultural and institutional variations. Some partners had specific research or cultural interests, which were not necessarily directly congruent with developmental psychology, and would result in some local adaptations (e.g. adding a complementary question). In some cases, parents, teachers, or school directors would want more information, or even oppose the task (for instance if they thought that the act of drawing god should not be allowed). Sometimes, children themselves objected the task for this reason, or because they believed that drawing god was a task reserved for “specially trained artists” only. Children who objected to the task were invited to write down why they had declined, to fill in the questionnaire, and to provide a written description of what their representation would have looked like, if they had drawn one.

We want to emphasize three aspects of this initial step of the research process. First, in order to produce the drawings, decisions were made regarding psychological questions; cultural, gender, and religious influence; local institutional influence; and material conditions. The researchers kept track of these decisions, even if what led up to the actual decision has been forgotten (as is often the case). The protocol and precise instructions used in the field are preserved with the drawings. Without these data, the drawings would lose part of their meaning and usefulness. For

example, it would be very difficult to interpret the drawings if the instruction “*You can draw all that comes to your mind when you think of the word god*” was lost or forgotten.

Second, the decisions regarding the protocol are echoed by the efforts made in the field to standardize the drawing conditions, the possibilities offered, and the constraints imposed on the children. The work of eliminating bias is complex and entails various entities: the protocol, the instructions, and the questionnaires (with their multilingual translations), of course, but also tables and chairs, A4 sheets of paper, and wax crayons. It requires adults who can make sure that the children: understand what they have to do, do not speak to one another, and do not look at one another’s drawings. It requires children who are willing to obey their teacher and the investigator, etc.

Third, the drawings are not isolated. Just as they are bound to traces of the conditions in which they were produced, they are linked to a set of other heterogeneous entities (see Fig. 17.1). On the back of the sheet are written the date, the first name of the participant, the instruction s/he recalled having received at the beginning of the task, and his/her own narrative description of the drawing. To the drawing is added a document containing a questionnaire and information regarding the gender, age, school, and religious affiliation of the child. The document and drawing are linked physically, but also through an identical reference number. A specific series of drawings is sometimes associated with photographs coming from the collection site. Further contextual information is gathered regarding the school, the specific context of the task, the person collecting the data, the local language, the precise wording of the task given to children, the number of children participating in the activity, and possible comments by partners on the field.

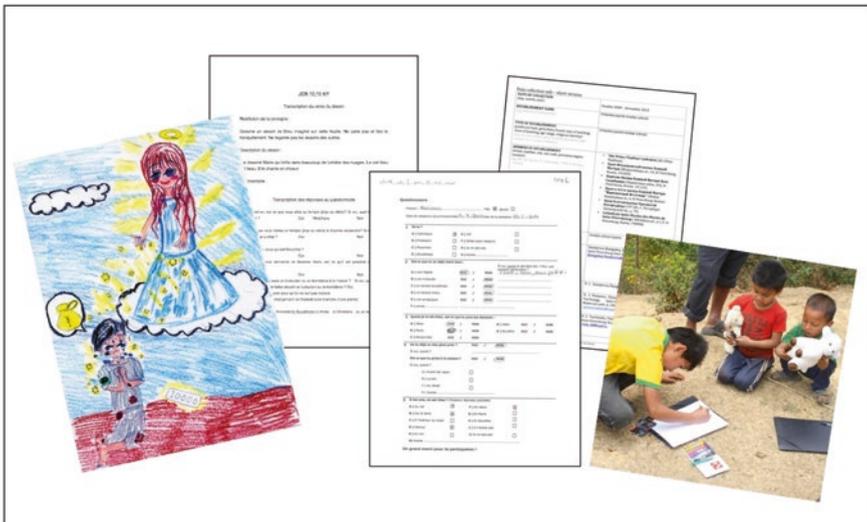


Fig. 17.1 Raw data as an assemblage of heterogeneous traces

Regarding these three aspects of the data collection, we would like to point out that various forms of equipping work must be achieved in order to render the drawings *commensurable*. If the information regarding the participants was lost, or if the drawings could no longer be linked to the protocols used to create them, then they could not be compared and thus analyzed. In fact, they would no longer qualify as data, as it is such commensurability that defines a dataset: entities that cannot be compared in any defined way do not belong in such a set. We understand the equipping of the drawings to be a condition for their existence as data. This point is often missed in discussions about raw data. There is no such thing as isolated data: links must be produced that define sameness and control the differences between the entities under study. Thus, the drawings do not travel alone: they are charged with information regarding the conditions in which they were produced and accompanied by other data. They emerge as parts of a vast assemblage gathering heterogeneous traces (drawing, narration, written information on the sheet of paper, marks and words on the questionnaire, documents of the protocol, pictures of figures of the site, etc.). The drawings are thus specific components related to other entities from which they receive some attributes and properties, among others “to be a drawing of god”—even when the so-called “drawing” consists in a white sheet without any pencil marks. Ethnographically speaking, it would be a mistake to describe the drawings as raw data and sever them from these other entities. As a matter of fact, researchers are quite preoccupied with maintaining the assemblage or repairing it (recoding, looking for the questionnaires associated to the drawings if missing, etc.) when it has been damaged (lack of space on a shelf, provisional separation of a subset of data for a specific treatment, travel incidents, etc.). Among others, specific traveling conditions are required in order to protect these assemblages, to avoid losing some elements, or the connections between them. Using the notion of equipping to understand data production thus help us see the intrinsic connectedness of data, and all that is necessary in order to produce and preserve such connections.

Producing “Objective” Descriptors

The team members wanted to add descriptors to the drawings before engaging in the analysis. They could have written an open-ended narrative description of each drawing. However, as the scientific preoccupation was to engage in rigorous analysis, the idea was to avoid letting each individual analyst decide what to describe in the drawings and how to describe it. The potential influence of the researchers’ religious background was particularly dreaded. The preoccupation was to avoid any form of interpretation, either psychological or religious, at this early stage of data treatment, in order to keep the datasets as open as possible to various research questions. This ideal of neutrality and openness appears to be related to various factors, including the quantitative scientific methodologies promoted by international journals in psychology, and the team members’ various religious backgrounds and psychological approaches (Piagetian developmental psychology, Vygotskian cultural

psychology, cognitivist psychology, social psychology). Particularly present throughout the project has been the goal of providing an interesting and usable database that would be accessible to other researchers around the world, and through which they could engage in new and still unthought-of analysis. Thus, neutrality and openness were seen as ensuring that the database would be compatible with the scientific interests and goals of virtually any researcher studying children’s representations of supernatural agents.

Neutrality, itself, however, can be open to many interpretations. If the research team wanted to contain subjectivity and reduce biases, the idea was nevertheless to produce descriptors that “made sense”. They did not see any use for inconsequential descriptions such as “This drawing shows five colors,” “Yellow covers a total area of 8 cm²,” “There is a red circle on the upper half of the sheet and a green rectangle on the lower half,” etc. The researchers wanted to avoid such overly factual descriptions as much as they wished to avoid overly interpretive ones. In the end, they adopted a long list of descriptors regarding: the number of figures present in the drawing, the presence or absence of a supernatural agent, the presence or absence of a clear-cut distinction between the supernatural agent and the scenery, the framing and characteristics of the supernatural agent, etc. The list was composed of more than 40 descriptors organized into four categories: (a) composition of the drawing, (b) scenery, (c) objective description of the main figure (e.g. hand position), and (d) attributes of the main figure (e.g. gender).

The researchers used these descriptors as they coded the drawings one by one (see Fig. 17.2). However, discussions continually arose regarding ambiguous cases (e.g. “Is this a human with an animal body, or an animal with a human face?”).

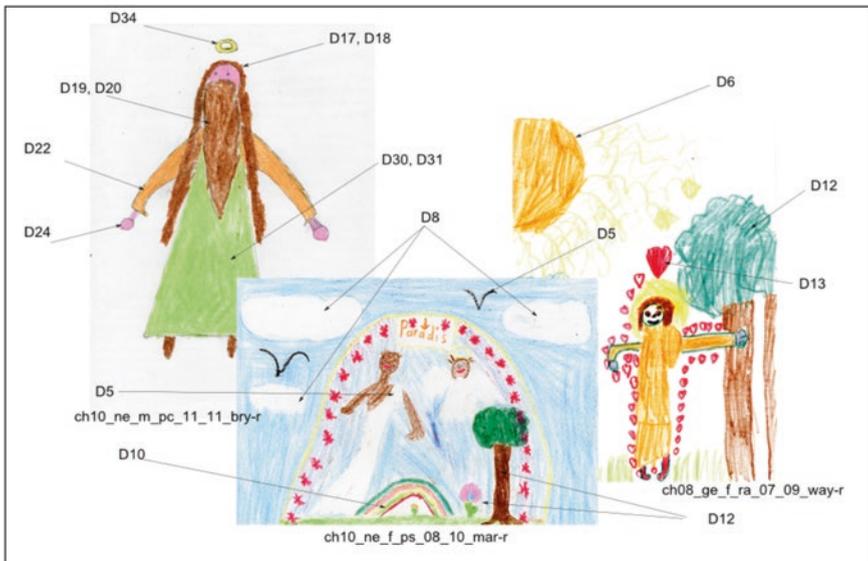


Fig. 17.2 Examples of descriptors noted on drawings

Facing such difficulties, the researchers decided to use categories that accounted for the ambiguity, e.g. *hybrid*. They also relied on children’s written descriptions of the drawings as a way of interpreting them. Nevertheless, these solutions left open a vast array of questions. How many figures can the researchers code as hybrid before it becomes a problem for further analysis? Does using children’s written descriptions to interpret drawings introduce some sort of bias to the analysis? How should the researcher conceptualize the relation between drawings and children’s descriptions? Should they give priority to the drawing? How many descriptors do they need in order to properly describe a drawing? Should they add new categories when those already present seem inaccurate, or is it better to attempt to reduce their number? At what point should they prioritize speed over accuracy? Are some descriptors redundant? Such questions show that the work of defining descriptors is complex and often tiresome, grounded in the team members’ experiences regarding coding and data production as well as in ongoing discussions on scientific and analytical goals pursued by the project.

Having coded a significant share of the drawings they had gathered, the researchers began to analyze them. At first, they studied the influence of age, gender, and type of school on the representation of god among Japanese children. They constructed a typology of drawings, distinguishing nine types of drawings:

1. Celestial figures,
2. Celestial human,
3. Terrestrial figures,
4. Buddha,
5. Monsters,
6. Masked entities,
7. Non-anthropomorphic entities,
8. Relation or narration,
9. Light.

They then produced a large array of statistics: about the children; about the drawings, using both descriptors and types; crossing children’s characteristics and type of drawing, type of school and type of drawing. These analyses lead them to a new argument regarding children’s representations of supernatural agents. In an article published in 2009, they showed that there was a contrast between the drawings collected in Japan and those from Western countries. In the Western sample, almost all anthropomorphic figures were male; in Japan, however, half of the girls drew a female god. Their data also suggested that religious (Buddhist) education influenced children, the older ones mostly opting for non-anthropomorphic rather than anthropomorphic representations. They also pointed out the influence of visual culture, as drawings of human(-like) beings were deeply influenced by manga codes (Brandt et al., 2009).

What can we say about these next few steps of the equipping process? A classic way of analyzing these operations would be to see them as the first “links” of a “chain of re-representations” (Latour, 1995), a series of *translations* during which the drawings are transformed into new representations, i.e. a set of codified

descriptors that will enable new associations and actions. As they use the descriptors to code the drawings, the team members in effect translate them into sets of standardized attributes. Digitized, these sets of attributes enable statistical analysis. Aggregating a set of descriptors to each drawing transforms it into standardized data, opening new analytical ventures. The drawings are thus converted into data similar to and—of most importance—commensurable with, those from the questionnaire. Both sets of data become homogeneous, which allows for simultaneous data treatment, e.g. cross analysis of descriptors referring to the drawings with descriptors referring to the children, their intentions, or their environment. By producing a typology of drawings, the team members perform a new translation, which leads to further translations as they shape new representations of their data in scientific talks and articles. The final links of the chain articulate statements coming from the scientific literature with the representations previously produced: drawings, descriptors, types, statistics, and graphs.

Such an analysis is interesting because it underlines the fundamental, sequential nature of scientific work. Nevertheless, what should not be overlooked is that each translation—and even more so the whole sequence—can be controversial, especially when new practices and entities are involved. Regarding the project under study, replacing the drawing by standardized descriptors for all analytical purposes raised the fear that some interpretive quality would be lost along the way. Could the researchers understand the cultural component of drawings properly through such analysis? Paradoxically, a perspective very much concerned with the temporal dimension of scientific practices tends to lose sight of the fact that chains of re-representations must be painstakingly established before they become self-evident. To put it differently, such a process either rests heavily on previously stabilized methods, involving explicit and tacit knowledge, competencies, goals, incentives, etc. distributed between the various entities engaged in research practices; or it involves heated debates and sometimes-painful disagreements. As such, these methods can be seen as a part of the ordinary equipment researchers use when creating new re-representations from the data they previously produced, i.e. when equipping those data. In the case of the *Children's Drawings of Gods* project, such equipment had to be produced (almost) from scratch.

Conclusion

The new avenues opened by digital technologies for researchers in the humanities and social sciences increasingly lead them to build large-scale digital infrastructures. In this paper based on our ethnography of the *Children's Drawings of Gods* project, we focused on specific aspects of the shaping of such an infrastructure. Doing so, we put forward a very basic point: the process of building a digital infrastructure is not straightforward. The path that leads to collectively usable data is complex. Never-before-thought-of questions soon become impossible to avoid. Details that once appeared as almost meaningless raise what sometimes become

crucial dilemmas. Along the way, decisions must be made, and choices of various kinds are thus progressively blackboxed into data, IT tools, research protocols, organization and skills. We also tried to formulate some more theoretically informed conclusions, using the notions of equipment and equipping work.

First, analyzing how raw data (i.e. children’s drawings) are produced, we suggested that data could be seen as such by the researchers only as far as they are, and continue to be, connected to a set of various entities. Data production thus consists in a large part of equipping work. The drawings must be securely and durably linked to the protocols and precise instructions used in the field, and to other information such as the name of the participant, the instruction s/he recalled having received at the beginning of the task, his/her own description of the drawing, etc.

Second, following the way that descriptors were added to the drawings, we used the notion of equipment in two different ways. On the one hand, focusing on data equipping, we highlighted the multiplicity and complexity of the mundane tasks facing the researchers. On the other hand, focusing on the equipment available to the researchers themselves when producing and organizing their data, we emphasized that such a digital humanities endeavor is at odds with many ordinary, well-stabilized infrastructuring processes, in which methods, processes, tools, competencies, etc., can be taken for granted.

Of course, a lot more could, and should, be said about this peculiar infrastructure and the way it is being built. We hope that these few propositions will help generate further interest in the “Children’s Drawing of Gods” project as well as in similar undertakings in the digital humanities.

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Chapter 18

Brief History of the Database *Children's Drawings of Gods* (2015–2019)



Olga Serbaeva 

Abstract In 2009, a database (DB) in FileMakerPro was set up for supporting the project *Dessins de dieux* (DDD), also called the *Children's Drawings of Gods* project. In 2015, it was migrated into Structured Query Language (SQL). This presentation shall summarize the major changes the database underwent from 2015 to the beginning of 2019. First, I will present the structural particularities of the MySQL database. Then I will provide a brief description of the technical and architectural solutions that had to be implemented in the new, Resource Description Framework (RDF) database, in order to accommodate the needs of the *Children's Drawings of Gods* research project.

Keywords Databases · MySQL · RDF · Data modeling

In 2009, a database (DB) in FileMakerPro was set up for supporting the project *Dessins de dieux* (DDD), the *Children's Drawings of Gods* project. In 2015, it was migrated into Structured Query Language (SQL). SQL is a programming language used for managing data held in a relational database, or for processing the relational data (Dyer, 2015; Stephens & Russell, 2004; Gilmore, 2010; Cabral & Murthy, 2009; Kruckenberg & Pipes, 2005; West, 2013; Schneller & Schwedt, 2010; DuBois, 2014; Delisle, 2006).¹ It is the best choice for working with structured data, where there are direct or indirect relations between different entities (variables),

¹SQL is one of the most widely used languages for managing databases. Additional information can be found at: <https://www.mysql.com/>

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which are placed in different columns of the database. One could easily imagine the data model as a set of columns in Excel that are different but related to each other. The alternatives to SQL are Not Only SQL (NoSQL), a relatively new language allowing to manage less well-structured data (Tiwari, 2012; McCreary & Kelly, 2014), and the Resource Description Framework (RDF), which proposes a significantly different data model. This presentation shall summarize the major changes the *Children's Drawings of Gods* database underwent from 2015 to the beginning of 2019. First, I will present the structural particularities of the MySQL database. Then I will provide a brief description of the technical and architectural solutions that had to be implemented in the new, RDF database, in order to accommodate the needs of the research project.

Before going into technical details, one could ask why a project would need an open access online database at all. Such a database is necessary for the *Children's Drawings of Gods* project² for five reasons.

1. It serves as a stable repository, providing all researchers inside and outside of University of Lausanne (UNIL) access to the exactly same version of the data, which would be impossible to organize via, for example, emails or doc sharing.
2. It makes it possible for the researchers to work on the same image simultaneously, to constitute and share groups of images.
3. It preserves the data, regardless of the composition of the team, and it is thus the first step towards the sustainability of the research data, which is now becoming a norm for research. For instance, the Swiss National Foundation strongly encourages the Data Management Plan that is supposed to function even after the end of the project.
4. In addition, the DB contributes to the Open Science movement; i.e., it allows researchers from all over the world to access and use the collected materials.
5. Finally, the DB is a visual face of the project, serving as an image gallery.

State of the Database in 2015

In 2015, the SQL database, hosting about 2500 images, was a simple and flat structure with only 16 active fields (and 10 linkage-, or supplementary fields, either filled in automatically or not actively used). It did not offer the possibility of storing the data in original languages or non-Latin scripts. The active fields (i.e., those that were constantly used for queries by the researchers of the *Children's Drawings of Gods* project) included the following:

Collection The field entitled collection indicates a historical and/or geographical arrangement of images that also served to distinguish the groups of images based

²The international project, *Drawings of Gods: A Multicultural and Interdisciplinary Approach to Children's Representations of Supernatural Agents*, is also known in French as *Dessins de dieux* (DDD), and referred to in this volume simply as *Children's Drawings of Gods*.

upon the particularities of the tasks given to children. The biggest collection in the database as of 2015 was the UNIL collection. It included the data from Japan, Russia, Switzerland, and Romania.

Cote The cote field is a code of the image, summarizing the information about the image that is most important for the researchers. For example, ir14_te_m_pmm_08_00_sah (<http://ark.dasch.swiss/ark:/72163/1/0105/7cYtb6dsSPCYOzsSX536DAE.20181215T035543825Z>), encodes that an image was collected in Iran in 2014 (ir14), in the region of Teheran (te). The representation was drawn by a boy (m), exactly 8 years old (08_00), whose personal name is encoded as “sah.” This image was collected in a public school setting (p) with an additional code (mm), resulting in the 3-letter segment (pmm).³

These codes were very useful for searching and verifying the database info. When the data were migrated to the new database (see below), these codes were retained as the main identifiers for the images. It would have been helpful to exchange the places between gender and school code. This would allow researchers to be able to sort the data by code based on the three parts of geographical code (i.e., country, region, school), and it would structure the child’s information sequentially (i.e., gender, age, name). Following this pattern, the code from above ideally should have been ir14_te_pmm_m_08_00_sah. The new fields in the new DB allowed a resolution of this problem without modifying the core code-structure.

Longitudinal Code(s) Longitudinal code(s) were those same codes of images linked to one another in a special field for images drawn by the same child in different years. As the names and dates of births were not a part of the data stored online, researches worked outside of the DB to identify the longitudinal images.

Page Orientation The field for page orientation was not filled in by the researches, but was identified automatically by the webpage script by comparing horizontal and vertical size of the image in pixels upon upload. As in the majority of cases A4 sized paper was used for drawings, two options (portrait and landscape), were sufficient to describe the orientation.

Country and Region Country and region were also read by the script from the image code upon upload, and translated into the text format, e.g., “ch” would be interpreted as Suisse/Switzerland, while “te” would stand for Teheran, and “vd” for Canton de Vaud. The textual fields, thus generated, were used to provide a brief description of the image on the webpage, together with the child’s gender and age, as well as the year the image was collected (drawing the respective fields of gender, age in years, age in months, and year of collection in the SQL DB).

³At the beginning, the code for school had not three, but only two letters (i.e., ru08_bo_m_pb_15_01_jam (<http://ark.dasch.swiss/ark:/72163/1/0105/jzIr8SZQRMq=fKE6fdUmVA0.20180702T190158578Z>)). See the explanation on the institution type field, below.

Institution Type The field for institution type had two options: “r” for religious and “p” for public (secular or lay) institutions (schools, in the majority of cases). This was read automatically by the script from the 3-letter part of the image codes that described the schools (i.e., pmm). Originally, the idea behind the other two letters (mm in the above example) was to assign precise religious identity to the institution (e.g., a secular institution would be indicated by “px” in majority of cases, while religious institution could be marked as “rp”, e.g., religious-protestant). However, this had not been applied to all data (as of 2015, the codes were mostly px and rx), and majority of institutions were lay and public. Therefore, beginning in 2015 the *Children’s Drawings of Gods* team started to use those two letters to mark the exact school. When the database was relatively small, it was unproblematic to have only 2- and not 3-letter code for school (i.e., p/r plus one letter). However, the limits of this approach soon became all too clear. A maximum of only 52 schools could be coded: 26 religious and 26 public. When, in 2014, an Iranian collection of 3000 images from some 60 public schools appeared, immediately the need for restructuring of this 2-letter school code became apparent; and the 3-letter code replaced it as the standard. The change of code necessitated the modification of the research materials, but nothing for tracking such changes originally existed in the old DB. It is, thus, understandable that the scholars responsible for some countries opposed the introduction of the new codes for the schools because it would require massive changes not only in the DB, but also in the personal files of the researchers, and would need additional work from IT personnel. Therefore, the images from Russia, USA, and Romania still have some 2-letter school codes. The additional fields in the new DB, including a field for old or alternative codes, have made this problem irrelevant.⁴

Task Fields The task fields store the instructions given to the participants (translated into English and French). They brought this information directly to the webpage, based on the language chosen by the user (English/French). This was accomplished through inputting text in the old DB, but it was more logical to make it a choice from a limited list in order to reduce the number of typos. This has been rectified in the new DB. As the tasks are rather long, and the subtle changes in three to four lines of text are not directly evident to human eyes, the codes for the different types of tasks were also introduced in the new DB.

⁴The problem with the SQL architecture in the old DB was the fact that the 2- and 3-letter-codes for geographical location and the types of the schools, all had to be unique, i.e., it was impossible to have code “sp” for both Saint Petersburg and Sao Paolo, as these geographical objects would be on the same level, and the script would only read them as Saint Petersburg (the upper line in the code), regardless of the fact that the two objects belong to two different countries. As a result, researchers had to compile a thesaurus of non-repeating codes. They then had to consult their thesaurus each time that a new geographical location or school was introduced, because the proper hierarchical links between geographical entities of level 1 (country) and level 2 (region or city) were missing in the SQL architecture. With the construction of the new DB, a rigid, three-tiered hierarchical geographical location was scripted from the very beginning; it removed the necessity of the thesaurus.

Restatement, Description, Commentary Three textual fields (restatement of the task by the child, description of the drawing by the child, and commentary) were filled in by hand by the researchers. The UTF8⁵ that would allow researchers to type any language in its original script and have a full set of diacritical and punctuation marks, was not implemented in the original SQL DB. As a result, the diacritical marks (such as accents and punctuation), even for the French, were regularly misread on import and export. These signs had to be updated and marked with escape signs in order to secure the unmodified export and display. The implementation of the UTF-based original scripts for Russian, Farsi, Japanese, and Nepalese was completed as the first priority in the construction of the new DB.

Keyword and Questionnaire Among the remaining fields in text format that were supposed to be filled in by the researchers, keywords and questionnaire were both empty. The system of keywords that would have been directly linked to a part of image had been developed on an external platform (Gauntlet), and its tree-like structure was impossible to fit into a single plain text field.⁶

The questionnaire field was supposed to host the information from the transcribed questionnaires, but they were on many pages, of various types, and with many questions. Each type of questionnaire would demand a database for itself. Thus, researchers used the questionnaire field only to fill in the religious identity of the child. This had to be completely revised for the new database (see below).

The import or modification of data triggered the generation of a set of technical fields. These included ID (the order number of the imported image), and page, which was crucial for the internal linkage. This second field was an addition to the code using characters, that would mark the uploaded files as: “-r,” the recto of the image; “-v,” the verso of the image, which included the participant’s description of the image and the task restatement; or “-q,” the separate questionnaire. The questionnaires would often contain multiple pages, but they could only be uploaded one page at a time, in JPG format. So for those questionnaires, the additional codes “-s,” “-t,” and “-u” were used for pages 2, 3, and 4, respectively. Finally, the database would automatically store both the name of the person who uploaded or modified an image or data, and the date of those modifications in corresponding fields (uploaded by user, upload date, edited by user, and edition date).

In order to represent a visual structure of the SQL DB, one should imagine the fields linked to the recto of the image. Thus, any modification of the recto or its code would require reloading of the image and all of its parts (verso, questionnaire),

⁵“UTF-8 is a variable width character encoding capable of encoding all 1,112,064 valid code points in Unicode using one to four 8-bit bytes.” <https://en.wikipedia.org/wiki/UTF-8>

⁶In simple words, it was technically impossible to fit the hierarchically structured keywords within a plain text without inventing a system of tags that would be very difficult for the users to learn and to apply. One would need a separate object in RDF, or a separate table in SQL, for each of the major branches of the keywords tree, and that is precisely what has been done in the new DB.

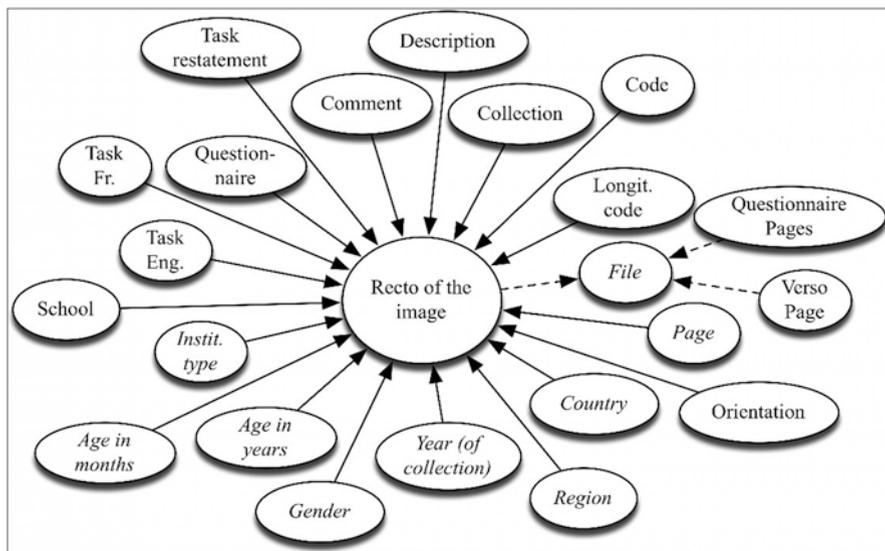


Fig. 18.1 Graphic representation of the SQL database

precisely because of the many script-generated data fields described above. Besides generating data, the script would resize the image to fit various icons in the webpage.

Figure 18.1 provides a graphic representation of the SQL DB, excluding the technical fields.

The fields generated by the script on upload from the code of the recto are in italic. Each oval corresponds to a column in the flat relational database, while each individual drawing generates one line of data in these columns.

The dump of the whole database was approximately 3 MB in 2015. The database allowed the users, via a web-interface, to access the images and the minimal meta-data of the following countries: USA, Japan, Switzerland, Russia and Romania, which constituted the original core of the *Children's Drawings of Gods* research project.⁷

Problems of the Architecture of the SQL Database and Their Influence upon the Research Project

The simple and minimalistic database had the following shortcomings: the data, instead of being entered once per object, had to be repeated for each line of the flat, Excel-like structure. Simply speaking, the design did not fit the basic rules outlined

⁷<https://ddd.unil.ch/>

by Codd (1970, see also Hellerstein et al., 2007).⁸ The existing fields, such as keywords and questionnaire, were not adapted to store the wealth of materials they were intended to hold, and thus remained empty. Simply speaking, each of the existing fields should have been an independent database in itself, with proper links. These shortcomings led to the fact that a lot of the research information could not be stored within the database. Researchers kept this data in external files. This state of affairs not only impoverished the database, but also made the actual data exchange between various parallel research projects more complicated. It became clear that we needed a new database that could integrate, store, and make accessible the majority of the externally stored data.

Meanwhile, the database grew considerably, and in 2017, it included more than 6500 images from the five countries listed above, plus three new ones (Iran, Nepal, and the Netherlands). At the same time, researchers from Greece, China, Argentina, and Brazil were expressing their interest in collaboration.

The architectural problems were dealt with at the same time that the major data standardization process occurred, mostly during 2015–2017. The standardization included the corrections of age in large parts of the collection, and the unification and disambiguation of the codes for schools, regions (for which a standardized, official administrative units-based structure was introduced), and abbreviations of the children's names.

Two Options of Resolving the Structural Problems of the SQL DB

As for the structural problems, there were two possible solutions.

1. The first option involved a series of cosmetic changes to the existing database and the webpage, with the additions of some new fields, but without major restructuring.
2. The second option entailed a total restructuring of the DB.

At the time of this decision, around 2015, various national-level projects aiming at the research data-sustainability had become known. Among them, a potential collaboration with the Data and Service Center for Humanities (DaSCH),⁹ with its Knowledge Organization, Representation, and Annotation (Knora), which is a server application for storing, sharing, and working with humanities data) was envisaged.¹⁰ The DaSCH appeared to be the most promising for the *Children's*

⁸ Summarized here: https://www.ntu.edu.sg/home/ehchua/programming/sql/relational_database_design.html

⁹ Since 2017, DaSCH has become a part of the Swiss Academy of Humanities and Social Sciences. See <http://www.salsah.org/>

¹⁰ <http://dhlab.unibas.ch/knora/> and <https://docs.knora.org/paradox/01-introduction/what-is-knora.html>

Drawings of Gods project in particular, because it was based in Switzerland, run from the University of Basel, and there was a local team in UNIL that would be responsible for the integration.

After a preliminary discussion with the UNIL team of Knora, the *Children's Drawings of Gods* team opted for this second option (i.e., the total data restructuring), in a view that it would lead towards data sustainability and open access. However, the final decision was made and the practical work started when Knora accepted the integration of the restructured DB as a pilot project. This meant that no additional funds were needed for this massive change. The research team agreed to comply with Knora standards concerning the image quality and data structuring, while the Knora team not only committed to the migration the data to the new milieu, but also consented to adapt the generic System for Annotation and Linkage of Sources in Arts and Humanities (Salsah) interface to the precise needs of the *Children's Drawings of Gods* project.¹¹

Opting for the total DB restructuring resulted in the following long-term consequences. First, the database structure had to be rethought from ground zero, both to resolve the problems listed above and to shift from SQL, based on relational data, to semantic query language for databases (SPARQL), which is based on RDF, a model or method for handling data, based on subject-predicate-object relationships, (i.e., triples).¹² RDF proposes a data model which is considerably different from the classical relational database, this difference for humanities, consists in the fact that it allows the integration and analysis of a less-well-structured set of data (as compared to the relational databases, which are extremely rigid, and have limited usability while working with imperfect, incomplete, and/or unstructured datasets). The best overview of the technical side of RDF so far is to be found in Curé and Blin (2015), the pattern search methods applicable to RDF are given in Gerber et al. (2013).

In practical terms, the *Children's Drawings of Gods* project had to shift from an Excel (table-type) data organization to a dynamic industrial standard data model, which had the option of being modified in real time without stopping the database and reimporting all for every object change that one might need to implement. A series of group meetings ensued to discuss the structure. These meetings started in autumn 2016, and the script, with all objects and fields, was ready for migration from SQL to RDF in December 2017. The flat structure of the old SQL database, with, properly speaking, one object with 16 fields, has unfolded into an interconnected net of 18 different objects, with more than 300 fields called *properties*.

The structure of the new database was no longer an internal affair of the members of the research project. From 2016 onwards the project was closely discussed with the Knora/Salsah collaborators, who were also the mediators between the *Children's Drawings of Gods* researchers and the Basel-based main seat of Knora, which had

¹¹ Salsah is a generic user interface (front-end) for Knora (back-end), a software framework for storing, sharing, and working with primary sources and data in the humanities. See <https://dhlabs-basel.github.io/Salsah/>

¹² The main differences between SQL and the SPARQL, used for RDF database queries, are outlined at: <https://www.topquadrant.com/2014/05/05/comparing-sparql-with-sql/>

the final say on the major technical questions. The *Children's Drawings of Gods* team's requests, in that context, could have repercussions both on the generic interface and on the needs of other research projects that were to be integrated into Knora. As a result, some of the team's requests were granted and others, not.

This three-tiered structure (*Children's Drawings of Gods* project—UNIL-based Knora/Salsah group—Basel) has required the establishment of a whole series of communications and organizational tools (meetings, written protocols, Github, sharing data options), and this resulted in significant delays (approximately 1 year) in finalizing the new database and achieving the actual data migration.

The source code for the new database, in its two major parts, ontology and lists, consists of 5511 and 7998 lines of code, respectively.¹³ The migration dump, which included 48 different fields for more than 6500 images and integrated all the fields from the old SQL database plus many of the external Excel files produced by the participating researchers, contained close to 20,000 lines, and occupied approximately 16.5 MB.

The migration started in December 2017. First, the images and the data were imported onto the test platform. After careful testing, they were pushed to production, country by country. Since early February 2019, the new database, accessible at <https://salsah.unil.ch/>, has been fully operational.

The State of the Database in February 2019: The New Database Structure

The new database is about 20 times as big as the old one, with regard to the number of fields.¹⁴ To put it simply, each of the old actively used fields (see above) has become an independent object, a mini-database in itself. In addition, new objects, non-existent in the old database have been created, as well as a complicated network of links between and among them. The graphic representation below represents only the most important links between the 18 objects (see Fig. 18.2).¹⁵

I will now briefly outline the content of the new and upgraded objects of the RDF-based DB.

Instruction This object is based on the Task Eng. and Task Fr. of the SQL DB. The tasks given to children are now accessible in three languages, the original one (i.e., that in which they were spelt out to the children), English, and French. A typology of the tasks, depending on their closeness to the *Children's Drawings of Gods* and

¹³ It is available on GIT: <https://github.com/LaDHUL/drawings-gods>

¹⁴ Available at: <https://salsah.unil.ch/>, select “Dessins des dieux” [drawing of gods] in the vocabulary.

¹⁵ This is a simplified representation of the data model was done with OmniGraffle. The data model itself was created in June 2017, in collaboration with UNIL team of Knora/Salsah, Marion Rivoal and Loïc Jaouen.

UNIL standards has been developed. This closeness is based primarily on the terms used to say *god*,¹⁶ and on the linguistic implications of the formulation concerning the gender and number of gods, that might affect children's drawings. The type of instruction given to the children now largely defines the object called Research Wave (see below).

Person This is a new object created as a response to the problem of linkage of the longitudinal images, i.e., the drawings done by the same child in different years. If in the SQL DB, there was only an internal link between the codes of the rectos; here, the drawings are linked to a Person Object as a larger level entity. It thus becomes possible, for example, to take only the first image done by every child, which would have required a manual sorting in the SQL DB. As this object allows storing the sensitive information, such as the name, the date of birth, the country of origin, the ethnicity of the child, and the spoken languages, it is accessible only to the administrators, but provides a solid ground for the identification of the longitudinal images from within the database.

Directly linked to person object is a set of additional person-linked files, for example, the tests of attachment, etc.

Drawing This object splits into two sub-objects, identical in structure: Public Sub-Object and Private Sub-Object. The Public Sub-Object allows researchers to locate all drawings for which there is an explicit agreement (on the part of the parents) that the images can be made freely accessible online. The Private Sub-Object contains those images for which the parents of the children (often those having medical problems), have agreed to make the drawings accessible only to the members of the *Children's Drawings of Gods* research team.

In the Salsah interface, the Drawing Object, with its two subsections serves as the main anchor for linking the majority of other objects, and puts together many fields from the SQL DB, either directly, or as links to the other objects. Among the new features, there is now the possibility of introducing the imprecise age of the child in a clear manner, keeping track of the history of the code changes thanks to special field, and assigning the hierarchically structured keywords.

Keywords The keywords can be assigned on three different levels: (a) those describing the main god-figure(s) or main motif, when such can be identified, and these are the most detailed, i.e., they have many sub lists; (b) those describing the surroundings of the figure, i.e., general context; and, finally, (c) those used for cases when it is impossible to decide if a particular part of the drawing belongs to the god-figure or to the context. In addition, there are keywords concerning general composition or the layout of the image and the religious identity of the composition

¹⁶Why the term *god* begins sometimes with an uppercase letter G, sometimes with a lowercase letter g, and why it appears sometimes in the singular and sometimes in the plural, is explained in the introductory chapter of this book (Chap. 1, this volume).

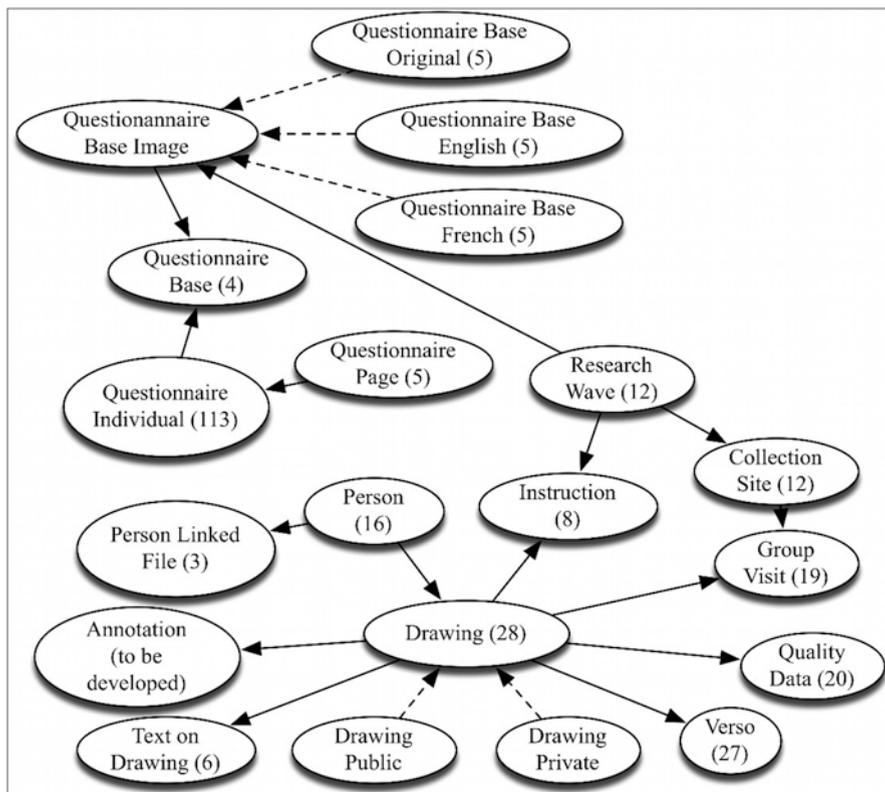


Fig. 18.2 Simplified representation of the links between the objects of the new RDF DB. The number of properties per object appears in brackets. This number excludes the technical properties (date, author of creation, modifications, etc.). Dotted lines indicate a link between an object and its sub-object(s)

In order to provide a better understanding of the hierarchical structure of the Keyword Object and its construction based on the visual analysis of the quasi-totality of the collection (Serbaeva's working papers, 2016), the following graphic representation has been drawn (see Fig. 18.3).

Within the General Composition area, the researcher can choose from a list to select either a single figure or motif or multiple figures or motifs. In the latter case, an additional list outlines the position of the elements. This is useful to mark the drawings in manga style, for example, or when the drawing is separated into two parts, opposed to each other by the choice of colours and meaning (heaven and hell, etc.)

In the case when the main figure or motif that represents god can be identified, it often falls into one of the following twelve categories, and there is the possibility of adding new categories if such are discovered in the future.

1. Anthropomorphic figure

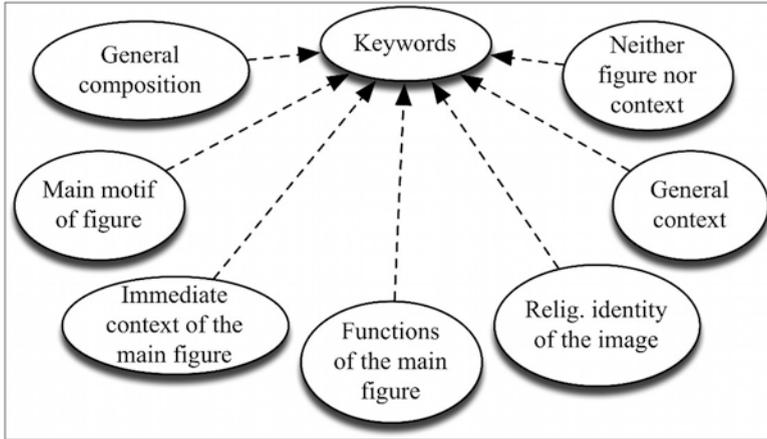


Fig. 18.3 Seven main categories of keywords. Each oval stands for an independent hierarchical list in the new database

2. Passage from one world to another
3. Plant or tree
4. Sun or light
5. Symbol (often having clear religious identity)
6. Text (i.e., citation of sacred writings)
7. Animal, bird, insect
8. Abstract image
9. Clouds, rain, rainbow
10. Cosmos
11. Elements constituting totality (i.e., water-fire-air-earth, etc., in their symbolic representations)
12. Emptiness also including the cases when the child decided to render an empty page

In the absolute majority of cases, i.e., approximately 3500 drawings from 6500, the main figure or motif is an anthropomorphic figure. Each of the above-identified motifs has a number of variants that can be chosen from the list by the researcher. In the graphic representation below (see Fig. 18.4), only the options concerning the anthropomorphic figure will be presented. These options are not exclusive, i.e., more than one can be selected, and, upon selection, they open the additional sub lists.

For example, suppose a researcher would like to use keywords to describe the drawn figure of an angel. The researcher would go to the option Body Particularities and would select Wings and Nimbus from the sub-list there. In case of Naruto, however, the researcher should instead select the option for Recognizable Human Character. Buddha would be classified as Recognizable Religious Character. A

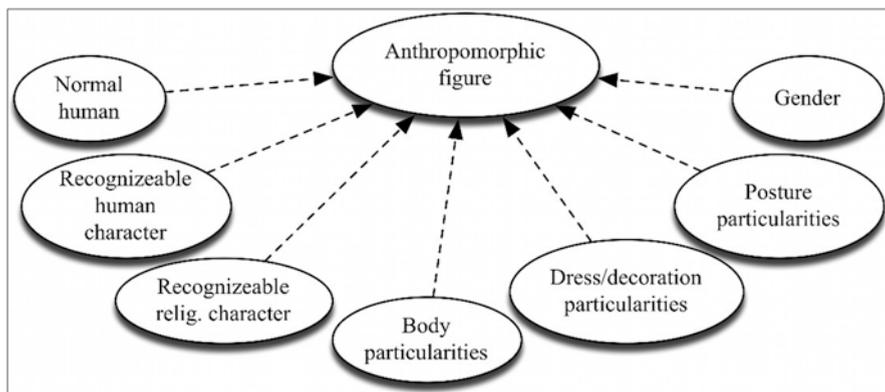


Fig. 18.4 The object, anthropomorphic figure, with seven possible sub-variants. (It is only in very rare cases that one would select the Functions-of-the-Main-Figure and/or the Immediate-Context-of-the-Main-Figure options for non-anthropomorphic images. The religious identity of the image can only be assigned to drawings with clarity when the main motif is a recognizable religious character or when identifiable religious symbols are present, either as the main figure or in the context)

researcher could also note the particularities of posture, or hairstyle in the corresponding categories.¹⁷

The rigid hierarchical structure chosen for the keywords appeared to be the best option, because if the *Children's Drawings of Gods* team had chosen to use a free text option, it would have been difficult to link the synonyms, and one would have to deal with the varied terms and language choices of the participants. For instance, one researcher could describe the angel as “having wings and a nimbus,” while another might write “it flies and has a halo around the head.” Although these descriptions are essentially the same, it would be impossible to apply data mining to such descriptions. Nevertheless, the new RDF DB is structured to allow the introduction of free text comments for every object.

Annotation Directly linked to the drawing is the Annotation object, which is a similar tree of hierarchical keywords, linked to the system of tagging of the actual position of the object in the drawing (measured in pixels). So far, this tagging has been done on a platform (Gauntlet) that is external to Knora/Salsah, and the integration of this data remains an open question (as of Feb. 2019).

Words on the Recto Another object directly related to the drawing object and the set of keywords is the Words-on-the-Recto object. One can tag their presence with the help of the keywords (in main motifs). Nevertheless, in order to transcribe and translate those with multilingual support, an independent object was necessary.

¹⁷The full tree of keywords, including all lists and sub-lists, represents about 17 pages of text, and can be shared on request.

Verso This object represents the textual information from the verso of the drawing, and includes such fields from the SQL DB as task restatement and description by the child. The improvements include the three following aspects: (a) multilingual support, (b) the ability to include the text exactly as it was written by child, as well as a corrected version (if needed), and (c) the possibility to mark who the exact author of a given part of the text was (often in the case of children under 7 years old, the description was written down by an adult).

Questionnaire In the SQL DB this was a reproduction of the pages of the questionnaire in JPG and a single text field was somehow supposed to store the transcribed information. In the RDF DB, the questionnaire field has become a set of objects. This is hardly surprising due to the multiplicity of languages, models, length in pages, and number of questions on the questionnaires. Now every individual questionnaire is linked to its type, and examples of the questionnaires are available for viewing in the original language as it was supplied to the participants, as well as in English and French. The researcher can see the questionnaire in JPG format through the Questionnaire Page object, and enter the data into a single, flat structure based on multiple lists (the same for all questionnaire types) to be found in the Individual Questionnaire object. This simple flat structure, in which one sees all questions that have ever been asked of the participants in the questionnaires of the *Children's Drawings of Gods* project (and which is consequently very long), has been chosen to make the data from various types of questionnaires compatible for the statistical analysis. An alternative option would have been to create a separate object in the RDF DB for each of the questionnaire types, but this would double the number of objects without providing a response to the question of how to make this data compatible across the questionnaires.

Most questions, from the 113 in total, aim at discovering the strength of the religious aspects of the life of a child (how often s/he visits the temples, if s/he prays at home, etc.) They are perfectly compatible and can be used directly for the statistical analysis. However, the questionnaires also contain a lot of hand-written information, which cannot fit in the lists, and for which additional free-text fields have been introduced. Although these additional notes are important to understand the drawings, they are far too random to be the object of data mining.

Research Wave The Research Wave object that has its roots in the SQL DB's collection field is something entirely new. It allows researchers to group the sites where the images were collected in any way they desire. The collections in the SQL DB were often based upon the similarity of tasks and questionnaires, and thus exclusive. This means that the main collection was UNIL; it only included the images corresponding to the *Children's Drawings of Gods* set of standards. Now, however, the researcher can group the images freely, for example, by taking all Catholic schools across the globe, or by selecting a particular language, which could go beyond the limits of a single country. These waves can be assigned to the materials either before or after the data collection.

Collection Site This is an object locating the precise place where the images were collected. In the SQL DB, the corresponding information included country, region, and the coded name of the school. In the RDF DB, the structure is essentially the same, but there are more fields for describing the schools, for example in relation to the gender of the students, or the predominant language. The tripled geo-location structure of this object in the RDF DB allows perfectly tailored access for various kinds of users, i.e., a general user of the database will be able to see only the country and the region, while the team members will have full access to the contact information of a particular site. There are major improvements to the architecture of the data: if in SQL DB the geo-location information was essentially repeated for every image of the same provenance, in the RDF DB the geo-localization is to be entered once only for each collection site.

Group Visit This is a new object that is used to describe the circumstances of each visit to a given collection site. It makes a collection diary accessible, noting the particularities of the age of children in a selected group, or the important circumstances (for example, that “the collection took place after the study of Greek gods,” etc.) Using group visit, researchers can integrate the data of, for example, two different collectors working at the same time on the same site.

Quality Data The last object to be mentioned is also a new one. The necessity of the Quality Data object became apparent during the data cleaning and standardization done in 2015–2017. This object allows the selection of images and metadata that would precisely fit a particular research task. For example, for a color analysis, it makes no sense to include the blank images. Now, thanks to this object, one can select the required data with one click.

The Quality Data Object is also a means of protecting the identity of participating children, who often leave their full names on the rectos of the drawings. These names are cleaned with GIMP¹⁸ and the corresponding field, in quality data, allows the process to be monitored. One can also verify whether or not the child understood the task by comparing the task instructions and the corresponding task restatement. In the RDF DB, the number of fields to fill in for a given image passed 300. The data input is often done by people based on their preferred language, the control of the textual data entry is also done by language, i.e., English, French and, when applicable, the native language of the participant. This simple tool makes it possible to select the images fit for analysis in a situation when the new Database exists, but not all fields have yet been filled in for all images.

To summarize, the RDF DB has better architecture. It is more dynamic, in the sense that one can add the properties and modify the lists without the necessity of

¹⁸ GIMP (GNU Image Manipulation Program) is a free and open-source raster graphics editor used for image retouching and editing, free-form drawing, converting between different image formats, and more specialized tasks. See <https://en.wikipedia.org/wiki/GIMP>

reimporting the data.¹⁹ Now the properties that are common to a group of images need to be keyed only once. The Salsah interface provides excellent search options, both for structured and free text queries, with Boolean search options and wild cards. The access to the data can be defined up to the level of a field within a given object, and the *Children's Drawings of Gods* team can control who sees, reads, and writes in precise sets of objects and fields. The new database handles other languages and scripts (Russian, Japanese, Farsi, etc.), from a technical standpoint, it best suits the present, and the visible future needs of the research project.

Future Development and Open Questions

The new DB, if we revisit the points of the second paragraph of the introductory section, is a stable repository, it definitely contributes to the sustainability of the research data, and it meets Open Science objectives; however, the features of the common work on the same image or a set of images are not well developed in Salsah/Knora's present interface. This interface cannot be adapted to serve as a showcase for the project at this point, as is the case of the webpage linked to the old SQL DB: one can only search and add the information, but one cannot, for instance, acquire a set of random images in order to introduce the DB content to new users. Besides, as the platform stores many databases, it is difficult for new users to find the *Children's Drawings of Gods* project and additional explanations are needed every time.

Other remaining questions to be sorted out with the Knora and Salsah team include export options (not readily available in the present Salsah interface), better integration of the image annotation data (coordinates), and the everyday database enrichment provided by creating an upload script that could prefill the data based on code, (which was a feature of the old SQL DB and linked webpage script).

As the generic interface of Salsah cannot yet be adapted freely to the preferences of the *Children's Drawings of Gods* team, the old SQL database with the linked webpage shall continue to function as the showcase for the project for at least 1 or 2 years after the migration, i.e., approximately until mid-2021.

All that said, the two-party structure that was typical for the research project at the early stages (researchers versus databank), has now become a triangle, as one more player (Salsah/Knora) has been introduced, and this partner is not as reactive and quick as a local IT technician. Besides, the *Children's Drawings of Gods* team cannot implement major changes without having the preliminary agreement from the Salsah/Knora team. If the research project has reached its end, this is not extremely problematic; however, if a new project is put into place based on the same DB materials, a more dynamic and responsive relation between the research team and Salsah/Knora will be necessary.

¹⁹It is not yet clear whether or not new objects can be added with the same conditions.

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Chapter 19

Interdisciplinarity, Team Science, and the Next Generation of Researchers: *The Children's Drawings of Gods Project* Experience



Frédéric Darbellay

Abstract Based on an analysis of the research project *Drawings of Gods: A multi-cultural and interdisciplinary approach to children's representations of supernatural agents* also known as (*Children's Drawings of Gods*), this work aims to study the epistemological and methodological issues that arise when several disciplinary approaches are convened for the processing, analysis, and interpretation of a corpus of digitized children's drawings. This work shows how the interdisciplinary process is set up, with its points of convergence, its potentialities, but also its difficulties with regard to the various epistemic and cultural horizons involved. The success of such an interdisciplinary, intercultural, and international project relies on mutual consideration and respect for the diversity of objects, disciplines, and approaches in a spirit of team collaboration. This negotiated sharing of values, practices, and epistemological horizons calls for capacities for openness and creative dialogue between researchers. Further, it requires the researchers to go beyond their disciplinary centres to engage in hybrid configurations or even transgressive knowledge.

Keywords Children's drawings · Gods · Complexity · Interdisciplinarity · Digital humanities · Team science

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The materializations of the figure of God(s),¹ whether scriptural, iconographic, or through another medium of communication, vary according to religious systems, societies, cultures, and individuals. This variation, set against a background of symbolic invariants, is also reflected in the mental, social, and cultural representations that embody, orient, and valorize or divert the concept of God, with more or less originality. The material or psychosocial re-presentation practices concerning the concept of God are not exclusive to adults. Children are able to express the representations of God and its characteristics that they have constructed (and are constructing throughout their development). The representations bear the influence not only of the children's educational and cultural backgrounds, but also of their creativity, imagination and curiosity. As we see it, drawing functions as a means of graphic expression adapted to the communication capacity of the individual child. If children's drawings of gods and the cognitive strategies they implement in this act of creating the representation are taken as a subject of study (Dandarova, 2013; Brandt, 2016), what is immediately striking is the complexity of such a process. The reasons for this complexity lie both in the diversity and in the graphic density of the children's productions (shapes, colors, compositions, textures, etc.). There are, of course, also graphic invariants related to prototypical representations of the figure of God—as well as the relative specificity of individual and collective representations according to the cultural contexts included in an international and intercultural dynamic. The intercultural dimension operates here as a factor of diversification that makes it possible to identify and trace more or less specific representations of Gods. It allows us to consider them in a comparative perspective showing not only the similarities but also the stylistic differences that innervate the figures of Gods learned of, reflected upon, visualized and retranslated graphically by children of various religious, educational, and cultural backgrounds.

The complexity of graphic, religious, and intercultural representations makes it impossible for researchers to reduce their approach to a single disciplinary perspective. Neither visual semiotics, nor psychology of religion, nor cultural anthropology alone can cover all the variables to be considered. This programmed impossibility of a monodisciplinary approach thus calls for the implementation of an epistemologically, theoretically, and methodologically based interdisciplinary approach. This chapter aims to situate the issue of children's drawings of gods in a resolutely interdisciplinary perspective. To do this, I will build upon the advances and developments of the collective interdisciplinary research project *Dessins de dieux* (DDD), also called *Children's Drawings of Gods*.² This project serves both as a space in which the issues and practices of interdisciplinary research are brought into play

¹Why the term *god* begins sometimes with an uppercase letter G, sometimes with a lowercase letter g, and why it appears sometimes in the singular and sometimes in the plural, is explained in the introductory chapter of this book (Chap. 1, this volume).

²The international project, *Drawings of Gods: A Multicultural and Interdisciplinary Approach to Children's Representations of Supernatural Agents*, is also known in French as *Dessins de dieux* (DDD), and referred to in this volume simply as *Children's Drawings of Gods*. This interdisciplinary project was funded by the Swiss National Science Foundation (SNSF)/(2015–2018). Request

and as an example of what interdisciplinarity can actually produce in the framework of a project that is set in the context of Digital Humanities. Digital humanities are considered here as a field of research and engineering at the interface between computer science and the humanities and social sciences. The first section presents the ins and outs of the project, showing how the need for interdisciplinarity and the conditions for its emergence arise. The second section proposes a clear definition of the concepts of multi-, inter- and transdisciplinarity which makes it possible to position the *Children's Drawings of Gods* project on the gradient between monodisciplinarity and the transgression of disciplinary boundaries. Finally, I will show in the last section how interdisciplinary work is set up in a team science dynamic, outline the profiles of the researchers involved in such a process, and note which profiles are desirable for an effective realization of interdisciplinarity, both scientifically and academically.³

Complexity, Interculturality, and Digital Humanities in the *Children's Drawings of Gods* Project

In the context of the *Children's Drawings of Gods* project, interdisciplinarity is called to work within and between the disciplines of human and social sciences; this interdisciplinarity internal to human and social sciences is enhanced by an extended transdisciplinarity in and through interaction with computational sciences and statistics. The project embraces the challenge of intercultural complexity. To do so, it involves researchers from the humanities and social sciences (psychology, religious studies, anthropology, sociology of science, epistemology, etc.), and from the engineering sciences (computational sciences: image processing and computer vision). The fundamental challenge is to bring these multiple disciplinary perspectives together to treat, analyse, and interpret children's drawings of Gods. Certainly, rooted first in the field of humanities and social sciences, from which most of the members of the team come, the development of the project requires a close collaboration with specialists in image processing and computational sciences. This collaboration—between the digitization of qualitative images produced by children and the humanization of computer tools adapted to the corpus, all set to the background of more or less difficult communication between humanists and computer scientists—is symptomatic of what is happening in the field of digital humanities. This transdisciplinary collaborative dynamic indeed favors the ever-obvious encounter between computational technologies and the disciplines of human and social sciences, arts and humanities (Schreibman et al., 2001).

Number: CR1111_156383. Principal Applicant: Pierre-Yves Brandt; Co-applicants: Frédéric Darbellay, Dominique Vinck, and Zhargalma Dandarova-Robert.

³These elements are more developed in two recent contributions from the project's research group. See Darbellay et al. (2018) and Cocco et al. (2018). This chapter is based primarily on developments in the first of these previous contributions.

The operation of drawings digitization, in addition to the investments in computer media that it requires, enables the storage of the drawings and their analysis by means of computer tools capable of annotation (Dessart et al., 2016) and images data processing (Cocco et al., 2017). A corpus of digital images is thus formed for the analysis and interpretation of cognitive processes and graphic strategies implemented by children to represent God. The design and development of this set of computer tools aims at a certain harmonization of treatment and analysis procedures, while remaining as sensitive as possible and adapting to the idiosyncratic singularity of each culturally and individually marked design. Considering the internal variability of the corpus of images requires an ongoing negotiation between the organizing power of quantitative computing tools and the specific needs of more qualitative analysis of sub-groups of the corpus, or particular drawings. To do this, a tool set has been created: a database (BDD) for storing drawing scans, an annotation tool for these scans specific to the needs of the project, and computer processing tools for images.

According to the Svensson (2010) classification of digital humanities projects based on modes of engagement of information technology and digital specialists in the human and social sciences, this project is clearly in a tool-type commitment, including an exploratory laboratory part. This process involves multiple negotiations between the researchers' needs and the technological tools specificities, negotiations that, in turn, modify the initial orientations of the project. This problem is typical of a digital humanities project anchored in human sciences that attempts to incorporate different but potentially complementary perspectives. Potentialities and difficulties lie in the co-construction of the object of study and the methods, and most often, they depend on very pragmatic considerations. Computer tools must thus be systematically tested, redesigned, and reformatted in the dynamics of the project, which, far from following a predefined linear trajectory, may require successive reorientations. During these decisive moments, researchers in the humanities and social sciences may discover new research questions or lines of analysis that fall outside their field of study. The choice of tools influences the way data is analysed and interpreted: there are mutual enrichments between computer tools, methods, and theoretical considerations. The digital detour also makes visible what is often invisible to the naked eye, by a technologically enhanced vision for new modes of reading. It allows a remote "distant reading" (Moretti, 2013) on the entire body of digital data understood as a global system of data and metadata upon which machine or algorithmic readings can operate (machine reading). This scale of macroscopic data contextualization is complementary to the micro-observation scale, a close reading regime (Moretti, 2013) that is more sensitive to the nuances and stylistic variations inherent to the diversity of individual and cultural designs produced.

The following diagram (Fig. 19.1) summarizes the dynamics that occur from and around the children's drawings of gods, when taken as objects of study by a group of disciplines. Without being prescriptive, the list of disciplines is open to other disciplines likely to contribute to the analysis. In the diagram, the horizontal alignment of the disciplines does not seek to mask the dominance that one discipline can take over another in practice, nor does it discount the power dynamics and

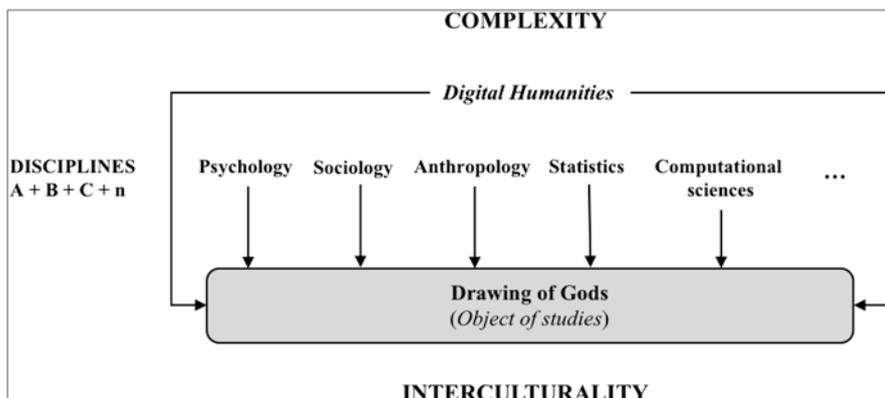


Fig. 19.1 Drawings of Gods: disciplines, complexity, interdisciplinarity

asymmetrical relations that can occur between specialists. Each discipline deals with one of the dimensions of the complexity of the object of study: the psychological, social, cultural, material, and digital dimensions. The disciplines are spread across a transdisciplinary axis (a dialogical and productive tension axis) from the human and social sciences (“soft” sciences) to computational sciences (“hard” sciences). The field of digital humanities could then represent a meeting place, or a space of convergence, between these disciplines from different epistemological, theoretical, and methodological horizons. As we pointed out above, this disciplinary approach—a multidisciplinary stage—makes sense in a broader context of interdisciplinarity and semiotic, psychological, and social complexity. Starting from this multidisciplinary anchoring at work in the *Children’s Drawings of Gods* project, the central question that can arise is how, and under which conditions, this juxtaposition of disciplinary points of view can migrate towards a more interdisciplinary approach in the sense that it realizes articulations or integrations between the different disciplines.

Interdisciplinarity

From Disciplinarity to Transdisciplinarity

To understand fully the issues of interdisciplinarity, it is necessary to situate this concept in the family of concepts that frames it and inscribes it in a dynamic range from disciplinarity to transdisciplinarity. The concepts used to describe the idea of decompartmentalization between disciplines are numerous. From multi-, pluri-, poly-, alter-, anti-, inter-disciplinarity etc. to para-, supra-, post- or trans-disciplinarity, this terminological space looks, at first glance, like a battlefield or a tower of Babel, where there is an apparent cacophony against a background of

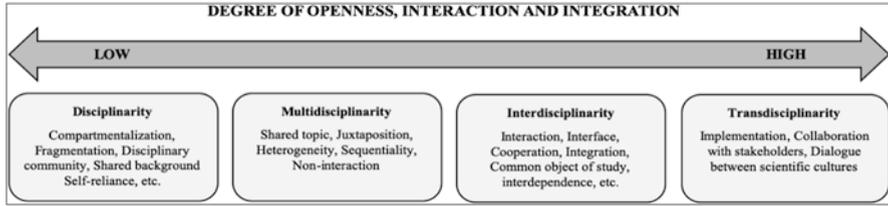


Fig. 19.2 Degrees of collaboration between disciplines

semantic dispersion and confusion. These terminological variations nonetheless present the notion of disciplinarity as an invariant element modulated on a case-to-case basis by a long series of prefixes. I will focus here on the key concepts that form a certain consensus in the scientific literature on interdisciplinarity today: *disciplinarity*, *multi-disciplinarity*, *inter-disciplinarity*, and *trans-disciplinarity* (see for example, Piaget, 1972; Thompson Klein, 1990, 2014; Darbellay, 2005; Huutoniemi et al., 2010). Figure 19.2 presents this conceptual development showing the progressivity between the different levels of complexity of the links between the disciplines.

From disciplinarity to multi-, inter-, and transdisciplinarity, there emerges a semantic and epistemological dynamic that is based on clearly identified disciplinary anchors, while integrating them into an increasingly dense and interactive network of relationships (Rosenfield, 1992; Stokols et al., 2008). With a very low degree of openness in disciplinarity, the gradual decompartmentalization of disciplines takes place from multi-, inter- and transdisciplinarity, with a progressively stronger degree of interaction and integration between branches of knowledge. The process of gradual decompartmentalization between disciplines makes it possible to go beyond the mere juxtaposition of points of view, characteristic of multidisciplinary, in order to develop a more integrated approach to knowledge from a perspective of solving theoretical or practical problems (Clark, 2002). A dialectical tension is thus emerging between disciplinary anchors and their necessary interaction in an interdisciplinary dynamic: there is at the same time a disciplinary foundation and an opening towards an interface between and beyond disciplines.

Positioning

Where along the axis that moves from disciplinarity to transdisciplinarity (as visualized in Fig. 19.2) does the *Children's Drawings of Gods* project fall? Based on our research experience with the project, we can begin to determine its position. As already mentioned, the project calls on a number of complementary disciplines and aims for an interdisciplinary goal. The corpus of digitized drawings serves as a point of contact and discussion among researchers, it is organized in a database that is being processed and reconfigured in and by the development of new analytical

tools. The drawings translated into digital data are considered here as “intermediary objects” (Vinck, 2011) which materialize and allow the creation of a space of circulation and interdisciplinarity between concepts, tools, and heterogeneous methods. Creating such interdisciplinary links requires “articulation work” (Strauss, 1985, 1988; Oberhauser, 2016), understood as a development, transformation, and collectively negotiated process. The articulation is based on both a division of tasks between the disciplines adapted according to the project objectives and on coordination of efforts. Between the distribution of tasks and the need for collaboration, the relatively subjective perception of differences and specificities between researchers plays a key role. To work on children’s drawings as objects of study and rallying points for the various disciplines is part of a desire to open up monodisciplinary approaches. It aims to overcome the simple juxtaposition of studies that have been conducted in different countries. Such a juxtaposition often lacks adequate intercultural considerations and fails to make effective comparisons between the findings from the various locales. The corpus of drawings, conceived as rallying materials, acts as a means of intercultural exploration and comparison, while catalyzing the interdisciplinary dialogue between psychology, religious studies, image analysis, cultural anthropology, sociology, etc.

The project is anchored in the area of multi-disciplinary configurations. At the same time, it sets up an interdisciplinary dialogue among the disciplines convened, as well as opening a transdisciplinary connection between the disciplines of human and social sciences and computational sciences within the framework of digital humanities. This openness to inter- and transdisciplinarity is neither self-evident nor can it be decreed arbitrarily; no recipe is supplied in advance. It is a process that gradually takes place with its points of convergence, its results, and its difficulties with regard to the various epistemic and cultural horizons. This interdisciplinary process requires negotiations between colleagues in an attempt to co-construct a common theoretical framework and develop technical analysis devices capable of responding to the hermeneutic questions of researchers in the humanities and social sciences, while being of scientific interest to researchers in computational sciences. We have experienced this positive dynamic in our project based on relationships of trust and respect (both interpersonal and academic) characterized by exchanges that occurred long before the project commenced, by having joint experiences to test the interest and feasibility of the collaboration before the elaboration the project itself, and by having regular meetings during the project. I note that regular meetings, facilitated by the presence of the principal researchers on the same campus, make it possible to discuss various issues concerning the organization, such as the research and the progress of the subprojects. Meetings also provide time and space to solve problems and share different points of view. This dynamic is reinforced by the presence of researchers who are able to establish bridges between the domains of humanities and computer sciences, reconciling and integrating both fields and working, for example, on the development of methods of automatic image analysis. This reinforcement can be seen not only within the research team in the planning and practice of co-writing interdisciplinary publications, but also between the research team and colleagues who specialize in computational sciences (for

example in dialogue about expertise, human exchanges, sharing ideas, building dynamic relationships around the same object, etc.).

Interdisciplinarity in Action

Team Science

The research team of the *Children's Drawings of Gods* project is made up of a core group of three psychologists with a background in religious studies, a sociologist of science and technology, a sociologist of communication and culture, a specialist in mathematical methods and computational sciences for social sciences and humanities, and an epistemologist of interdisciplinarity. According to the inter-institutional collaborations, the group is enriched by additional ad hoc contributions from specialists in computational sciences and automatic image analysis. The members of the research group will also draw, depending on the needs of the analysis and interpretive games, on other fields of complementary expertise such as cultural and social psychology, cognitive science, anthropology, or even history of religious art. This configuration of multiple disciplines offers a breeding ground enriched by the diversity of theoretical frameworks, concepts, and methods that are can be specific to a particular discipline (e.g., computer modeling), or more or less shared between them (for example a social constructivist view of the elaboration of god representations). Epistemic diversity increases rapidly when the distance between disciplines extends to computational sciences (hard sciences). The mobilization of the hard science disciplines in the project is likely to create the conditions for a mutual misunderstanding about the psychological and socio-cultural nature (vs. algorithmic) child drawings, as well as about the design, purpose and use of computer tools in the project.

The research project on the children's drawings of Gods mobilizes the scientific and relational skills of the members of the group. It also provides the opportunity to implement a collaborative process in a dynamic teamwork. With its successes (but also communication difficulties as noted above), teamwork can test conceptual, theoretical, and methodological strategies. In this context, the science of team science (SciTS) field is likely to shed some light on the issues and the course of interdisciplinary collaboration (Fiore, 2008; Stokols, 2006). Our project has been confronted with several key issues of teamwork.⁴ We could qualify the interdisciplinary vision as an epistemological horizon of the project, an attempt at *cross-disciplinarity* in the sense that this generic concept refers to any form of collaboration between researchers or groups of researchers from different disciplines (Stokols et al., 2008). The cross-disciplinary approach thus covers the spectrum or pathway

⁴See: *Team science glossary*. Available on: <https://i2insights.org/2017/03/16/team-science-glossary/>

of the project (which itself is based on multidisciplinary approaches), experimenting with interdisciplinary articulations in the framework of a transdisciplinary dialogue between the human and social sciences and the computational sciences. Without aiming for a fusion or confusion between the disciplines mobilized, the project potentially tends towards a certain “convergence” (Sharp et al., 2016) in the sharing of ideas, theories, or methods between scientific and disciplinary fields that have been heretofore historically distinct. The continuous practice of the co-constructive exchange in team science allows for the production of knowledge, approaches, or techniques of analysis that would not have come into being without this work of “collective intelligence” (Woolley et al., 2010). This collective co-production has gone through a process of co-learning between researchers from the humanities and social sciences and researchers from the computer sciences. Each group has sought, through their primary disciplinary language, to communicate theories, methods, and tools of analysis unfamiliar to the other party (see Darbellay et al., 2018). The brainstorming sessions conducted by the research group revealed the need for interdisciplinary work. The interdisciplinary work cannot move forward without arduous discussions in which one must take the time to understand the disciplinary languages of others, master the main tools when possible, and attempt to build a shared horizon. These exchanges are based on mutual trust and are essential to building the “team dynamics” (Tuckman, 1965) that occur through multiple levels of interaction: academic, professional and personal. The discussions and the need for constructive exchanges are necessary not only in the phase of co-production of ideas or methods, but also in the phase of dissemination and exploitation of research data. Through the formulation (and often the concrete reformulation) of theoretical, methodological, and descriptive elements, the work of collective publication between the team members continued the dialogue, drawing on the disciplinary backgrounds of the co-authors concerned. This co-authorship approach also allowed us to explore more or less explicitly the various co-publication models that depend on disciplinary practices with their degrees of variation. The process of co-authorship demonstrates, above all, the importance of clarifying and documenting—from the beginning of a collaborative project—each team member’s objectives, involvement, and contribution (Bennet et al., 2010).

Researcher Profiles

Interdisciplinary work, individual and collective, does not come into being by decree; it is carried out by hardworking researchers who agree on the goal of working together for the common cognitive good. Collaborative and interdisciplinary scientific research in small or larger groups (or subgroups) therefore calls for researchers not only to be aware of the issues and requirements of interdisciplinarity, but ultimately to be trained to master the process and methods of interdisciplinary work. There is currently a great need in this area. Training programs dedicated to this goal are increasing at both undergraduate and doctoral levels. Instead of

going into the details of this new type of training programs, let me focus on the idea that interdisciplinarity undoubtedly calls for new profiles of researchers who are able not only to master disciplinary skills but also are able to be open to other disciplines or fields of study and link them together. We, ourselves, have experienced this in the *Children's Drawings of Gods* project; disciplinary skills in the field of human and social sciences were insufficient to deal with the complexity of the digital requirements. This challenge was forcibly revealed when we were recruiting young researchers who were potentially anchored in the field of human and social sciences or even sub-disciplines of this field (such as the psychology of religions), even though these researchers were open-minded and aware of issues related to the digitization, processing and technical analysis of children's drawings (for a detailed analysis see Darbellay et al., 2018). In the context of digital humanities, hard skills in one or more disciplines are necessary, but they must be accompanied—or even transformed—by contact with technical skills for the analysis of images, and with soft skills for communicating between and beyond disciplinary boundaries and creating transdisciplinary links. This new generation of researchers should be encouraged, trained, and valued in their interdisciplinary academic background.

Conclusion

The complexity and interculturality inherent in a research project such as *Children's Drawings of Gods*—which served here as a support for reflection and provided the opportunity to examine the scientific literature in the field of inter- and transdisciplinary studies—cannot be treated by resorting to a monodisciplinary approach. In this context, interdisciplinary stakes must imperatively be noted, especially as part of the field of digital humanities in full transformation. It is in this atmosphere of cognitive openness that teamwork takes on new meaning, allowing each specialist to assert his or her disciplinary skills while contributing to the collective effort to co-construct a collective intelligence that is capable of solving the complex theoretical and practical issues that cannot be dealt with by one field alone. The needs and demands of this collective effort call into question the legitimacy of the dominant vision of interdisciplinarity: which is simply bringing together a group of specialists from different disciplines. If we wish to prepare a new generation of scholars for the challenges of interdisciplinary research, it goes without saying that our old vision of specialization will be hindered by its limitations and will have to be overcome. What place or climate is there, or can be created, within the academic system that welcomes and nurtures interdisciplinarians, polymathic scholars, and other neo-generalists of a new era?

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Part IX
Interdisciplinary Approaches to Drawings
of Gods: Challenges, Achievements, and
Perspectives

Chapter 20

Interdisciplinary Approaches to Children's Drawings of Gods: Challenges, Achievements and Perspectives



Pierre-Yves Brandt , Zhargalma Dandarova-Robert , Christelle Cocco ,
Dominique Vinck , and Frédéric Darbellay 

Abstract To conclude this stage of research on the representations of supernatural agents in children's drawings, this chapter summarizes some of the main results of the works collected in this volume. The use of drawings to study children's representations is not a classic methodology in child psychology. Analysing images is challenging on different levels: content analysis, material features of the drawings, and the development of technical tools needed for the analysis. This chapter discusses the benefits and the limitations of this methodology, as well as those of interdisciplinary approaches that try to combine computer vision methods with studies on child and adolescent development. It ends with the presentation of specific research ideas generated by this first stage of investigation, ideas which we propose as a program for a second stage of research.

Keywords Children's representations of gods · Drawing methodology · Computer vision · Interdisciplinarity

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As we reach the end of this volume, it is time to formulate some conclusive remarks. In fact, all of the approaches presented in the various chapters of this book have sufficiently demonstrated that they do not lead to conclusions; on the contrary, they open a wide range of stimulating questions and hypotheses that await testing. This does not mean that the efforts invested by so many researchers from different countries to better understand how children represent gods¹ have been merely exploratory. The primary purpose of summarizing the overall project here was precisely to overcome the mere juxtaposition of a variety of approaches in the representation of supernatural agents in children. This is why we introduced the construction of an integrative model at the beginning of this book (see Chap. 2, this volume). The main perspective of this integrative model is developmental: it focuses on the child's development of representations of gods. The need to write such a chapter, as to lead the whole project on children's representations of gods elsewhere, is twofold. First, in the field of psychology of religion, research on children is underrepresented. Second, talking, in general, about children's representations of gods means nothing if it is not conceived in a developmental perspective, simply because children's concepts change considerably between the age of four and the age of fourteen.

After briefly recalling some of the main results presented in the book, this concluding chapter discusses successively the contributions and limitations of using drawings as a means of studying children's representations of god, then the benefits and limitations of interdisciplinary approaches. Finally, it presents four future directions of research.

Main Results for the Study of Children's Representations of God

We do not pretend to summarize exhaustively in a few lines all the results presented in this book. We will only mention some salient points in connection with the project *Children's Drawings of Gods*.²

Let's start by recalling that the integrative model presented at the beginning of the book is largely based on the research described in subsequent chapters. We placed the integrative model at the beginning of the book as an invitation to the reader: a means of engaging the reader's interest in the other chapters by introducing their topics and providing additional interpretation of their results. We provide substantial documentation and information to developmental psychologists

¹Why the term *god* begins sometimes with an uppercase letter G, sometimes with a lowercase letter g, and why it appears sometimes in the singular and sometimes in the plural, is explained in the introductory chapter of this book (Chap. 1, this volume).

²The international project, *Drawings of Gods: A Multicultural and Interdisciplinary Approach to Children's Representations of Supernatural Agents*, is also known in French as *Dessins de dieux* (DDD), and referred to in this volume simply as *Children's Drawings of Gods*.

interested in religious development, and to teachers involved in the religious education of children at schools and in various religious contexts.

A theme that has accompanied us throughout this research is that children who draw *god* do not simply produce a spontaneous pictorial representation of a supernatural being, but rather, they compose their drawings with reference to representations already available in their social environment. In itself, this observation is not new. Harms (1944) had already shown that from the age of twelve, when asked to draw god, a substantial number of children and adolescents will draw representations typical of the religious traditions with which they are familiar, or to which they belong.

However, a main finding of these studies shows that it is not necessary to belong to a religious tradition and to receive an education from it in order to create religious representations graphically. The ability to conceive supernatural beings and to produce iconographic representations is universal. Children who are not in contact with religious traditions easily find in the media (films, cartoons, comics, video games, etc.) sources of inspiration for representing god.

Another finding worthy of note is the impact of religious education. In the *Children's Drawings of Gods* project, we take care to collect drawings in the public school setting (in order to reach an all-round population), as well as in the setting of religious education (e.g., in parishes or in religious education classes at school). However, we found that these settings did not serve as effective predictors of religious socialization. We could not, based solely on the setting of the data collection, predict which children would have strong religious socialization and which would not. On one hand, children from very religious families may attend public schools; and, on the other hand, children taking part once a week in religious education classes at school may not be distinguishable from other children in the same school who do not participate in such classes. More in-depth analyses have yet to be conducted on the data that has been collected. Let us note for the moment that, analyses of the Swiss sub-collection seem to indicate that receiving religious education increases the tendency to produce an emotionality intense drawing, which is probably linked to familiarity with the concept of god. This does not mean that the child who receives a religious education will lose all critical capacity and then reproduce only stereotypical religious representations. On the contrary, thinking about a concept can help to distance oneself from naïve and spontaneous representations. De-anthropomorphization and ambivalence are two strategies, among others, that children can use in their drawings in order to allow anthropomorphic features to express that gods are intentional agents, and at the same time not simply draw figure that is merely human (see Chaps. 3 and 4, this volume).

A number of findings highlight the impact of culture. Cross-cultural analyses indicate some differences in the hierarchy of colour preferences for drawing god, and at the same time they expose the dominant role of the colours yellow, (also orange and red in Japan). It seems that the idea of light is universally associated to the concept of god, and that yellow, sometimes orange, and red are the preferred colours used to represent light (see Chap. 8, this volume). The impact of the religious background also becomes evident when analysing the gendered

characteristics of the god figure (see Chap. 5, this volume). In Western countries, where the concept of god is clearly associated with a masculine figure, feminine representations of gods are rare. However, in Japan or in Buryatia, feminine representations of gods are quite frequent, and they are mainly produced by girls. Other interesting aspects concern the impact of culture on the position of the god figure in the drawing (see Chaps. 6 and 7, this volume). Intercultural analyses have yet to be extended to all sub-collections to better understand the impact of the cultural background not only on the spatial location of god, but also on the emotions associated with god figures, and on the possibility that an attachment bond is, or has been, established with god (see Chaps. 10 and 11, this volume). Indeed, the same depth of analysis and coding has not been carried out on all of the sub-collections that are mentioned in this volume. There is still work on the board to be done. Nevertheless, at this moment, it is time to present some reflections on the effectiveness of using drawings to study children's representations of god, and to appreciate the contributions of an interdisciplinary work.

Contributions and Limitations of the Methodology of Drawings for Studying Children's Representations of God

One of the main strengths of using the technique of drawing as a means of collecting data is its great flexibility and its potential to be used in all types of research (quantitative, qualitative, or their combination). Drawings can also be used with a wide variety of topics, either as a main method of research or as a supplementary procedure. The present volume is a first attempt to demonstrate the diversity of empirical studies that rely on drawing as the main method used to study children's representations of god. Although the majority of studies presented in this volume used quantitative designs, drawing technique also fits very well, if not better, with qualitative research designs. Whatever the type of methodological design, the present research project, we expect, could demonstrate the value and singularity of this method for exploring children's imagination of the divine.

Another great advantage of drawing as a tool for research is the richness and diversity of information that can be found in such material. In contrast to language-based methods, drawings are able to reveal the information that is not accessible using techniques such as questionnaires and interviews. All elements of the drawings may be important sources of knowledge: the participant's choice of character, object, symbol, or process to represent the topic (god, in our case), the choice of colour, the size of objects, their location within the drawing space of a sheet of paper, the composition, the omission of some parts of a figure, and the degree of originality (that is, whether or not a drawing represents a conventional image of the divine that exists in the child's cultural or religious environment). Moreover, drawings, when combined with narratives, become an even richer source of information. At the same time, the richness of information that is available in drawings also

represents an inherent disadvantage of this method. Undoubtedly, a complete and proper analysis of drawings is a very elaborate and time-consuming process. It requires a good knowledge of both the general particularities of children's drawings and the specific cultural and religious realities in which drawings were collected. In terms of methodological concerns, this can present a challenge for researchers (although the degree of challenge depends on the research questions and the chosen approach). In this regard, we had to make choices. We therefore gave up filming the children while they were drawing. This technique was used for example by Wiedmaier (2008, 2010) and allows very fine analyses of the drawing elaboration process. However, it is too time-consuming when it comes to processing a large amount of drawings. Nonetheless, drawing, as a research tool, serves as an extremely valuable instrument to go beyond, as some researchers said, the "intellectualized, theological, cognitive understanding" of god, and to reveal an emotional and experiential image of god (Rizzuto, 1970; Hoffman, 2005; Gibson, 2008).

Psychological inquiry into religious phenomena would be not complete if the fields of psychology and cognitive science did not address religious images and religious imagery. As Moore (1977) argued, there were images, visual symbols, and pictographs before written texts in the history of ancient religions. Even in religions with a large corpus of scriptures, such as Buddhism, the use of images developed as a parallel tradition, only partly related to the texts. The implementation of drawing as a research tool offers great benefits to the advance of our knowledge in this domain. For instance, through drawings we can better understand the vitality and stability of some religious images, the origins and development of religious symbolic thinking, and the functionality of religious images on both the individual level and the group level. Another important question to which drawing as a method could offer a valuable insight is the question of embodiment in the human's imagination of the divine. Hodge and Sousa (2018) correctly pointed out that it is commonplace in the cognitive science of religion (CSR) literature to read that supernatural agents are believed to be disembodied beings while the majority of gods across the vast majority of religions are represented as embodied. Unfortunately, this issue is largely ignored in the psychological and cognitive investigation of religion. What is the relationship between the divine and the form in which it is represented? This is an intriguing question and if we do not engage it, we miss an important element in a human's imaginings of the divine. One critical point of view concerning the use of drawings in study of god representation should be mentioned here. According some authors, the task of drawing god forces children to look for a pictorial form of god and pushes the results in an anthropomorphic direction (Tamminen, 1991; Tamm, 1996). Actually, the tendency to anthropomorphize supernatural agents has been confirmed in numerous studies using different types of measurement such as verbal, or experimental (see for instance, Deconchy, 1967; Barrett & Keil, 1996; Barrett, 1998; Demoulin et al., 2008). Accordingly, the problem is not in the method. Anthropomorphism of supernatural agents is an aspect of a much broader phenomena, that of attributing human characteristics to nonhuman phenomena. We find evidence of this attribution in art and in technological gadgets (Guthrie, 2015; Waytz et al., 2013). Therefore, it makes no sense to exclude this

method from the field of the psychological study of religion. On the contrary, it is necessary to expand the research by examining not only anthropomorphism in our (necessarily human) conception of the *mind of god* (as cognitive science does) but also anthropomorphism in physical, bodily representations of supernatural agents. Along with that, we should remind ourselves that a child's drawing of god cannot be taken as an adequate and exact reproduction of child's inner idea of god. Drawing often results from a creative and imaginative process in which a child is involved. The graphic representation also depends on children's manual skills, his or her aesthetic preferences, the materials used, and the research context and setting. Consequently, children's pictorial representation should be viewed rather as a metaphor, or as a symbolic representation, that makes visible the essence of child's idea of god that she or he has at the time of drawing. In this sense, the child's choice of how s/he represents god can also provide rich insight into individual and group creation and the use of symbol systems. The choices made by the child also reflects the transmission of religious beliefs and practices within the culture.

Another important outcome of using the drawing method is the facilitation of cross-cultural research. In actuality, the field of the psychological study of religion suffers from the same weakness that the whole field of psychological science suffers from: the understanding of human religiosity has largely been constructed on an empirical foundation that was gathered from WEIRD³ people (Henrich et al., 2010). According to Hoffman et al. (2007), the majority of god image theory and research assumes the Judeo-Christian worldview, therefore, religious and spiritual diversity need to be addressed. Understanding what is universal or variable about human's perception of supernatural agency necessarily requires the study of religious data from a diversity of populations and religions. Drawing is particularly useful for collecting data from a great diversity of populations because there is no need to test and validate psychological constructs and instruments designed to measure them. Many of the existing measures of god concept and/or image are limited to a Christian population. The development of new measures demands a considerable effort from researchers and it is not a straightforward task for those who are not experienced in such tasks or who have very limited resources (or none) for the correct execution of all necessary procedural work. This is especially true for researchers working outside of economically developed countries. Additionally, drawing technique involves the minimal use of language and, consequently, eliminates many problems associated with the use of language in data collection and any subsequent comparative analyses. The religious and cultural diversity of data we have been able to collect in the present project clearly confirms this advantage.

Finally, drawing is regarded as particularly well suited for data collection that involves children. It is even considered to be "child-centred" in the sense that it may be familiar to, and even enjoyable for the child. Drawing may be more sensitive to children's (especially younger children's) particular competencies or interests (Punch, 2002; Mitchell, 2006). According to Punch (2002), younger children may

³People from Western, Educated, Industrialized, Rich, and Democratic (WEIRD) societies.

have a limited and different use of vocabulary and understanding of words, they could have difficulty expressing their views freely while being interviewed by an unknown adult researcher in a one-to-one situation, and they may have a shorter attention span than adult participants. In contrast to interviews or written surveys, drawing can encourage children to be more actively involved in the research, and enable them to feel more at ease with an adult researcher. The drawing method gives to children more control over their experience of the research process as well as over their form of expression. Children have more time to think about what they want depict and they can modify their drawings to better express their ideas (Punch, 2002).

In summary, the drawing method certainly has much to offer to the psychological inquiry of children's concepts of the divine by proposing new research questions and strategies. Now it is important to continue to explore the potential of this method, to elaborate new types of analysis, and to continue the critical discussion regarding theoretical and methodological approaches to using drawings not only within psychological science but also in dialogue with other scientific disciplines. In many ways, the field of psychology has remained isolated from other social sciences studying religion. Children's drawings are a particularly relevant subject for interdisciplinary or multidisciplinary research in this domain. Actually, research on how people imagine and conceptualize supernatural agency could benefit greatly from joint efforts of different disciplines, leading to richer outcomes through interdisciplinary collaborative work. This aspect of our project will be discussed in more detail in next sections.

Benefits and Limitations of Interdisciplinary Approaches That Combine Computer Vision, Database Management, and Developmental Psychology

Throughout the project, numerous epistemological, and methodological issues have necessitated strong interdisciplinary collaborations. This is common in research within the digital humanities that also involves computer science, information technology, and design (as demonstrated by F. Darbellay, see Chap. 19, this volume). The present research project gathered specialists in computer vision, database construction, data analysis, psychology, sociology, etc. The collaboration was crucial, first for the database construction. Infrastructuring a huge set of data and associated tools for the multifactorial understanding of what (and how) influences the representation of supernatural agents led us to mobilize specialists of digitization and database experts in order to tackle the specificities of the sources, the materiality of the data, the social conditions of its gathering, and the relevant metadata (see Chap. 18, this volume). It was also important for the digitization and the data treatment of the drawings, themselves. Thus, computer vision specialists cooperated with psychologists to negotiate definitions of colours, their equivalences in various contexts (e.g., is the orange or red used for the sun in Japan equivalent to the yellow used in other cultures?) and their composition (e.g., is green a mix of some yellow and blue

which can be quantified or is it a specific colour unto itself?). The interdisciplinary discussion included questions such as: How can we transcribe the colours in automated recognition of light in drawings? Does the figure of god tend to be located in the upper part of the drawing? Is the figure of god larger in drawings made by children with religious affiliation when compared to children with no religious affiliation? These questions led both to scientific and technical challenges in computer science and to heuristic, methodologic and epistemic challenges for human scientists. Working together to tackle one question often led to additional questions, causing us to revisit discussions regarding the research goals of the various research disciplines. In this situation, interdisciplinary efforts preclude a strictly linear research process. Instead, this interdisciplinary research fosters a situation that encourages researchers to go back and forth between objectives and analysis results, and between theoretical questions and empirical work, via a non-linear path filled with reciprocal interactions and recursive loops. Aside from the classical confrontation of scientific approaches, the translation of the categories from one discipline to another, the gathering of consensus on some joint challenges, the shaping of a shared global research design, and the discovery of new ways to think about individual research objectives, the interdisciplinarity also led us to questions regarding the very research infrastructure we sought to construct, the building of which led us to the interdisciplinary approach in the first place.

The work of D. Vinck and P. N. Oberhauser (Chap. 17, this volume) discusses how the drawings are *equipped*, i.e., how entities are added to the “raw” material in order to make the data usable for the research project. However, doing collective research, with researchers pursuing different research questions, implies having discussion and confronting the various research orientations in order to organize the data in a way that will be useful for the different research designs. The question is even more important when we consider the amount of data and the associated amount of required invisible work because the research infrastructure under construction could unintentionally embed irreversible limitations. The lengthy work of equipping raw data engages the potential use of the data and, as a consequence, creates both possibilities and constraints for further research. Because the research infrastructure is intended to be used by more researchers with different backgrounds and approaches, its scientific flexibility is a key issue. Thus, the internal diversity of the research team, both inside and outside the field of psychology (along with information technology specialists), and its intentional interdisciplinarity was one way we chose to integrate the expected openness of the research infrastructure and its sharable data among researchers with different backgrounds and approaches. This issue has raised questions and generated interdisciplinary discussion. Interdisciplinarity, here, appears to be both an end goal (the openness of the research infrastructure for new users) and a means to that end (a way to ensure the interdisciplinary character of the large-scale digital infrastructure).

However, just as the interdisciplinarity was a resource, it was also a constraint. Depending on the involvement of researchers from different domains, of their own motivation (taking into account the academic pressure placed upon them), and of the relationship between them (sometimes ambiguous collaboration, at other times

epistemic dependence), the resulting infrastructure is also the product of negotiation and compromises which sometimes led to a reduction in future possibilities (limitations). The researchers involved also maintained vigilance regarding the contributions and the advice coming from other disciplines. They did this in part because of the difficulty inherent in evaluating the engagement and robustness of these contributions, regardless of whether they came from partners or employees. Along the way, the researchers from one discipline discovered the internal diversity of other disciplines via dialogue and mutualisation; computer science and psychology are heterogeneous domains crossed by a diversity of streams of thought and different paradigms. Depending on the sub-discipline or the specialty, scientific and technical inputs vary. Being ignorant of, or not having anticipated, this internal diversity, the research team sometimes took one direction, unaware that another way was also possible. Along the way, the challenges of interdisciplinarity initially led to some withdrawal and inflexibility, but through learning to work with other disciplines, and thus cultivating a new understanding of other disciplines, interdisciplinarity led to more openness. We must, however, remain conscious that interdisciplinary activity cannot be forced or imposed by one disciplinary group onto another; it develops rather through the process of mutual discovery and the co-learning of a variety of disciplinary languages that are enriched and can potentially reach beyond a single discipline.

Interdisciplinarity in the project was not only a question of learning to translate categories from one discipline to another one, or to confront different approaches. It was also about becoming familiar with each other's disciplines, their social and epistemic structuring and the necessary ways to cooperate in order to open or close scientific and technical possibilities. As a by-product, interdisciplinary efforts form researchers and research teams that are able to engage new endeavours and collaborations with some mutual expertise on the importance of such cooperation.

New Perspectives

As we close this presentation of this research project, we turn our attention to new vistas of research that have been opened as a result of our work. They unfold in four directions that we will briefly describe before concluding.

In the Field of the Sciences of Religions

A first direction of future research takes place in the field of the sciences of religions. Interpreting drawings sometimes required a deep knowledge of how a given religious tradition thematises religious concepts, how it symbolizes them in iconic motifs, transposes them in behaviours, etc. For example: In Switzerland, including earrings in a drawing can be a way of adding a feminine feature to a figure of a girl; in Buryatia and Japan, however, earrings are more likely to be an attribute of

buddhist divinity regardless of its gender. Without knowledge of the codes used by the religious traditions with which a child may have been in contact, we may not correctly identify the strategies used by this child to signify the divine. Future work involves the study of the iconographic codes in the cultural environment in which the drawings were collected in order to better analyse what may have served as a model for the child.

In the Field of Religious Art

A second direction for future research takes place in the field of religious art. Starting from a given drawing made by a child, the goal will be to look in the history of art to see if we are able to find similar representations of the divine. In the case of an affirmative answer, we will have to ask ourselves if there is a chance that the child has used this particular work of art as a model for his drawing or if it is better to think that an artist before him had simply proposed the same way of representing god. Such an approach leads us to shed light on the history of the sources of inspiration for the representation of the divine in a given culture. It also informs us about the availability of such models in the cultural environment, and encourages us to consider the permeability of this environment with regard to images coming from other cultural backgrounds. In cases where it is implausible that the child could be inspired by works of art that were previously made, we will then be able to emphasize the inventiveness of the child as shown in his/her drawing. It will be an attestation to the notion that similar ideas can emerge in different contexts. From the perspective of the study of artistic activity, the analysis of parallel strategies used by children and by artists for representing the divine will contribute to the discussion of what conditions are necessary in order to proclaim that a child is an artist (Boone, 2007; Twigg & Yates, 2019).

The Study of Creativity and Creative Processes

This reflection leads to a third direction of research: the study of creativity and creative processes. When a child draws god, does he or she reproduce models available in his/her social environment or does he or she independently imagine the mental image that s/he then draws? In terms of reproduction or creativity, it is not always easy to know if a child's representation of a supernatural agent is an attempt to reproduce a work of art previously seen by the child or if it is an invention of the child, him/herself. In addition, it is often said that religious iconographies are not really open to innovation (Duborgel, 2004; Lubart, 1999). Therefore, a tension between the processes of reproduction and imagination can be observed through the study of religious drawings made by children. This is why it will be particularly interesting to better understand how children's creativity is expressed in this context.

Developmental Psychology and Developmental Norms

Finally, these considerations open a fourth direction of research in the field of developmental psychology of religious norms. Religious traditions tend to provide iconographic models and to restrict the production of representations of religious topics to these standards. Therefore, such models, considered as orthodox by these religious traditions, receive a normative status. In the field of developmental psychology, with regard to developmental norms, two main research questions can be applied to children's drawings of god. The first question: At what age do children identify the normative status of certain religious representations, and how do they take this into account when they draw god? What are the strategies they use in order to respect, circumvent, or transgress religious norms? The second question concerns the comparison between religious norms (from the perspective of developmental psychology) and other kinds of developmental norms. There is a whole line of research on the study of norms from a developmental point of view (see for example Gabennesch, 1990; Nisan, 1987; Smith & Vonèche, 2006). The question here is: Does the child's interpretation of religious norms and canonical representations present some specificity in comparison to the child's understanding of norms in general? There is a whole field of research that needs to be explored in an intercultural way, particularly in relation to the prohibitions against pictorial depictions of the divine that are advocated in different religious contexts (Wagner et al., 2005): How do children manage such prescriptions?

Conclusion

We come to the end of a book that offers a variety of perspectives on children's pictorial representations of the divine. The intersecting points of view made it possible to highlight the richness of a material, such as the use of drawings to study children's development from an intercultural perspective. Much remains to be done to improve image analysis techniques. The results presented already show clearly how the handling of religious representations is located at the intersection of cognitive, affective, and social processes. The four directions of future research that we have just outlined show that much remains to be done. Let us hope that we will find the means to achieve it.

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Appendix: Index of the Project Database Images

Olga Serbaeva

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				http://ark.dasch.swiss/ark:/72163/1/0105/iHPLG1JaRXOv9IAwhLs2hQi.20180702T170732862Z	

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Chapter 5, p. 139	Fig. 5.4	p. 139, 178-179	See also image on p. 179, Fig. 7.3(a)	jp03_ca_f_ rix_07_10_amx	
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Chapter 5, p. 139	Ref. to code	p. 139, 267-268	See also image on p. 273, Fig. 10.17	ch16_vd_f_ rcb_14_11_oxa	
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Chapter 5, p. 140	Ref. to code	p. 140		ch16_fr_f_ rcn_12_09_gae	
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Chapter 5, p. 140	Ref. to code	p. 140	See image on p. 141, Fig. 5.5	ch09_vd_f_ pbu_12_00_oli	
Chapter 5, p. 140	Ref. to code	p. 140		ru09_sp_f_ px_08_01_sta	
http://ark.dasch.swiss/ark:/72163/1/0105/AxzJWeNmS8K7yK5n3A=LQwa.20180702T193658015Z					
Chapter 5, p. 140	Ref. to code	p. 140	See image on p. 161, Fig. 6.3(a)	ru09_sp_f_ px_07_10_nas	
http://ark.dasch.swiss/ark:/72163/1/0105/R51HZfJORHid8ISt=WmzSgR.20180702T19364819Z					
Chapter 5, p. 140	Ref. to code	p. 140		ru12_bo_f_ pb_12_06_adi	

	http://ark.dasch.swiss/ark:/72163/1/0105/mBTnGOVKTZKvb=_bjES6Ap.20180702T200107704Z				
Chapter 5, p. 140	Ref. to code	p. 140		ru09_bo_f_ px_11_03_nel	
	http://ark.dasch.swiss/ark:/72163/1/0105/EmLTQ57bTBWwrNTIOC9VNAf.20180702T191035929Z				
Chapter 5, p. 140	Ref. to code	p. 140		ru09_bo_f_ px_10_10_vik	
	http://ark.dasch.swiss/ark:/72163/1/0105/s1zhvAIdS5W4wTZt4FC6gQN.20180702T190818888Z				
Chapter 5, p. 140	Ref. to code	p. 140		ru09_bo_m_ px_10_06_bou	
	http://ark.dasch.swiss/ark:/72163/1/0105/VIGK=1pdTSSXagVLHtH0wQ4.20180702T192452154Z				
Chapter 5, p. 140	Ref. to Fig. 5.6, code	p. 140	See image on p. 142, Fig. 5.6	jp03_to_f_ pfx_13_06_sax	
Chapter 5, p. 140	Ref. to code	p. 140		jp04_to_m_ rtx_10_10_kyx	
	http://ark.dasch.swiss/ark:/72163/1/0105/bF_pGSpaQDaRmGUYbBzfQQf.20180702T171736534Z				
Chapter 5, p. 140	Ref. to code	p. 140		jp04_ca_f_ rix_14_03_kkx	

	http://ark.dasch.swiss/ark:/72163/1/0105/AqjABEt5Ri=82vfgRbDOIg5.20180702T170550308Z				
Chapter 5, p. 141	Fig. 5.5	p. 140		ch09_vd_f_pbu_12_00_oli	
	http://ark.dasch.swiss/ark:/72163/1/0105/hSU3HEEHT3GE3Y7NOCskjwE.20180702T153643603Z				
Chapter 5, p. 141	Ref. to Fig. 5.7, code	p. 141	See image on p. 143, Fig. 5.7	ch10_ge_f_rbc_15_04_val	
Chapter 5, p. 141	Ref. to code	p. 141		ch10_ge_m_pco_11_00_flo	
	http://ark.dasch.swiss/ark:/72163/1/0105/ch3_Xi_Q_qjhnOd=YwGjQt.20180702T15453491Z				
Chapter 5, p. 141	Ref. to code	p. 141		ch09_ge_m_pco_10_00_flo	
	http://ark.dasch.swiss/ark:/72163/1/0105/=0XOy=sFSbeojbIsTwmVPwE.20180702T153543856Z				
Chapter 5, p. 142	Fig. 5.6	p. 140		jp03_to_f_pfx_13_06_sax	
	http://ark.dasch.swiss/ark:/72163/1/0105/FktBI22cR7ykWhxJ2II3BQH.20180702T170149535Z				

Chapter 5, p. 142	Ref. to code	p. 142		ch10_ge_f_rbc_12_11_jul	
http://ark.dasch.swiss/ark:/72163/1/0105/Qj=B=QvKRYaL4JiimtYkkQ8.20180702T154204711Z					
Chapter 5, p. 142	Ref. to code	p. 142		ru09_bo_f_px_08_00_tan	
http://ark.dasch.swiss/ark:/72163/1/0105/Dj9pT4VwMqP2aObNKuMkNeAJ.20180702T190406403Z					
Chapter 5, p. 142	Ref. to code	p. 142, 199	See image p. 202, Fig. 8.1	ru09_bo_f_px_13_02_eka	
Chapter 5, p. 142	Ref. to code	p. 142, 162	See image p. 162, Fig. 6.6(b)	jp04_fa_m_pkx_11_05_tyx	
http://ark.dasch.swiss/ark:/72163/1/0105/0IObP2HASw2u8RE4nBv1kgM.20180702T170908702Z					
Chapter 5, p. 142	Ref. to Fig. 5.8, code	p. 142	See image on p. 144, Fig. 5.8	jp03_to_f_pfx_07_06_max	
Chapter 5, p. 142	Ref. to code	p. 142		jp04_to_m_rtx_08_09_fyx	
http://ark.dasch.swiss/ark:/72163/1/0105/czvUj1B9SQKgyeatPBwggQI.20180702T171715889Z					

Chapter 5, p. 143	Fig. 5.7	p. 141		ch10_ge_f_rbc_15_04_val	
http://ark.dasch.swiss/ark:/72163/1/0105/6TefojrqQ9SPj22i2ca3qAo.20180702T154414798Z					
Chapter 5, p. 144	Fig. 5.8	p. 142		jp03_to_f_pfx_07_06_max	
http://ark.dasch.swiss/ark:/72163/1/0105/8vJ4O4CgSIuweA7sQr4xGQI.20180702T170041568Z					
Chapter 5, p. 144	Ref. to Fig. 5.9, code	p. 144	See image p. 145, Fig. 5.9	ru09_bo_m_px_11_06_vit	
Chapter 5, p. 144	Ref. to code	p. 144		ch08_ge_f_rap_11_00_and	
http://ark.dasch.swiss/ark:/72163/1/0105/=39Q9biNT=mA2q1buleKTwj.20180702T152652017Z					
Chapter 5, p. 144	Ref. to Fig. 5.10, code	p. 144	See image p. 146, Fig. 5.10	ch09_vd_f_pbu_12_06_mel	
Chapter 5, p. 144	Ref. to code	p. 144		ch10_ge_f_ral_13_05_kok	
http://ark.dasch.swiss/ark:/72163/1/0105/FH_E0oWITQCikZK28=_HBUQ7.20180702T154112419Z					

Chapter 5, p. 144	Ref. to code	p. 144		ru09_sp_f_ px_11_04_tan	
http://ark.dasch.swiss/ark:/72163/1/0105/4i3NeAMfSE631UOsNsDdCwK.20180702T193849086Z					
Chapter 5, p. 144	Ref. to code	p. 144		ru09_sp_f_px_11_ xx_ana	
https://ark.dasch.swiss/ark:/72163/1/0105/ySexDXXTQXCxQTZJySF8Ah.20180702T193934828Z					
Chapter 5, p. 145	Fig. 5.9	p. 145		ru09_bo_m_ px_11_06_vit	
http://ark.dasch.swiss/ark:/72163/1/0105/v4QFu_6kSs27ZrjHEfwn6gV.20180702T192715355Z					
Chapter 5, p. 145	Ref. to code	p. 145		ru09_bo_f_ px_11_03_dar	
http://ark.dasch.swiss/ark:/72163/1/0105/S42k_YqKQkSSgfvzBaDw2A6.20180702T191017822Z					
Chapter 5, p. 145	Ref. to code	p. 145		ru08_bo_f_ pb_15_01_nin	
http://ark.dasch.swiss/ark:/72163/1/0105/K3lqY=kvSEWDjQ6A4GGNbgV.20180702T185222435Z					

Chapter 5, p. 145	Ref. to code	p. 145		ru08_bo_f_ pb_07_05_ali	
http://ark.dasch.swiss/ark:/72163/1/0105/8uaS_DrqQ3GTAfzATYAEQ3.20180702T184431845Z					
Chapter 5, p. 146	Fig. 5.10	p. 144		ch09_vd_f_ pbu_12_06_mel	
http://ark.dasch.swiss/ark:/72163/1/0105/oE5E0QaRsKClmZq6r7v5wA.20180702T153710201Z					
Chapter 5, p. 146	Ref. to code	p. 146		ru08_bo_m_ pb_11_09_dan	
http://ark.dasch.swiss/ark:/72163/1/0105/Ve7GJ31uSfiqU3xAdhZ=0g9.20180702T185943523Z					
Chapter 5, p. 146	Ref. to code	p. 146		jp04_to_m_ rtx_08_07_whx	
http://ark.dasch.swiss/ark:/72163/1/0105/D5iSVRYPQaSa95GychYShAQ.20180702T171706585Z					
Chapter 5, p. 146	Ref. to code	p. 146		jp03_ca_f_ rix_13_02_rix	
http://ark.dasch.swiss/ark:/72163/1/0105/Xw6MyQYKQ=m3u2KkivD8kwW.20180702T165634265Z					

Chapter 5, p. 146	Ref. to Fig. 5.11, code	p. 146, 147	See image on p. 147, Fig. 5.11	jp04_ko_m_ryx_13_01_trx	
Chapter 5, p. 147	Fig. 5.11	p. 146		jp04_ko_m_ryx_13_01_trx	
http://ark.dasch.swiss/ark:/72163/1/0105/aa_7HOHQTzqersFw3Qic4gd.20180702T171023496Z					
Chapter 5, p. 149	Ref. to Fig. 5.12, code	p. 146	Image on p. 150, Fig. 5.12	jp03_fa_f_pkx_10_02_eri	
Chapter 5, p. 149	Ref. to code	p. 138-139, 149		jp03_to_m_pfx_10_02_tax	
http://ark.dasch.swiss/ark:/72163/1/0105/X8eTcBRIRZycw8Nlg9FypQ4.20180702T170242184Z					
Chapter 5, p. 150	Fig. 5.12	p. 149		jp03_fa_f_pkx_10_02_eri	
http://ark.dasch.swiss/ark:/72163/1/0105/D_XCS0bqSzyCy0sv0QlnxQd.20180702T165758288Z					
Chapter 6, p. 158	Ref. to Fig. 6.1	p. 158	See images on p. 160, Fig. 6.1(a-c)		
Chapter 6, p. 160	Fig. 6.1(a)	p. 160		jp04_to_m_rmx_11_09_kdx	
http://ark.dasch.swiss/ark:/72163/1/0105/fFGUoiGkQ_ebEM9KQMnwRQm.20180702T171517147Z					

Chapter 6, p. 160	Fig. 6.1(b)	p. 160		ru09_bo_f_ px_13_00_val	
http://ark.dasch.swiss/ark:/72163/1/0105/bHuHkm9FQ767zrFyTm7txAf.20180702T191757675Z					
Chapter 6, p. 160	Fig. 6.1(c)	p. 160		ch10_ne_f_ pcc_11_02_hyu	
http://ark.dasch.swiss/ark:/72163/1/0105/9yqWi69TRlagOTciTCzLUQI.20180702T155115754Z					
Chapter 6, p. 160	Fig. 6.2(a)	p. 160		jp03_ca_f_ rix_10_02_mix	
http://ark.dasch.swiss/ark:/72163/1/0105/3ibe2A2KSmiSua9jti9Etge.20180702T165551173Z					
Chapter 6, p. 160	Fig. 6.2(b)	p. 160		ru08_bo_f_ pb_08_00_sar	
http://ark.dasch.swiss/ark:/72163/1/0105/U_sHKj5TSsict3DnXNY2sQq.20180702T184705255Z					
Chapter 6, p. 160	Fig. 6.2(c)	p. 160		ch09_vd_f_ pbu_12_11_mar	
http://ark.dasch.swiss/ark:/72163/1/0105/bfi8ECn8Qt6wyfKNuXsAtgD.20180702T153744222Z					

Chapter 6, p. 160	Ref. to Fig. 6.3	p. 160	See images on p. 161, Fig. 6.3(a-c)		
Chapter 6, p. 160	Ref. to Fig. 6.4	p. 160	See images on p. 161, Fig. 6.4(a-c)		
Chapter 6, p. 161	Fig. 6.3(a)	p. 140, 161		ru09_sp_f_px_07_10_nas	
http://ark.dasch.swiss/ark:/72163/1/0105/R51HZfJORHid8ISt=WmzSgR.20180702T19364819Z					
Chapter 6, p. 161	Fig. 6.3(b)	p. 161		ru08_bo_m_pb_07_05_aju	
http://ark.dasch.swiss/ark:/72163/1/0105/x1B5WpDIS7Ks1p=qjv8mjjw2.20180702T185330748Z					
Chapter 6, p. 161	Fig. 6.3(c)	p. 89, 161	See image on p. 118, Fig. 4.17	ch16_vd_f_rsp_10_01_cap	
Chapter 6, p. 161	Fig. 6.4(a)	p. 161		jp04_ca_f_rix_13_11_yax	
http://ark.dasch.swiss/ark:/72163/1/0105/r6MMzwV0THCe6Fx7bfgUkgY.20180702T17053932Z					
Chapter 6, p. 161	Fig. 6.4(b)	p. 161		ru09_sp_m_mn_09_10_nik	
http://ark.dasch.swiss/ark:/72163/1/0105/4bMI3AEfThaXUPZ_3PzYbw6.20180702T195520598Z					

Chapter 6, p. 161	Fig. 6.4(c)	p. 161		ru12_bo_m_ pb_15_07_bai	
http://ark.dasch.swiss/ark:/72163/1/0105/4guytwktQGSFK13DyguideQ4.20180702T201302842Z					
Chapter 6, p. 161	Ref. to Fig. 6.5	p. 161	Image on p. 162, Fig. 6.5(a-c)		
Chapter 6, p. 161	Ref. to Fig. 6.6	p. 161	Image on p. 162, Fig. 6.6(a-c)		
Chapter 6, p. 162	Fig. 6.5(a)	p. 161		ru09_bo_m_ px_08_10_igo	
http://ark.dasch.swiss/ark:/72163/1/0105/GVnHho8MRtWIVmMZQ9o64QK.20180702T192340855Z					
Chapter 6, p. 162	Fig. 6.5(b)	p. 161		ru10_sp_m_ rv_10_06_and	
http://ark.dasch.swiss/ark:/72163/1/0105/xRCqLiZHSOC1h0K0_loM6Qx.20180702T195711637Z					
Chapter 6, p. 162	Fig. 6.5(c)	p. 161		ch09_ge_f_ pco_10_07_ano	
http://ark.dasch.swiss/ark:/72163/1/0105/WipnUlu7SeuOIeN12Q3UiQJ.20180702T153239264Z					

Chapter 6, p. 162	Fig. 6.6(a)	p. 161		ru09_sp_f_ rn_09_04_mas	
http://ark.dasch.swiss/ark:/72163/1/0105/2lkdKr_KT1ixLfjEpVFtAS.20180702T194501515Z					
Chapter 6, p. 162	Fig. 6.6(b)	p. 142, 162		jp04_fa_m_ pkx_11_05_tyx	
http://ark.dasch.swiss/ark:/72163/1/0105/0lObP2HASw2u8RE4nBv1kgM.20180702T170908702Z					
Chapter 6, p. 162	Fig. 6.6(c)	p. 161		ch10_ge_f_ rbc_15_01_noe	
http://ark.dasch.swiss/ark:/72163/1/0105/8CECSoEMQW=cbV8OLcDWCQn.20180702T154405637Z					
Chapter 7, p. 177	Ref. to Fig. 7.2	p. 177	See images on p. 178, Fig. 7.2(a-c)		
Chapter 7, p. 177	Fig. 7.1(a)	p. 177		ru09_sp_m_ px_11_06_gre	
http://ark.dasch.swiss/ark:/72163/1/0105/sLAXx2BEQjGKnyhmI4cumwO.20180702T194908382Z					
Chapter 7, p. 177	Fig. 7.1(b)	p. 177		ru09_bo_f_ px_08_04_sof	

	http://ark.dasch.swiss/ark:/72163/1/0105/n19QwjZPTISVr1XPW0FvXAq.20180702T190509004Z				
Chapter 7, p. 177	Fig. 7.1(c)	p. 177		ru12_bo_f_px_14_05_aru	
	http://ark.dasch.swiss/ark:/72163/1/0105/Qh5sT1=GTxqtXIcp8ZkOMw4.20180702T200755887Z				
Chapter 7, p. 178	Fig. 7.2(a)	p. 177		ru12_sp_f_ro_07_xx_kse	
	http://ark.dasch.swiss/ark:/72163/1/0105/DbLM1MVITVOxXGzCCbKRWz.20180702T202034614Z				
Chapter 7, p. 178	Fig. 7.2(b)	p. 177		jp04_to_m_rnx_11_10_ftx	
	http://ark.dasch.swiss/ark:/72163/1/0105/jl01DeeNSp27MxwroxmaDgv.20180702T171547028Z				
Chapter 7, p. 178	Fig. 7.2(c)	p. 177		ru12_bo_m_pb_16_02_esc	
	http://ark.dasch.swiss/ark:/72163/1/0105/gYZxqCClQiqydoN3_LbuQ1.20180702T201346519Z				
Chapter 7, p. 178	Ref. to Fig. 7.3	p. 178	See images on p. 179, Fig. 7.3(a-c)		
Chapter 7, p. 179	Fig. 7.3(a)	p. 135, 139, 178	See image on p. 139, Fig. 5.4	jp03_ca_f_rix_07_10_amx	

Chapter 7, p. 179	Fig. 7.3(b)	p. 178		ru09_bo_f_ px_12_11_sar	
http://ark.dasch.swiss/ark:/72163/1/0105/FIrlQV2BTU6m6MEfiYYpYwp.20180702T1917032Z					
Chapter 7, p. 179	Fig. 7.3(c)	p. 178		ch09_ge_f_ rje_14_10_del	
http://ark.dasch.swiss/ark:/72163/1/0105/umgDtZLPTxqB26CvniDluQj.20180702T153403063Z					
Chapter 7, p. 179	Ref. to Fig. 7.5	p. 179	See images on p. 181, Fig. 7.5(a-b)		
Chapter 7, p. 181	Fig. 7.5(a)	p. 179		ru09_bo_f_ px_07_07_das	
http://ark.dasch.swiss/ark:/72163/1/0105/joSAspHaQXqPx CohEcaZEQ3.20180702T190310106Z					
Chapter 7, p. 181	Fig. 7.5(b)	p. 137-138, 179	See also image on p. 138, Fig. 5.3	ru10_sp_m_ rs_15_02_ale	
Chapter 7, p. 181	Ref. to Fig. 7.6	p. 181	Image on p. 182, Fig. 7.6(a-b)		
Chapter 7, p. 182	Fig. 7.6(a)	p. 182		ch16_vd_f_ rrd_07_08_ele	
http://ark.dasch.swiss/ark:/72163/1/0105/ETKelDqjQ8uXlJNC8dTXIgo.20180702T16421404Z					

Chapter 7, p. 182	Fig. 7.6(b)	p. 182		ru13_sp_f_ ro_15_09_mar	
http://ark.dasch.swiss/ark:/72163/1/0105/64WH4OkBQXywisbWX6tQ9wG.20180702T202318864Z					
Chapter 8, p. 199	Ref. Fig. 8.1	p. 199	See images on p. 202, Fig. 8.1(a-f)		
Chapter 8, p. 199	Ref. Fig. 8.2	p. 199	See images on p. 203, Fig. 8.2(a-f)		
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Chapter 8, p. 199	Ref. Fig. 8.4	p. 199	See images on p. 205, Fig. 8.4(a-f)		
Chapter 8, p. 202	Fig. 8.1(a)	p. 199		ru11_sp_m_ rv_08_02_sem	
http://ark.dasch.swiss/ark:/72163/1/0105/1C9498fITMacuoPz8s_GkQH.20180702T195844365Z					
Chapter 8, p. 202	Fig. 8.1(b)	p. 199		ru09_bo_m_ px_12_11_gal	
http://ark.dasch.swiss/ark:/72163/1/0105/9WNXqqOORsC0iKaj9wFmFAc.20180702T193121815Z					
Chapter 8, p. 202	Fig. 8.1(c)	p. 142, 199	p. 135	ru09_bo_f_ px_13_02_eka	
http://ark.dasch.swiss/ark:/72163/1/0105/Gy9MGxK0RDOcQd=23eDs=Ae.20180702T191824085Z					

Chapter 8, p. 202	Fig. 8.1(d)	p. 199		jp04_to_m_rtx_08_03_trx	
http://ark.dasch.swiss/ark:/72163/1/0105/a1IJM5iSTMyU=HSdZr3CDAq.20180702T17161799Z					
Chapter 8, p. 202	Fig. 8.1(e)	p. 199		ch10_vs_f_phn_09_07_cla	
http://ark.dasch.swiss/ark:/72163/1/0105/ua3RlhCDR_GJATuEJTjimQH.20180702T160731797Z					
Chapter 8, p. 202	Fig. 8.1(f)	p. 199		ch10_ge_f_rbc_12_10_cle	
http://ark.dasch.swiss/ark:/72163/1/0105/l6S=JyYiT2Gews_4zYWPPwU.20180702T154146959Z					
Chapter 8, p. 203	Fig. 8.2(a)	p. 199		ch16_vd_f_rcb_14_06_cyn	
http://ark.dasch.swiss/ark:/72163/1/0105/Gb3VP=5zS=2X=6CdtJeMLQn.20180702T163908277Z					
Chapter 8, p. 203	Fig. 8.2(b)	p. 199		jp04_ko_m_ryx_13_03_tkx	
http://ark.dasch.swiss/ark:/72163/1/0105/wUT9e0NbTeiUErJOTE2MEQp.20180702T171105379Z					

Chapter 8, p. 203	Fig. 8.2(c)	p. 199		ru09_bo_m_ px_08_00_nik	
http://ark.dasch.swiss/ark:/72163/1/0105/duba83_9RFWEs1bTbJgvGAs.20180702T192115319Z					
Chapter 8, p. 203	Fig. 8.2(d)	p. 199		ru09_bo_m_ px_13_xx_aly	
http://ark.dasch.swiss/ark:/72163/1/0105/faW3u0jpR6qXKYmgf0ae2Aq.20180702T193537348Z					
Chapter 8, p. 203	Fig. 8.2(e)	p. 199		ru08_bo_f_ pb_11_00_lud	
http://ark.dasch.swiss/ark:/72163/1/0105/AEJs5pXURRmIAOaNzfIrAZ.20180702T184940719Z					
Chapter 8, p. 203	Fig. 8.2(f)	p. 199		ch10_ne_m_ psr_08_10_vic	
http://ark.dasch.swiss/ark:/72163/1/0105/wqqNxLCETW6GT0GNfHSHawq.20180702T155913317Z					
Chapter 8, p. 204	Fig. 8.3(a)	p. 199		jp04_to_m_ rtx_08_04_ayx	
http://ark.dasch.swiss/ark:/72163/1/0105/fl0E98zRQHqJ7RwZuQa1zgj.20180702T171627979Z					

Chapter 8, p. 204	Fig. 8.3(b)	p. 199		ru08_bo_m_ pb_07_08_tch	
http://ark.dasch.swiss/ark:/72163/1/0105/NCsAzDTpQ0qPIEL1VkJ6AQ.20180702T185445084Z					
Chapter 8, p. 204	Fig. 8.3(c)	p. 199		ru09_bo_f_ px_08_05_lub	
http://ark.dasch.swiss/ark:/72163/1/0105/CjMDUzWCQHSFhGvzW87YAp.20180702T190536819Z					
Chapter 8, p. 204	Fig. 8.3(d)	p. 199		ch10_ne_f_ pcc_10_04_mel	
http://ark.dasch.swiss/ark:/72163/1/0105/2O7_NopZTye_R8vr5XS_oQz.20180702T155026048Z					
Chapter 8, p. 204	Fig. 8.3(e)	p. 199		jp04_to_m_ rnx_08_07_nrx	
http://ark.dasch.swiss/ark:/72163/1/0105/iAruZWuOTcOLYBLqPgzxigI.20180702T171358877Z					
Chapter 8, p. 204	Fig. 8.3(f)	p. 199		ru09_bo_f_ px_09_02_nas	
http://ark.dasch.swiss/ark:/72163/1/0105/BtFPA2DnS2K=S9ePHep28gv.20180702T190734383Z					

Chapter 8, p. 205	Fig. 8.4(a)	p. 199		ru08_bo_m_ pb_07_06_elb	
http://ark.dasch.swiss/ark:/72163/1/0105/4cC4qKkXQLW8oSPAT6aADwp.20180702T185403597Z					
Chapter 8, p. 205	Fig. 8.4(b)	p. 199		ch10_ne_f_ psr_08_07_jul	
http://ark.dasch.swiss/ark:/72163/1/0105/JOS51ZJdT1m=4qiYkq=oyAm.20180702T155410185Z					
Chapter 8, p. 205	Fig. 8.4(c)	p. 199, 274, 277	See also images on p. 277, Fig. 10.21	ch10_ne_f_ psr_08_10_mar	
http://ark.dasch.swiss/ark:/72163/1/0105/_BiJTMcGQAOG97ZI=cgGmQm.20180702T155427954Z					
Chapter 8, p. 205	Fig. 8.4(d)	p. 199		ch10_ne_f_ pcc_10_11_cel	
http://ark.dasch.swiss/ark:/72163/1/0105/xC5uYo4MQm6v4eGFF4I_FgW.20180702T155057937Z					
Chapter 8, p. 205	Fig. 8.4(e)	p. 199		ch10_vs_f_ phn_07_06_ine	
http://ark.dasch.swiss/ark:/72163/1/0105/A_4Sv4cyQoGHuAGEEEdK7Qd.20180702T160618593Z					

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http://ark.dasch.swiss/ark:/72163/1/0105/=dbCBGWWSNmIRmtdtMJ5AAq.20180702T19303706Z					
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http://ark.dasch.swiss/ark:/72163/1/0105/MIRjVt_RRZuLjX5gHR6rgY.20180702T170000609Z					
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http://ark.dasch.swiss/ark:/72163/1/0105/3eerzOZERRY=S4hVKX5iRwN.20180702T153223083Z					
Chapter 9, p. 234	Fig. 9.12(b)	p. 232		ch16_fr_m_rec_12_08_luc	
http://ark.dasch.swiss/ark:/72163/1/0105/QW2PW3EaSb=RYRO999KkxAu.20180702T163238646Z					

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http://ark.dasch.swiss/ark:/72163/1/0105/2EguYRzfSc6KAJN5aEZ1=Q5.20180702T165706658Z					
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http://ark.dasch.swiss/ark:/72163/1/0105/Y96k8K5HT3KU8hwnwq4Y0AU.20180702T194155712Z					
Chapter 10, p. 249	Ref. to Fig. 10.1	p. 249	See image on p. 250, Fig. 10.1	This image does not belong to the database, it was provided by the authors.	
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http://ark.dasch.swiss/ark:/72163/1/0105/Qch7bwMpT2e2bd1RnP=10A6.20180702T162653761Z					
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http://ark.dasch.swiss/ark:/72163/1/0105/CITTjDU4QvGMqt6zkRbkvgc.20180702T162914268Z					
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http://ark.dasch.swiss/ark:/72163/1/0105/XR5EDuDXQ9OnQqmg5wLE3Qv.20180702T162528552Z					
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http://ark.dasch.swiss/ark:/72163/1/0105/vgvr=9XER6ObOzdeLlvHIAS.20180702T162741826Z					
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http://ark.dasch.swiss/ark:/72163/1/0105/cQzHI6bhQGS9eCQeSMHTQgN.20180702T154246678Z					

Chapter 10, p. 264	Ref. to Fig. 10.12	p. 264	See image on p. 268, Fig. 10.12	ch10_ne_m_psr_08_07_col	
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https://ark.dasch.swiss/ark:/72163/1/0105/Evv4BQPtRtq9jPz6L8OJ3QU.20180702T15290689Z					
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https://ark.dasch.swiss/ark:/72163/1/0105/L1ugzboLRrCkBEafrEeiNQG.20220602T043346838228322Z					
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Chapter 10, p. 271	Ref. to Fig. 10.13	p. 267, 268, 271	See image on p. 269, Fig. 10.13	ch09_ge_m_pco_08_08_tia	
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http://ark.dasch.swiss/ark:/72163/1/0105/_hGXCE70QOaZ1iOHn8Ni1A6.20190115T095629257Z					
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http://ark.dasch.swiss/ark:/72163/1/0105/YonUAYwwSAKVOgijyZIsxuA3.20180702T154846209Z					

Chapter 10, p. 274	Ref. to Fig. 10.21	p. 205, 274	See image on p. 277, Fig. 10.21	ch10_ne_f_psr_08_10_mar	
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http://ark.dasch.swiss/ark:/72163/1/0105/_MneXhgNTvCmzZzHsOEVqAg.20191009T074809188366Z					
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http://ark.dasch.swiss/ark:/72163/1/0105/gXogkIJISiCcGGwaeVgbcwX.20180702T171949316Z					
Chapter 11, p. 299	Fig. 11.4	p. 296		nl14_fl_f_rcg_12_xx_xyl	
http://ark.dasch.swiss/ark:/72163/1/0105/yIj1XBwdTyapgOis_fyGMAC.20180702T172011232Z					
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http://ark.dasch.swiss/ark:/72163/1/0105/=NFSImu0RW62LNqPs7AWpQK.20180702T172033226Z					
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http://ark.dasch.swiss/ark:/72163/1/0105/oW4YstOHSwu677fN16o6ZQ_.20180702T172138458Z					
Chapter 11, p. 302	Fig. 11.8	p. 296		nl14_fl_f_rcg_13_xx_xyr	
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http://ark.dasch.swiss/ark:/72163/1/0105/ak7oh6kmSQCYwKm0zzuFQA9.20180702T17230344Z					
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Chapter 11, p. 308	Fig. 11.14	p. 296		nl14_fl_m_rcg_13_xx_xym	
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http://ark.dasch.swiss/ark:/72163/1/0105/0GSIwk=QTZq2lyOjwpqBEgO.20180702T172732466Z					
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Chapter 12, p. 347	Fig. 12.4	p. 343		ir14_sh_f_ pfh_11_06_moi	
http://ark.dasch.swiss/ark:/72163/1/0105/koordin9UQqiM2z96sFfw5w7.20181214T20093128Z					
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Chapter 12, p. 353	Fig. 12.10	p. 343		ir14_si_m_ ped_08_xx_axi	
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Chapter 13, p. 371	Fig. 13.2	p. 370		br15_so_f_pis_12_01_emi	
http://ark.dasch.swiss/ark:/72163/1/0105/Pw13R4OfS2ml_0cr4x6dOgX.20190122T11430612Z					
Chapter 13, p. 372	Fig. 13.3	p. 370		br15_ma_m_rit_12_xx_zem	
http://ark.dasch.swiss/ark:/72163/1/0105/oCckVnXqTsi_u3Ou_cp51wh.20190122T114106791Z					
Chapter 13, p. 373	Fig. 13.4	p. 370		br15_ma_m_rit_09_xx_jor	
http://ark.dasch.swiss/ark:/72163/1/0105/Bv3oOz4PSoiQaAQLyYIVSQI.20190122T114026927Z					
Chapter 13, p. 375	Refs to Figs 13.5-9	p. 375	See images on p. 376-380 under respective names.		

Chapter 13, p. 376	Fig. 13.5	p. 375		br15_ma_f_ pit_10_xx_car	
http://ark.dasch.swiss/ark:/72163/1/0105/_H4pHG11Qr=Hb1VeWbodrgW.20190122T11373915Z					
Chapter 13, p. 377	Fig. 13.6	p. 375		br15_ma_m_ rit_08_xx_rai	
http://ark.dasch.swiss/ark:/72163/1/0105/xm8g3mZsQLmhF3jBSzAjHgK.20190122T114013964Z					
Chapter 13, p. 378	Fig. 13.7	p. 375		br15_ma_f_rit_10_ xx_juc	
http://ark.dasch.swiss/ark:/72163/1/0105/MAktv8tjSkq=bpAxDiGp4wK.20190122T113821407Z					
Chapter 13, p. 379	Fig. 13.8	p. 375		br15_ma_f_ pit_10_xx_bet	
http://ark.dasch.swiss/ark:/72163/1/0105/uRuufXiïTDO7FWXAJXEmZAK.20190122T113732636Z					
Chapter 13, p. 380	Fig. 13.9	p. 375		br15_ma_m_ pit_12_xx_ilt	
http://ark.dasch.swiss/ark:/72163/1/0105/yJrxBS48TeeiSCmSVEiLwQC.20190122T113913856Z					

Chapter 15, p. 412	Ref. to code	p. 412		ir14_te_m_ pot_10_10_mol	
http://ark.dasch.swiss/ark:/72163/1/0105/lhCVzGBeQxmSIDP7RJ7GfwB.20181215T040517867Z					
Chapter 15, p. 412	Ref. to code	p. 412		ir14_te_m_ pot_11_09_alh	
http://ark.dasch.swiss/ark:/72163/1/0105/MtVXI=B2RDGi_KfyjffXbQX.20181215T04074149Z					
Chapter 15, p. 413	Ref. to code	p. 413		ir14_te_m_ pot_12_xx_moh	
http://ark.dasch.swiss/ark:/72163/1/0105/g8dthQF9T6WgwrgezPVpcZgP.20181215T041026249Z					
Chapter 15, p. 413	Ref. to code	p. 413		ir14_sh_m_ pai_13_07_has	
http://ark.dasch.swiss/ark:/72163/1/0105/5wkIR=xBSMKbZ8NDcqdoeA=.20181214T204537411Z					
Chapter 15, p. 413	Ref. to code	p. 413		ir14_sh_m_ pai_13_05_mox	
http://ark.dasch.swiss/ark:/72163/1/0105/qkyMfLOhRqe6H_EnYHUpXgA.20181214T204435875Z					

Chapter 15, p. 413	Ref. to code	p. 413		ir14_sh_f_ pet_12_09_mxz	
http://ark.dasch.swiss/ark:/72163/1/0105/X6v1rfe6RGO3XE6LKqsL1Ak.20181214T195111959Z					
Chapter 15, p. 413		p. 413		ir14_ny_f_ pkh_11_10_far	
https://ark.dasch.swiss/ark:/72163/1/0105/9oL1upijSOKHqOdR8n6q_Ao.20181214T183946839Z					
Chapter 15, p. 413		p. 413		ir14_ta_m_ pki_12_01_amo	
http://ark.dasch.swiss/ark:/72163/1/0105/IJgW9ncURq=C53rsn4JjPAi.20181215T022550531Z					
Chapter 15, p. 413		p. 413		ir14_si_m_ par_14_06_alb	
http://ark.dasch.swiss/ark:/72163/1/0105/A1pMs4ncSl6=u1LYHS_Omg7.20181214T22295944Z					
Chapter 16, p. 435	Refs to Figs. 16.1-16.4	p. 435	See images on p. 435-435.		
Chapter 16, p. 435	Fig. 16.1	p. 435		ag18_ba_f_ ppl_14_08_sof	
http://ark.dasch.swiss/ark:/72163/1/0105/TIO=FrgvSKKAujbXrfDMFgU.20191211T064541810723Z					

Chapter 16, p. 435	Fig. 16.2	p. 435		ag18_ba_f_ppl_14_08_can	
http://ark.dasch.swiss/ark:/72163/1/0105/OR8fjNkMTtO9nXTJ80wXbwF.20191211T06380290113Z					
Chapter 16, p. 436	Fig. 16.3	p. 435		ag15_ba_m_pho_09_11_joa	
http://ark.dasch.swiss/ark:/72163/1/0105/ybfxpQhlQouhXXDlcUw1pQi.20210117T102334340927Z					
Chapter 16, p. 436	Fig. 16.4	p. 435		ag15_ba_m_pho_07_03_max	
http://ark.dasch.swiss/ark:/72163/1/0105/EbpNtFqwRhKuxGUYzeXp_wn.20210117T102041785839Z					
Chapter 16, p. 436	Refs. to Figs 16.5-16.6		See images on p. 437.		
Chapter 16, p. 437	Fig. 16.5	p. 436		ag15_ba_f_pho_08_03_nat	
http://ark.dasch.swiss/ark:/72163/1/0105/es8K4GUuTWOZeP4P3Zb3Igl.20210117T101536346524Z					
Chapter 16, p. 437	Fig. 16.6	p. 436		ag15_ba_m_pho_07_05_lea	

	http://ark.dasch.swiss/ark:/72163/1/0105/uVEGpeJgR1uia3YWbvOMsw0.20210117T102135819606Z				
Chapter 16, p. 437	Fig. 16.7	p. 437		ag15_ba_f_pho_08_09_jul	
	http://ark.dasch.swiss/ark:/72163/1/0105/O99oYaNtTmuJXB6GEot4hQa.20210117T101629463024Z				
Chapter 16, p. 437	Fig. 16.8	p. 437		ag15_ba_f_pho_05_00_mar	
	http://ark.dasch.swiss/ark:/72163/1/0105/vMUVfUVLQCiAUJK6UDUPwA5.20210117T101424070829Z				
Chapter 16, p. 438	Refs. to Figs 16.9-16.12	p. 438	See images on p. 438-439 under their respective names.		
Chapter 16, p. 438	Fig. 16.9	p. 438		ag18_ba_f_ppl_17_00_mic	
	http://ark.dasch.swiss/ark:/72163/1/0105/VUqVhUwrS=q6As0e=ob7ngC.20191211T082709185999Z				
Chapter 16, p. 438	Fig. 16.10	p. 438		ag18_ba_f_ppl_16_10_flo	
	http://ark.dasch.swiss/ark:/72163/1/0105/Chz47sVNR4GWO6FUuqM30Qd.20191211T081629792962Z				

Chapter 16, p. 439	Fig. 16.11	p. 438		ag18_ba_m_ppl_16_07_toi	
http://ark.dasch.swiss/ark:/72163/1/0105/qG71fsAjQz2tR8hvBvQdUA9.20191217T094221343034Z					
Chapter 16, p. 439	Fig. 16.12	p. 438		ag15_ba_m_pho_09_07_fel	
http://ark.dasch.swiss/ark:/72163/1/0105/8zXrUMfiTA=9dR58WbOvpAW.20210117T102238248501Z					
Chapter 16, p. 440	Fig. 16.13	p. 440		ag18_ba_m_ppl_13_05_zof	
http://ark.dasch.swiss/ark:/72163/1/0105/zHd3YoUPQwWShqakISQg0gZ.20191217T083655404083Z					
Chapter 16, p. 440	Refs to Figs 16.14-16.16	p. 440	See images on p. 441-442.		
Chapter 16, p. 441	Fig. 16.14	p. 440		ag18_ba_m_ppl_16_10_tom	
http://ark.dasch.swiss/ark:/72163/1/0105/E7Dq7_goTX=EzWCefOYurwa.20191217T095523827954Z					
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Chapter 16, p. 442	Fig. 16.15	p. 440		ag18_ba_f_ppl_15_09_chi	
http://ark.dasch.swiss/ark:/72163/1/0105/q4pSRgn0QnmmSQIbji56NgQ.20191211T070036241032Z					
Chapter 16, p. 442	Fig. 16.16	p. 440		ag18_ba_m_ppl_16_08_uen	
http://ark.dasch.swiss/ark:/72163/1/0105/2zFgO=spRU29_yGToalQbgT.20191217T094545321019Z					
Chapter 16, p. 443	Fig. 16.17	p. 441, 443		ag15_ba_f_pho_10_09_fel	
http://ark.dasch.swiss/ark:/72163/1/0105/1Mt=4BL3TsuLzu6ASBHvZAz.20210117T101951231936Z					
Chapter 16, p. 443	Refs to Figs 16.18-16.19	p. 434	See images on p. 444-445.		
Chapter 16, p. 444	Fig. 16.18	p. 435		ag18_ba_f_ppl_13_11_jul	
http://ark.dasch.swiss/ark:/72163/1/0105/qN6C9abPTHGB2IEeVvNqJQ8.20191204T085233910028Z					
Chapter 16, p. 445	Fig. 16.19	p. 434		ag15_ba_m_pho_10_02_cel	

	http://ark.dasch.swiss/ark:/72163/1/0105/5BSFpdGyR4muv3zdVPHAmQt.20210117T102429632621Z				
Chapter 16, p. 445	Ref. to Fig. 16.20	p. 445	See image on p. 446.		
Chapter 16, p. 446	Fig. 16.20	p. 445		ag18_ba_f_ppl_15_11_rin	
	http://ark.dasch.swiss/ark:/72163/1/0105/B3J2zfA5ScqA3XBrHPPhtQW.20191211T071050900893Z				
Chapter 16, p. 447	Fig. 16.21	p. 447		ag18_ba_f_ppl_11_11_mar	
	http://ark.dasch.swiss/ark:/72163/1/0105/KNVPDNDTTTSQV5iYAuPdxAH.20191204T072310054259Z				
Chapter 16, p. 447	Fig. 16.22	p. 447		ag15_ba_f_pho_09_03_luc	
	http://ark.dasch.swiss/ark:/72163/1/0105/_XSprF4RjmVYJPWtyCYmgN.20210117T101800679673Z				
Chapter 16, p. 447	Ref. to Fig. 16.17		See image on p. 443.		
Chapter 18, p. 473	Ref. to code	p. 473		ir14_te_m_pmm_08_00_sah	
	http://ark.dasch.swiss/ark:/72163/1/0105/7cYtb6dsSPCYOzsSX536DAE.20181215T035543825Z				

Chapter 18, p. 473	Ref. to code	p. 473		ru08_bo_m_ pb_15_01_jam	
http://ark.dasch.swiss/ark:/72163/1/0105/jzIr8SZQRMq=fKE6fdUmVA0.20180702T190158578Z					