Nadine Kolb

Child Second Language Development in Immersion Education

A Study on Generic Determiner Phrases in L2 German and L2 French

Language acquisition has been the subject of decades of research. Most of the previous research on second language acquisition has centered around adult learners, leaving child learners understudied by comparison. This book focuses on child second language development. The cross-sectional empirical study herein investigates the syntax-semantics interface in English speaking children acquiring German and French as second languages. The author discusses variables such as crosslinguistic influence, the complexity of the learning tasks, cognitive maturity and the learning context. By focusing on child second language acquisition in immersion education, this book not only substantially contributes to the field of second language acquisition but also offers important insights into teaching in an immersion context.

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Child Second Language Development in Immersion Education

INQUIRIES IN LANGUAGE LEARNING

FORSCHUNGEN ZU PSYCHOLINGUISTIK
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Child Second Language Development in Immersion Education

A Study on Generic Determiner Phrases in L2 German and L2 French

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open

To Irmgard & Wolfgang Kolb
To Lelia, Anna & Thorsten

Preface

Language Learning is a field which bridges the gap between the research conducted within Psycholinguistics and the applied research within Foreign Language Didactics. For a long time, these two fields were regarded as separate disciplines, and the emphasis lay on their differences. However, just as there has been a gradual convergence between the concepts of *language acquisition* and *language learning*, over the past few years Psycholinguistics and Foreign Language Didactics have also been moving closer together. While Psycholinguistics is taking a growing interest in the classroom context in which language learning takes place, Foreign Language Didactics have fully embraced empirical research which sheds light on the linguistic phenomena found in the interactions within the classroom.

The series *Inquiries in Language Learning (Forschungen zu Psycholinguistik und Fremdsprachendidaktik)* aims to reflect this development. Since the areas of intersection between these two research fields have a high level of interdisciplinarity, the contributions to this series are relevant in many different ways for educators and researchers who are concerned with language learning. On the one hand, good foreign language or second language teaching requires teachers whose methodological and pedagogical decisions are based on a sound knowledge of language acquisition theory. Furthermore, foreign language textbooks should have a solid empirical foundation. On the other hand, the interpretation of linguistic data requires familiarity with the types of classroom activities and rituals that shape the various learning processes. After all, psycholinguistic research design must attend to the technicalities of classroom teaching and learning in order to obtain authentic results.

In this series we hope to contribute to the cross-disciplinary efforts in our research fields, bringing together psycholinguistic principles and classroom-based developments, thus reconciling theories and methods with research and practice.

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Christiane Bongartz
Jutta Rymarczyk

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Vorwort

Sprachenlernen/*Language Learning* ist das Bindeglied, das die naturwissenschaftliche Forschung der Psycholinguistik und die anwendungsorientierte Forschung der Fremdsprachendidaktik zusammenführt. Lange Zeit wurden die Disziplinen getrennt voneinander behandelt und die Betonung lag auf den disparaten Anteilen der beiden Gebiete. Vergleichbar zur Annäherung der Begriffe „Spracherwerb" und „Sprachenlernen" (*language acquisition* und *language learning*) ist jedoch seit einigen Jahren eine Annäherung der Psycholinguistik und der Fremdsprachendidaktik zu beobachten. Während die Psycholinguistik den schulischen Kontext des Spracherwerbs stärker beachtet, ist aus der Fremdsprachendidaktik die empirische Forschung nicht mehr wegzudenken, die linguistische Phänomene der Interaktion im Klassenzimmer beleuchtet.

Mit der Reihe „*Inquiries in Language Learning*. Forschungen zu Psycholinguistik und Fremdsprachendidaktik" wollen wir dieser Entwicklung Rechnung tragen. Da die Schnittstelle der beiden Forschungsgebiete, die durch die Reihe bedient wird, naturgemäß eine hohe Interdisziplinarität aufweist, strahlt ihre Relevanz in unterschiedliche Richtungen aus: Einerseits braucht guter Fremdsprachenunterricht Lehrkräfte, deren methodisch-didaktische Entscheidungen auf detaillierter Kenntnis spracherwerbstheoretischer Aspekte beruhen. Das Schreiben von Lehrbüchern für den Fremdsprachenunterricht muss auf einer soliden empirischen Basis geschehen. Andererseits bedarf die Interpretation psycholinguistischer Daten der Vertrautheit mit Unterrichtsabläufen und den Ritualen, die Vermittlungsprozesse prägen. Das Entwerfen eines psycholinguistischen Forschungsdesigns muss unterrichtstechnische Aspekte einbeziehen, um letztlich authentische Ergebnisse abbilden zu können.

Mit der Gesamtschau unserer Arbeitsbereiche hoffen wir dem Ineinandergreifen und den Verschränkungen von psycholinguistischen Grundlagen und fachdidaktischen Weiterentwicklungen, von Theorien und Methoden sowie von Forschung und Praxis gerecht werden zu können.

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Christiane Bongartz
Jutta Rymarczyk

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I am grateful for the wonderful colleagues and friends and for my beloved family that all have supported me along the way, had an impact on various levels, and both shaped this book and helped me grow.

Since the present monograph is a revised version of my PhD dissertation that I defended at the University of Cologne, I would first like to express my deepest gratitude to my committee members Christiane Bongartz, Andreas Rohde, and Jason Rothman. I would like to thank Christiane Bongartz, my main supervisor, whom I have known since my Master's studies, when I took several of her inspiring courses, for having invited me to join her research group and the PhD program at the University of Cologne, for having connected me to Waddell Language Academy in Charlotte, North Carolina, that she has been collaborating with for years, and for her continuous support. I would like to extend my gratitude to Andreas Rohde for his support, his encouragement, and his friendship. I was delighted when I had the chance to continue working with Andreas on quality development in multilingual early childhood education in the project QITA, "Qualitätsentwicklung in zwei-/mehrsprachigen Kitas," during my first postdoctoral fellowship. Andreas has been an excellent mentor, in particular when I worked with him as a research assistant in his research group but also during my PhD program and my postdoctoral fellowships. Last but not least, I would like to thank Jason Rothman, my external committee member, for his endless support, his anything-is-possible mindset, his encouragement, and his friendship. I met Jason in Madison, Wisconsin, USA when I gave my very first conference presentation, and he has been supporting me ever since. Jason has been an invaluable resource and inspiration to me, who always provided me with valuable feedback. I was very lucky having had the opportunity to join him at the AcqVA Aurora Center at UiT The Arctic University of Norway and to currently work with him on my Marie Skłodowska-Curie project INPUT: "Investigating Proxies for Understanding Trajectories: Heritage Language Maintenance and Child Second Language Acquisition in Refugee Contexts".

for fruitful discussions when I presented my work in the Brown Bag and reading group meetings.

Over the years, I collaborated with several bi-/multilingual schools and kindergartens and conducted over thirty teacher workshops on second language acquisition, bilingualism, foreign language didactics and immersion education. I would like to thank all teachers, school principals, students, and parents for stimulating discussions which gave me important insights into multilingual education and inspired my research. Grunewald Grundschule Berlin and Frankfurt International School collaborated with me on pilot data collection. Kindergarten and primary school Erasmus Offenbach gGmbH invited Christiane Bongartz, Lidia Cámara de la Fuente, and me to collaborate on trilingual education and literacy development in English, German, and Spanish. I had the chance to teach German as a second language to 12- to 16-year-old heritage language speakers in a Willkommensklasse at the Schule am Berlinickeplatz in Berlin for three months. I was invited by the Jewish Community in Berlin to support their kindergarten and primary and secondary schools in developing a trilingual language concept in German, Hebrew, and English from kindergarten to high school together with Michael Hertz. I am very grateful for having had the chance to work with Michael Hertz, the former school principal of the Nelson Mandela State International School in Berlin, for two years. While Michael's and my expertise were quite complementary, Michael quickly became both a mentor and a friend to me. During my first postdoctoral research fellowship as the principal investigator of the project QITA, which was funded by the Robert Bosch Stiftung and initiated by the Verein für Frühe Mehrsprachigkeit an Kitas und Schulen (fmks), I had the opportunity to collaborate with five multilingual kindergartens and the following wonderful colleagues: Annette Lommel, Uta Fischer, Andreas Rohde, Thorsten Piske, Anja Steinlen, Kristin Kersten, Eva Hammes-Di Bernardo, Ilka Maserkopf, Ilse Wehrmann, Simone Toepfer, and Natalie Schmidt.

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2L1	Bilingual First Language Acquisition
AJT	Acceptability Judgment Task
BH	Bottleneck Hypothesis
CA	Contrastive Analysis
cL2	Child Second Language
cL2A	Child Second Language Acquisition
CPH	Critical Period Hypothesis
D	Determiner
DKP	Derived Kind Predication
DP	Determiner Phrase
FRH	Feature Reassembly Hypothesis
FTFA	Full Transfer/Full Access Model
GJT	Grammaticality Judgment Task
IL	Interlanguage
ILP	Individual-Level Predicate
K	Kindergarten
L1	First Language
L2	Second Language
L2 Child	Child Acquiring a Second Language
L3	Third Language
Ln	n-th Language (any language acquired after the L2 or L3)
L2A	Second Language Acquisition
LoE	Length of L2 Exposure
N	Noun
NL	Native Language, First Language (L1)
NMP	Nominal Mapping Paramenter
NP	Noun Phrase
POS	Poverty of the Stimulus
SLA	Second Language Acquisition
SLP	Stage-Level Predicate
TL	Target Language (e.g., the second language: L2)
TVJT	Truth Value Judgment Task
UG	Universal Grammar

Introduction

From a global perspective, growing up with more than one language is the norm, whether it be from birth or any time later in childhood (Ansaldo et al. 2008; Wiese et al. 2010). Many countries have more than one official language, and as a consequence, children often attend daycare, elementary, and secondary schools run in a language other than the child's first language (L1), i.e., many children spend their school day immersed in a second language (L2). A great number of these children are child second language (cL2) learners who have already acquired one language and are first exposed to a second language between 4 and 7 years of age (the defining criterion of child second language acquisition or cL2A). Child L2 learners are more cognitively mature than children acquiring their first language but less cognitively mature than adults acquiring an L2. Successful second language acquisition (henceforth L2A or SLA) requires that learners be exposed to age-appropriate meaningful linguistic L2 input.

The importance of cL2A and its role in the formal study of SLA has only been recognized relatively recently. Traditionally, SLA studies that included cL2 populations did so such as to have a comparison group for the target acquisition population or to contrast cL2 and target L2 groups in terms of specific factors, such as age and ultimate attainment. However, examining the interlanguage development and L2 endstate in cL2 learners shows that they must be regarded and studied as a significant group in their own right, since cL2 learners do not align with any other language acquisition population (Schwartz 2009). Child L2 populations differ from (bilingual) L1 children in that they have linguistic experience from the L1 and also differ from child and adult third language (L3) populations, who may have access to another previously acquired language in addition to the L1. They are further distinguished from adult L2 and L3 populations due to being cognitively less mature and depending on age, may still be in the process of acquiring their L1. Thus, cL2A can also provide important evidence on cognitive development and its interdependence with general linguistic development (e.g., Paradis 2008, 2010, 2011; Rothman, Long, Iverson, Judy, Lingwall, and Chakravarty 2016). More research on cL2A

is needed and will advance the field of SLA in important ways, including filling knowledge gaps and informing debates through data complementary to other SLA groups.

Within the relatively young field of cL2A, the focus of the research has shifted over time (Haznedar and Gavruseva 2008). While the earliest studies examined rather descriptive aspects in reference to L2 developmental stages, rate of development, and individual differences (e.g., Cancino, Rosansky and Schumann 1974; Dulay and Burt 1974; Wode 1977), subsequent studies focused on parameter-setting, access to Universal Grammar (UG), and the role of the L1 (e.g., Grondin and White 1996; Lakshmanan 1991, 1994). More recently, cL2 research has analyzed domain-specific processes and investigated differences between L1A, child L2A, and adult L2A, including discussions on direct or L1-mediated UG access as well as L1 transfer effects (see e.g., Haznedar 2013 for a review; Haznedar and Gavruseva 2008; Ionin 2008; Unsworth 2005a,b).

One particularly fruitful area of research for cL2A populations is generic reference, which is expressed differently across languages. In English, German, and French, generic reference differs in terms of bare plural count noun phrases (henceforth 'bare plurals', e.g., Sharks are dangerous), definite plural count noun phrases (henceforth 'definite plurals', e.g., The sharks are dangerous), bare singular mass noun phrases (henceforth 'bare mass singulars', e.g., Milk is white), and definite singular mass noun phrases (henceforth 'definite mass singulars', e.g., The milk is white). According to the Nominal Mapping Parameter (Chierchia 1998), these crosslinguistic differences with regards to the distribution of bare nominal arguments occur due to free type shifting being blocked by the existence of articles. Thus, if a language has articles, free type shifting from predicates to arguments and vice versa is not possible. The NMP claims that the syntactic category N is mapped into the particular interpretations, i.e., into arguments [+arg] or predicates [+pred]. Based on the occurrence of predicates and arguments, languages are divided into three types: type 1 [+arg, -pred], e.g., Chinese; type 2 [-arg, +pred], e.g., Romance; type 3 [+arg, +pred], e.g., Germanic. Thus, for English and German (type 3), N can be mapped into arguments and predicates, and for French (type 2), N can be mapped into predicates. Under the NMP, the three language types are presented as a parameter setting model: [±arg], [±pred]. For L1A, Chierchia (1998) predicts that the

child goes through a Chinese stage, followed by a Romance stage, and then the Germanic stage which persists until the target language stage.

Another account for the crosslinguistic variation in generic reference is that of Dayal (2004). Rather than a parameter-based model, Dayal puts forth a universal scale of definiteness, where languages fall at different points along the scale according to the degree to which the definite determiner is lexicalized. There are two semantic functions that can be lexically (overtly) or covertly realized in generic reference: maximality (ι) and kind formation (∩). At one end of the scale are Romance languages, which lexicalize both maximality and kind formation. Article-less languages such as Chinese, where neither maximality nor kind formation is lexicalized, represent the other end, with other 'hybrid' languages falling between the two endpoints. Under Dayal (2004), both French and German lexicalize maximality and kind formation (though is some optionality in the case of German), while in English, only maximality is lexicalized.[1]

The present study on child second language development from a generative perspective contributes substantially to the field of L2A by focusing on an understudied context of cL2A: immersion education. More concretely, the motivation for this research project is to shed fresh light on the field of second language acquisition by providing empirical evidence of the way in which children acquire generic reference in a second language. This research will further elucidate how children acquire a second language, the role of the first language in this process, influential factors in L2A, and whether L2 learners with the same L1 but differing L2s follow the same developmental paths. Furthermore, having an L2 teaching degree, I also aim to draw conclusions regarding effective L2 teaching and beyond that, to contribute evidence that informs successful L2A environments such as natural learning contexts. Immersion classrooms, I will argue, are a natural learning context in an educational setting, and thus constitute a hybrid learning environment, being neither an archetypal natural learning context nor a prototypical L2 classroom setting. Furthermore, this study resulted from a long-term collaboration between Waddell Language Academy and

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1   Dayal (2004) does not make any predictions with regards to acquisitional trajectory based on her scale of definiteness.

Christiane M. Bongartz (University of Cologne, Germany), a collaboration which clearly demonstrates the benefits of a fruitful exchange between practice and research.

In this empirical study, child second language acquisition of determiner phrases (DPs) with generic reference will be investigated. The aim is to examine the learning tasks for native English cL2 learners throughout the L2 developmental course when acquiring generic reference in L2 German or L2 French. Through the analysis of these learning tasks, cL2 development will be compared and contrasted in L2 French and L2 German in order to discern whether cL2A is constrained by UG in combination with L2 input and by L1 transfer effects. Maturational constraints relevant for the acquisition of generic reference in L1A and cL2A constitute another area of interest in this study which will offer new evidence regarding the interdependence of linguistic and cognitive development. Furthermore, I will also examine whether the acquisition of generic reference takes longer in the L2A developmental process, assuming that functional categories and interface phenomena (i.e., [±definite] related to referentiality – a syntax-semantics interface phenomenon) take longer to acquire due to the complexity of the learning task, which requires more computational space and consume more processing resources. This multi-faceted analysis will lead to implications for L2 teaching focusing on immersion education, which is the learning context of the L2 learners in this empirical study.

These goals are encapsulated in the following theoretical frameworks: within semantic theory are the Nominal Mapping Parameter (NMP) by Chierchia (1998) and an alternative proposal by Dayal (2004); and offering an acquisitional foundation are the Full Transfer/Full Access Hypothesis (FTFA) by Schwartz and Sprouse (1994, 1996), the Feature Reassembly Hypothesis (FRH) by Lardiere (2000, 2009), and the Bottleneck Hypothesis (BH) by Slabakova (2008, 2016), which are applied to cL2A even though they were not developed specifically for cL2A per se. The FTFA, FRH, and BH all assume full L1 transfer (including functional categories) and that UG restructures the L2 grammar in the L2 developmental course. Both the FRH and the BH focus on the L2A of functional categories. The research questions and predictions central to this empirical study have been formed based on the aforementioned theoretical proposals that have received supporting empirical evidence in the SLA literature (e.g.,

Pérez-Leroux, Munn, Schmitt and DeIrish 2004; Serratrice, Sorace, Filiaci and Baldo 2009; Ionin and Montrul 2012). Further empirical evidence in L2A for functional categories with regards to various parameter and feature values is necessary, in particular in cL2A. Thus, this research project contributes markedly to the field of L2A by providing further empirical evidence on the cL2A of generic reference in L2 German and L2 French.

The following research questions are investigated in this study: What are the native English child L2 learner's learning tasks when acquiring generic reference in L2 German or L2 French? Is the L2 developmental course affected by L1 transfer effects and constrained by UG (in combination with L2 input)? Does the complexity of the learning task in combination with cognitive maturational constraints cause difficulties, which lead to the acquisition of generic reference in an advanced interlanguage stage? Which conclusions can be drawn from the native English cL2 learners' learning tasks and their L2 developmental course in the acquisition of generic reference in L2 German and L2 French for immersion education?

The learning tasks will be examined in the light of the Bottleneck Hypothesis, which claims that when acquiring syntax and semantics in an L2, the bottleneck of functional morphology has to be passed. While this bottleneck will expand with increasing proficiency, initially, syntactic and semantic mismatches in L1 and L2 are expected to constitute a learning problem for L2 learners. The Bottleneck Hypothesis is motivated by increasing L2 teaching efficiency and claims that L2 teachers should focus on mismatches between L1 and L2 in the area of functional morphology, since "more difficult areas of the grammar should get more instructional effort and attention" (Slabakova 2016: 46).

Most SLA researchers[2] agree that the first language influences L2A. However, it is debatable as to precisely what is transferred from the L1, i.e., whether overt and/or underlying structures are transferred (e.g., Schwartz 2013), and whether child L2 learners have access to UG.[3] Following the Full

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2   "[S]ee Epstein, Flynn, and Martohardjono (1996) for a dissenting view" (Slabakova 2016: 45).

3   Two decades ago, several theoretical proposals on L1 transfer and UG access have been suggested, assuming full transfer, partial transfer, and no transfer, in combination with full access, partial access and no access to UG, e.g., the Full Transfer/Full Access Model (Schwartz and Sprouse 1994, 1996), the Minimal

Transfer/Full Access model, it will be assumed that the cognitive initial state of L2 development is the final state of first language acquisition (L1A), i.e., the L1 grammar, due to full transfer from the L1. The initial state of the L2 system will be restructured over the L2 developmental course by accessing UG (or the L1)[4] and receiving L2 input. Following Schwartz (2013), the question of the precise nature of what is being transferred will also be under investigation. If the features differ in the L1 and L2, then, according to the Feature Reassembly Hypothesis, they must be reassembled in order to acquire a targetlike L2. The FRH claims that the L2 learner's learning task is to reassemble the formal features of the L2, including the acquisition of the contexts in which these features appear in the L2.

Based on the theoretical proposals outlined thus far, in this study it is argued – in line with the FTFA – that the cognitive initial state of the cL2 developmental course is identical for both the L2 German and L2 French learners given their common L1: English. Subsequently, the L2 grammars will be restructured as guided by UG and the L2 input, and are then predicted to differ in the acquisition of generic reference in L2 German and L2 French. According to the FRH, the L2 grammar will be restructured through feature reassembly, and based on the NMP, the L2 learner's task is to map N into the particular interpretations. Along similar lines, the BH posits that the L2 learner's tasks are mapping forms to interpretations, mapping forms to features (feature reassembly), and identifying grammatical contexts – the latter causing difficulties for the cL2 learner due to the complexity of the acquisition of functional morphology and its semantics. The BH also argues that, in L2 teaching, focus on form should concentrate on mismatches between L1 and L2 in the area of functional morphology so as to improve teaching efficacy. Furthermore, this study will consider the effect of cognitive maturity, arguing that the acquisition of generic

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Trees Hypothesis (Vainikka and Young-Scholten 1994, 1996), the Failed Functional Features Hypothesis (Hawkins and Chan 1997) (for an overview see e.g., Slabakova 2016: 216). Thus, even though there was a controversial debate on L1 transfer and UG access, most SLA researchers now agree on L1 transfer effects.

4   According to Slabakova (2016), "principles are available from UG or from the L1, and one cannot realistically tease these two sources apart" (45).

reference will be constrained by cognitive maturity since the complexity of the learning tasks requires more computational space and consumes more processing resources. Previous findings on the L1 acquisition of English suggest that children acquire definiteness before the age of 4 years (e.g., Chierchia, Guasti and Gualmini 2001), while the semantics of definiteness is only acquired between the ages of 4 and 10 years (e.g., Pérez-Leroux, Munn, Schmitt and DeIrish 2004). It is assumed that cL2 learners have difficulties with type shifting, i.e., with identifying which grammatical form can be shifted to have generic reference. Chierchia (1998) claims that in English and German (type 3 languages), the bare plural blocks the generic interpretation for definite plurals, which is not the case in French (type 2 language) since the non-existence of bare nominal arguments leads to definite plurals having generic reference. Based on Chierchia (1998) and Pérez-Leroux et al. (2004) provided evidence that older L1 English and L1 Spanish children interpret definite plurals as [+generic], with L1 Spanish children allowing more generic interpretations than L1 English children, since English (in contrast to Spanish) also allows bare plural generics.

The child L2 German and L2 French developmental data support these claims in that they offer evidence for the acquisition of definiteness at an earlier interlanguage stage than the acquisition of generic reference, and also for the L2 input interacting with UG (as the L1 shapes the cognitive initial state). Due to maturational constraints, the cL2 learners have difficulties with type shifting and interpret definite plurals as [+generic]. The L2 developmental course in L2 German and L2 French is initially alike and subsequently differs as length of exposure (LoE), proficiency, and age at testing increase. Results from the Acceptability Judgment Task show the rejection of bare nominals at an intermediate interlanguage stage in L2 French and a high acceptance rate of generic definite plurals even at an advanced interlanguage stage in L2 German. The Truth Value Judgment Task findings illustrate that both L2 learner groups have difficulties with the targetlike interpretation of definite plurals with individual- and stage-level predicates. Definite plurals are interpreted as generic more often in L2 French than L2 German and also more frequently with individual-level than with stage-level predicates as a general pattern across the task.

This book is structured as outlined in the remainder of this introduction. In Chapter 1, generic reference in English, German, and French is described.

Section 1.2 examines crosslinguistic variation in DPs with generic reference in these three languages. Count and mass nouns will be contrasted due to crosslinguistic differences in bare plurals, definite plurals, bare mass singulars, and definite mass singulars and due to the differing assumptions for count and mass nouns under the NMP. DPs in subject position with individual- and stage-level predicates as well as DPs in object position with intensional and extensional predicates will be analyzed with regards to generic reference. Individual-level and intensional predicates typically have generic reference, whereas stage-level and extensional predicates have non-generic reference. Both subject and object positions are included in order to examine individual-level predicates following the DP as well as intensional predicates preceding the DP and to also elucidate possible differences in subject and object positions. In Section 1.3, theoretical approaches to generic reference will be discussed. The major claims of the Nominal Mapping Parameter as well as Dayal's 2004 proposal will be presented, with the former being tested in the empirical study in Chapter 3.

Chapter 2 addresses the acquisition of generic reference by child L2 learners. In Section 2.2, influential factors in cL2 acquisition are analyzed, including L1 transfer and UG (Section 2.2.1), child L2 typical development from interlanguage 1 to interlanguage n (Section 2.2.2), individual variation (Section 2.2.3), and immersion education (Section 2.2.4). During the acquisition process, the L2 child is assumed to be influenced by the L1, UG, and the L2 input. One of the major questions in cL2A is which components of language acquisition are innate, and what is provided by the L1 and by L2 input. Three theoretical approaches are presented in Section 2.2.5: The Full Transfer/Full Access Model, the Feature Reassembly Hypothesis, and the Bottleneck Hypothesis, which will be tested in the empirical study in Chapter 3.

Section 2.3 brings together generic reference in English, German, and French (Chapter 1) and the nature of child second language acquisition (Section 2.2) by presenting a review of the literature on the acquisition of generic reference in these three languages. This leads to an analysis of the learning tasks of the child L2 learner acquiring generic reference in L2 German or L2 French. It is argued that the acquisition of generic reference constitutes a learning problem for the cL2 learner for the following reasons: (a) generic reference is a poverty of the stimulus phenomenon and

will therefore not be available through evidence from the input; (b) the bottleneck of functional morphology has to be passed; (c) features have to be reassembled according to the targetlike L2 grammar; and (d) maturational constraints will lead to the acquisition of generic reference at an older age due to the complexity of the learning task which requires more computational space and consumes more processing resources. Section 2.4 presents the research questions and hypotheses for the empirical study.

Chapter 3 presents the empirical study on the cL2A of generic reference, with an overview in Section 3.2. Section 3.3 describes the participants: cL2 German learners (N=25) and cL2 French learners (N=34) that are enrolled in a full language immersion program, as well as L1 German children (N=12), L1 German adults (N=47), native French adults (N=4), and native English adults (N=5) to serve as control groups. The cL2 learners were divided into three groups based on their LoE (Low, Mid, or High; ranging from 0;8 to 6;6 years) in order to investigate the L2 initial state and further interlanguage stages. In Section 3.4, the predictions for both experiments (based on the hypotheses in Section 2.4) are presented. Section 3.5 details the L2 proficiency assessments, namely, the Student Oral Proficiency Assessment (SOPA) and a cloze test, as well as the participants' proficiency scores. In Section 3.6, the two experiments and the results are presented for L2 German and L2 French: an Acceptability Judgment Task (AJT) and a Truth Value Judgment Task (TVJT). Experiment 1, the AJT, focuses on the acceptability of bare plurals, bare mass singulars, and definite plurals in subject and object position with generic and non-generic reference. Experiment 2, the TVJT, targets the interpretation of definite plurals in subject position followed by individual- and stage-level predicates.

Finally, in Chapter 4, the findings of the experiments are discussed and implications are drawn for L2 teaching – in particular as it concerns immersion education. To close, the main findings are summed up in the conclusion.

Chapter 1 Generic Reference in English, German, and French

1.1 Introduction

This chapter deals with the theoretical motivation behind my empirical research with regard to generic reference and provides a crosslinguistic comparison between generic DPs in English, German, and French, as well as a syntactic and semantic analysis of generic DPs in these three languages. English is compared to German and French in order to compare the study participants' L1 and L2.[5] Contrasting English, German, and French shows that generic reference differs in bare plurals (*Sharks are dangerous*), definite plurals (*The sharks are dangerous*), bare mass singulars[6] (*Milk is white*), and definite mass singulars (*The milk is white*).[7] My empirical study (presented in Chapter 3) focuses on these four DP types, since, according to the Bottleneck Hypothesis, due to syntactic and semantic mismatches in L1 and L2, they are expected to cause difficulties for L2 learners (e.g., Slabakova 2008, 2016; Rothman 2008a; Rothman and Slabakova 2011). Thus, the analysis of bare and definite plurals, as well as bare and definite mass singulars[8] in varying linguistic contexts, i.e., varying syntactic

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5   The participants of the empirical study are English native speakers acquiring L2 German or L2 French.

6   "[M]ass nouns, unlike count nouns, come out of the lexicon already pluralized" (Chierchia 1998: 347), and plural mass nouns (e.g., *milks*) are ungrammatical. Therefore, the term 'definite mass SINGULAR' might be slightly misleading, since a definite mass singular might still have a plural meaning even if the syntactic form is singular. This term is used in order to contrast mass and count nouns. All DPs are described in their abbreviated terms as definite/indefinite/ bare and as singular/plural. For mass nouns, 'mass' is added.

7   English and German differ in regards to definite plurals, whereas French differs from English (and German) in regards to bare and definite plurals, as well as bare and definite mass singulars (see Section 1.2 for a contrasted overview and Section 1.3 for a detailed analysis).

8   Definite mass singulars play a minor role in the empirical study, since they are only involved in the form of corrective feedback in the acceptability judgment task, i.e., if L2 learners of French recognize that bare mass singulars (*Lait est*

positions with varying predicates, forms the foundation of the empirical research.

As summarized by Mari, Beyssade, and Del Prete (2013), investigating generic DPs (including the notion of kind and crosslinguistic variation thereof) involves the analysis of the following research questions:

> (i) What are the linguistic forms that can be used to refer to kinds across languages and what are the conditions governing their uses as well as the subtle semantic differences that they convey? While in English bare plurals and singular definite DPs may be kind-referring, in other languages, bare singulars or plural definite DPs also seem to be appropriate for referring to kinds.
>
> (Mari et al. 2013: 4)

> (ii) How can we account for the semantic computation of kind-referring DPs and what are the consequences of assuming kind reference into the ontology of natural language?
>
> (Mari et al. 2013: 5)

These questions are addressed in this chapter when investigating generic DPs.

Section 1.2 presents generic reference in English, German, and French and investigates crosslinguistic variation in these three languages. The three languages are contrasted in the linguistic contexts relevant for the empirical study, i.e., DPs in subject and object position in combination with various predicates (individual- and stage-level predicates, intensional and extensional predicates) leading to generic and/or non-generic reference. In Section 1.3, the syntax and semantics of the DP (including the notion of kind and crosslinguistic variation thereof) are investigated in the light of the Nominal Mapping Parameter (NMP) (Chierchia 1998) in order to analyze the DP types used for generic reference and the "semantic computation" (Mari et al. 2013: 4) of generic DPs. The NMP, which deals with the way syntactic categories are mapped into their interpretations, was chosen as the theoretical approach to generic DPs, since it offers an explanation for crosslinguistic differences in the interpretation of DPs and the distribution of bare nouns. The NMP explains the "computational process" (Chierchia et al. 2001: 38) of interpreting, i.e., "assigning an interpretation to the basic

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blanc) are ungrammatical in French, they reject the sentence and correct it to a definite mass singular (*Le lait est blanc*).

pieces (say, the lexicon)" (38), which are governed by the "rules/principles that tell us what the interpretation of lexical entries contributes to the interpretation of the structures in which they occur" (38). Crosslinguistic variation is explained by dividing languages into three types, based on the semantic origin of count and mass nouns, which are either kind-denoting (as arguments), predicate denoting (as predicates), or free (as arguments or predicates).[9] It is argued that generic DPs belong to the syntax-semantics interface,[10] since the syntactic categories are mapped into their semantics. As a Neocarlsonian, Chierchia's (1998) assumption in reference to the source of generic interpretations is the existence of an operator Gn.

> While the theory at the time of *The Generic Book* relied heavily on the contribution of a hidden operator GEN (first introduced in Farkas and Sugioka 1983), as a replacement for the unitary Carlsonian operator Gn (Carlson 1977b), subsequent research has tried to individuate the sources of the generic interpretation in overt material in generically interpreted sentences.
>
> (Mari et al. 2013: 1)

Finally, in Section 1.4, the results of this chapter are summarized.

1.2 Crosslinguistic Variation of Determiner Phrases with Generic Reference in English, German, and French

Generic sentences can be divided into three categories: (a) generic reference finds its origin in the DP as in (1) ("*reference to a kind*" in Krifka et al. 1995: 2); (b) generic reference is a feature[11] of the sentence as in

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9   Kabatek and Wall (2013) summarize the division in three types (based on Chierchia 1998 and Rijkhoff 2002) by focusing on bare nouns, explaining that there are "three groups of languages: languages in which bare nouns are predominant, languages practically without bare nouns and languages in which bareness enters into significant opposition to the presence of other elements. Of course, these languages are the most interesting ones, since they call for an adequate explanation of this variation" (1).

10 'Interfaces' refer to "[p]oints of mapping between two modules, e.g., syntax and semantics, semantics and pragmatics" (Slabakova 2016: 421).

11 'Features' are defined as "[p]roperties, or elements, into which linguistic units can be broken down in order to be studied and described. They are objects in linguistic theory. A feature, [plurals] for example, is used analogously to how chemists use H to designate hydrogen, a real chemical element that exists in the real world (Adger and Svenonius 2011). Features can be phonological

(2) ("*characterizing sentences*" in Krifka et al. 1995: 3); and (c) generic reference in (2) originates in the VP (cf. Mari et al. 2013: 3).

> (1) a. <u>The potato</u> was first cultivated in South America.
>   b. <u>Potatoes</u> were introduced into Ireland by the end of the 17th century.
>   c. The Irish economy became dependent upon <u>the potato</u>.
>
> <div align="right">(examples from Krifka et al. 1995: 2)</div>

The DPs in (1) do not refer to particular potatoes or a group thereof "but to a type of vegetable, the kind Potato" (Mari et al. 2013: 3). In contrast, the sentence in (2a) refers to a habit, which is "some kind of generalization over events" (Krifka et al. 1995: 2) and (2b) refers to a property of potatoes in general – "a generalization based on properties of individual potatoes" (Krifka et al. 1995: 2).

> (2) a. John smokes a cigar after dinner.
>   b. A potato contains vitamin C, amino acids, protein and thiamine.
>
> <div align="right">(examples from Krifka et al. 1995: 3)</div>

According to Krifka et al. (1995), kinds are opposed to particular individuals (including objects) and characterizing sentences to particular facts and events. Since the empirical study only includes generic sentences in which generic reference originates in the DP, we will focus on generic/kind-referring DPs in the following.

   In the following, generic DPs are contrasted to non-generic DPs. In the semantic literature, these DPs are called "*kind-referring NPs*, or sometimes *generic NPs*," (e.g., Krifka et al. 1995: 2), which are contrasted to DPs referring to specific objects or individuals, which are called "non-generic," "*object-referring NPs*" (e.g., Krifka et al. 1995: 2), "existential" (e.g., Carlson 1977; Mari, Beyssade and Del Prete 2013: 12), or, in some cases, "specific" (e.g., Ionin 2003). As can be noticed in the quote by Krifka et al. (1995: 2), kind-referring and generic DPs are not equivalent. Chierchia (1998) defines 'kinds' as regularities that are based on the speakers' shared knowledge:

(e.g., [voice]), semantic (e.g., [past]), and syntactic (e.g., [Nominative Case])" (Slabakova 2016: 420).

From an intuitive, pretheoretical point of view, kinds are generally seen as regularities that occur in nature. They are similar to individuals like you and me, but their spatiotemporal manifestations are typically 'discontinous'. To any natural property, like the property of being a dog, there corresponds a kind, viz. the dog-kind. Conversely, any natural kind will have a corresponding property (the property of belonging to that kind). By 'natural' kinds, we do not necessarily mean, in the present context, just biological ones or even 'well-established' ones. Artifacts (like chairs or cars) or complex things (like intelligent students or spots of ink) can qualify as kinds, to the extent that we can impute to them a sufficiently regular behavior (cf. on this Carlson 1977, pp. 26ff. and Krifka et al. 1995). What counts as kind is not set by grammar, but by the shared knowledge of a community of speakers. It thus varies, to a certain degree, with the context, and remains somewhat vague. Lexical nouns identify kinds. Complex nouns may or may not.

(Chierchia 1998: 348)

The way generic reference is expressed varies crosslinguistically (e.g., Chierchia 1998), since a "variety of types of noun phrases […] refer to kinds across languages" (Mari et al. 2013: 2), and "no language has noun phrases distinctively generic in form" (Lyons 1999: 179). As a consequence, DPs with generic reference are ambiguous,[12] even though the degree of

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12 It is controversially debated whether DPs are ambiguous (see Longobardi 1994, 1996; Chierchia 1998; Mari et al. 2013). According to researchers supporting the ambiguity hypothesis (e.g., Krifka 1988; Wilkinson 1991; Diesing 1992; Gerstner-Link and Krifka 1993), DPs are ambiguous, whereas it has also been claimed that generic and non-generic DPs occur in complementary distribution (e.g., Carlson 1977; Chierchia 1998). At this point, I would like to emphasize that the DP itself is ambiguous, since there is no morpheme solely encoding generic reference. The linguistic context of the DP determines the interpretation, as will be discussed in the present chapter. Chierchia et al. (2001) confirm that a noun in the lexicon might have a different meaning in its original form than it has occurring in a particular structure that is governed by certain rules and principles, which leads to the interpretation of the particular structure. It is also for this reason that nouns occurring in DPs start out by being ambiguous (i.e., generic vs. non-generic), but might end up with a non-ambiguous interpretation by occurring in a particular structure/linguistic context. Assigning an interpretation to a particular structure is complex. "So it can well be that a certain expression, say a common noun, starts out as something and winds up as something else in the final context in which it is embedded. Presumably, the double role of common nouns finds its explanation is some such process. The interesting question is how exactly it all takes place. The NMP is a hypothesis on this" (Chierchia et al. 2001: 38).

ambiguity varies depending on the linguistic context, which is determined by distinctions such as definite/indefinite, singular/plural, count/mass/ proper noun, the choice of the predicate (kind-, individual-, or stage-level predicates, intensional or extensional predicates), the syntactic position of the noun, tense, aspect, lexical cues (e.g., *in general*, *normally*), etc. Thus, a lexical device such as *in general* can determine a generic interpretation of an ambiguous DP, or the choice of an individual-level predicate can lead to a generic reading. The linguistic contexts relevant in the empirical study will be discussed in the present chapter.

Researchers agree that in English, generic reference can be expressed by indefinite singular count noun phrases (henceforth 'indefinite singulars') (3a),[13] definite singular count noun phrases (henceforth 'definite singulars') (3b),[14] bare plurals (3c) (e.g., Mari et al. 2013: 25), the definite article combined with an adjective (3d)[15] (e.g., Chierchia 1998: 394; Lyons 1977,[16] 1999: 179), and bare mass singulars (4a). A generic reading of these DPs is possible even though these "types of nominals are not in free variation: their behavior differs in statements where aspect supports an episodic interpretation" (Mari et al. 2013: 25).

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13 As pointed out by Krifka (2013), "generic sentences with indefinite singular subjects [...] have [...] limited distribution" (372). "Such subjects cannot always be interchanged with bare plural NPs, as has been famously pointed out by Lawler (1973)" (372).

14 According to Krifka et al. (1995), the definite singular can only be used for generic reference for "well-established kinds" (11). Chierchia (1998) also points out that "the generic and kind-level uses of the definite singular article [...] is only possible if the described episode is somehow 'momentous' for the kind as such" (379). It has to be "representative for the whole kind" (379). In contrast to the definite singular, "in English plural 'the' does not have a generic interpretation" (379).

15 Generics formed by adjective nominalization pattern alike in English, German, and French (Chierchia 1998: 394–395), and are therefore not part of the empirical study nor will they be discussed any further in this chapter.

16 Lyons (1977) contrasts the following generic and non-generic sentences: for definite singulars, "*The bird* is a warm-blooded animal." vs. "*The bird* is flying."; for indefinite singulars, "*A cat* has nine lives." vs. "*A cat* caught two mice."; for bare plurals, "*Dinosaurs* are extinct." vs. "There are *dinosaurs* in that museum."; for definite articles followed by an adjective, "*The elderly* need better health care." vs. "*The elderly man* crossed that street."

(3) Generic count noun phrases in English
    a. A shark is dangerous.
    b. The shark is dangerous.
    c. Sharks are dangerous.
    d. The rich are greedy (example from Chierchia 1998: 394).

(4) Generic mass noun phrases in English
    a. Milk is white.

In German, generic reference can also be expressed by indefinite singulars (5a), definite singulars (5b), bare plurals (5c), the definite article combined with an adjective (5e), and bare mass singulars (6a). In some varieties of German, generic reference can also be expressed by definite plurals (5d), which is not the case for Standard German (e.g., Longobardi 1994; Krifka et al. 1995; Oosterhof 2004; Barton, Kolb and Kupisch 2015).

(5) Generic count noun phrases in German
    a. Ein   Hai ist gefährlich.
       a-masc shark is dangerous
       'A shark is dangerous.'

    b. Der   Hai ist   gefährlich.
       the-masc shark is   dangerous
       'The shark is dangerous.'

    c. Haie   sind gefährlich
       sharks are   dangerous
       'Sharks are dangerous.'

    d. ?Die   Haie   sind gefährlich.
        the-pl sharks are   dangerous
       ?'Sharks are dangerous.'/ 'The sharks are dangerous.'

    e. Die   Reichen sind   habsüchtig.
       the-pl rich   are   greedy
       'The rich are greedy.'

(6) Generic mass noun phrases in German
    a. Milch ist weiß.
       milk   is white
       'Milk is white.'

In French, generic reference can be expressed by indefinite singulars (7a), definite singulars (7b), definite plurals (7c), the definite article combined with an adjective (7d), and definite mass singulars (8a).

(7) Generic count noun phrases in French
    a. Un   requin est dangereux.
       a-masc shark   is dangerous
       'A shark is dangerous.'

      b. Le   requin est dangereux.
         the-masc shark is dangerous
         'The shark is dangerous.'

      c. Les   requins sont dangereux.
         the-pl sharks are   dangerous
         'Sharks are dangerous.'/ 'The sharks are dangerous.'

      d. Les   riches sont cupides.
         the-pl rich   are   greedy
         'The rich are greedy.'

(8) Generic mass noun phrases in French

      a. Le   lait   est blanc.
         The-masc milk is white
         'Milk is white.'/ 'The milk is white.'

A crosslinguistic comparison of English, German, and French reveals that all three languages can use indefinite and definite singulars in order to express generic reference as in sentences (3a, b), (5a, b), and (7a, b). Thus, for indefinite and definite singulars, English, German, and French pattern together. Furthermore, in English and German, generic reference is typically expressed by bare plurals (9a, b, see also 3c and 5c) and bare mass singulars (11a, b, see also 4a and 6a), whereas the equivalents in French use definite plurals (10c, see also 7c) and definite mass singulars (12c, see also 8a); bare nouns (in argument position) are ungrammatical (9c). Definite plurals and definite mass singulars are hence ambiguous in French (10c, 12c) but not in English[17] (10a, 12a) and Standard German[18] (10b, 12b). Some varieties of German are more tolerant in reference to the use of generic definite plurals

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17 There is one exception in English for definite plurals, which can be interpreted as generic when referring to nationalities, e.g., *The Americans are friendly*. In German, it is also possible to use the definite plural for generic reference with regard to nationalities, e.g., *Die Amerikaner sind freundlich*. However, examples involving nationalities are not included in the empirical study and are therefore not relevant for the present study. Discussing them further is beyond the scope of this study.

18 In enumerations in German, the definite article can be used for generic reference, e.g., when making generalizations about professions such as *Die Handwerker sind fleißig, die Politiker sind diplomatisch*, etc. ('The tradesmen are hardworking', 'the politicians are diplomatic'). However, examples involving professions are not included in the empirical study and are therefore not relevant for this project.

(10b) than English (e.g., Barton, Kolb and Kupisch 2015; Krifka et al. 1995; Longobardi 1994; Oosterhof 2004).

(9) Bare plurals (with individual-level predicates)
English
a. Sharks are dangerous [+generic]

German
b. Haie   sind gefährlich [+generic]
   sharks are dangerous
   'Sharks are dangerous.'

French
c. *Requins sont dangereux
   sharks   are   dangerous

(10) Definite plurals (with individual-level predicates)
English
a. The sharks are dangerous [-generic]

German
b. Die Haie   sind gefährlich [-/?+generic]
   the-pl sharks are dangerous
   'The sharks are dangerous.'/?'Sharks are dangerous.'

French
c. Les requins   sont dangereux [-/+generic]
   the-pl sharks are dangerous
   'The sharks are dangerous.'/'Sharks are dangerous.'

(11) Bare mass singulars (with individual-level predicates)
English
a. Milk is white [+generic]

German
b. Milch ist weiß [+generic]
   milk   is white
   'Milk is white.'

French
c. *Lait est blanc
   milk is white

(12) Definite mass singulars (with individual-level predicates)
English
a. The milk is white [-generic]

German
b. Die Milch   ist weiß [-generic]
   the-fem milk is white
   'The milk is white.'

French

c. Le   lait   est blanc   [-/+generic]
    the-masc milk is white
    'The milk is white.'/ 'Milk is white.'

Thus, English and German differ with regard to the interpretation of definite plurals, and English (and German) differs from French with respect to bare plurals, definite plurals, bare mass singulars, and definite mass singulars. However, the differences might be more complex due to the non-interchangeability of these generic DPs in varying contexts, and the question arises "if bare plurals and definite singulars correspond to two different ways of referring to kinds in English, […] what are the counterparts of English bare plurals and definite singulars in languages like French and Italian, and are kind-referring definite plurals comparable with English definite singulars or with English bare plurals?" (Mari et al. 2013: 25–26).

1.2.1 Count and Mass Nouns in Subject and Object Position

In the following, English, German, and French DPs will be contrasted in varying linguistic contexts in order to analyze the impact of the linguistic context on the interpretation of the DP. The linguistic context is restricted to the structures relevant for the empirical research.[19] Therefore, we will be looking at the interpretation of singular and plural DPs with count and mass nouns in subject and object position with individual- and stage-level predicates, as well as intensional and extensional predicates in English, German, and French.

Tables 1.1–1.8[20] illustrate crosslinguistic differences in the distribution and interpretation of DPs in English, German, and French by using sample phrases. These tables present an overview of (un)grammatical DPs with (non-)generic interpretations in the three languages, which remains on an observing surface level rather than on an analytic level. The analysis

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19 The analysis of further linguistic contexts is beyond the scope of this study. For further information on linguistic contexts influencing the interpretation of DPs, see, e.g., Krifka et al. (1995).

20 For reasons of completeness, singular count nouns are included in the tables. Since all three languages pattern together in reference to singular count nouns, these will not be considered in the following; the focus will be put on bare and definite plurals and bare and definite mass singulars since English, German, and French vary in reference to these constructions.

is presented in Section 1.2 and focuses on DP types varying in the three languages involved, i.e., bare plurals, definite plurals, bare mass singulars, and definite mass singulars.

1.2.1.1 Determiner Phrases in Subject Position with Individual- and Stage-Level Predicates

In the empirical study, we deal with individual-level predicates (13a) and stage-level predicates (13b), but not with kind-level predicates (13c). The choice of the predicate is one of the linguistic contexts determining generic or non-generic interpretations.

(13) a. Sharks are dangerous.
   b. Sharks are hungry.
   c. Dinosaurs are extinct.

A kind-level[21] predicate (13c) refers to a kind, e.g., to a type of animal, which in this case is the kind 'dinosaur', and is true for all members/the totality of that kind. It is impossible to say that dinosaurs are extinct, except for the individual dinosaur x. Kind-level predicates do not allow for exceptions.

The following section analyzes individual- and stage-level predicates and their effect on the interpretation of DPs.

In the literature (e.g., Carlson 1977; Chierchia 1998; Mari et al. 2013, Leslie and Lerner 2016)), individual- and stage-level predicates are investigated in contrast to one another. Carlson (1977) was the first one to introduce the terms individual-level predicate (ILP) and stage-level predicate (SLP) in his analysis of English bare plurals and indefinite singulars. He introduces the distinction between individuals and stages of individuals. Properties such as *being dangerous* can be assigned to individuals. States such as *being hungry* are stages of individuals. Properties are a permanent condition of an individual, whereas states or events are non-permanent temporal stages of an individual. An ILP such as *dangerous* assigns a property to an individual, and an SLP such as *being hungry* refers to a stage of an individual. Thus, *dangerous* refers to a whole class of sharks being

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21 Since kind-level predicates are not involved in the present study, they are discussed here very briefly. For more information on kind-level predicates, see, e.g., Krifka et al. (1995).

dangerous, since it is a property of sharks and therefore a permanent condition. In contrast, *hungry* refers to certain sharks being hungry during a limited period of time,[22] which is a stage of sharks and therefore a non-permanent condition (Mari et al. 2013: 34). SLPs such as *hungry* rather evoke a non-generic interpretation, since the state *being hungry* is only true until the individual has access to food and is therefore a stage of an individual. ILPs such as *dangerous* are correlated with a generic interpretation, since the property *being dangerous* is a permanent condition of that individual which does not change during particular stages of that individual. This property is time-independent and is true for an entire class or a representative individual in that class, but allows for exceptions.

Chierchia (1998) confirms that ILPs (e.g., rare, widespread) typically have generic reference. Bare arguments in subject position can occur with ILPs ('kind-selecting predicates') having generic reference as in (14a), and with SLPs ('non-kind-selecting predicates') having non-generic reference as in (14b) (see also Carlson 1977, Diesing 1992).

(14) a. Firemen are nice.
     b. Firemen are available.

(examples from Gavarró et al. 2006: 52)

He states when developing his Neocarlsonian approach that

[p]redicates like *rare* and *widespread* are kind-selecting. Mass nouns are kind-denoting and (plural) count nouns can be turned into names of kinds via '∩'. [...] However, a key characteristic of bare arguments is that they also occur with non-kind-selecting predicates. In the latter case, they typically give rise to a universal reading in generic contexts and to an existential one in episodic contexts – a behavior they have in common with indefinites.

(Chierchia 1998: 363)

Furthermore, he states that "individual-level predicates [...] are inherently generic and [...] that is why they induce universal readings of bare plurals" (Chierchia 1998: 368).

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22 Possibly, *sharks* are not the ideal example in combination with *being hungry*, since one could argue that sharks are always hungry, which turns *being hungry* into a property of sharks and to a permanent condition. However, *being hungry* usually tends to be a non-permanent condition which is limited to the moment in which there is access to food.

For German, it has been claimed that bare and definite plurals can have generic reference in combination with ILPs (e.g., Brugger 1993[23]; Longobardi 1994; Lyons 1999) and non-generic reference with SLPs (e.g., Lyons 1999).

Bare arguments in object position with extensional verbs have non-generic reference (15a) and generic reference with intensional verbs (15b). In combination with intensional verbs, "there is no existential assertion: it is entirely possible that the object does not exist" (Gavarró, Pérez-Leroux and Roeper 2006: 423) as in (15c).

(15) a. I ate carrots.
    b. I need shoes.
    c. I need unicorns/flying cars/etc.

<div align="right">(examples from Gavarró et al. 2006: 52)</div>

According to Gavarró et al. (2006),

> [t]he semantic literature fails to single out this reading of the bare object. We will refer to these bare plural objects of intensional verbs as *generic objects* in the understanding that the reading is not a reference to a kind, but instead reference to a potential instance of the kind [...]. What [(14)] and [(15)] have in common is the massification/lack of quantization of the concept. Carrots are treated as substance in [(14a)] (423).

Tables 1.1–1.4 represent examples of DPs in subject position with individual- and stage-level predicates in English, German, and French focusing on grammaticality and possible interpretations.

Table 1.1 shows indefinite and bare singular and plural count and mass nouns in subject position in combination with individual-level predicates in English, German, and French.[24] In all three languages, indefinite singulars (1a, 2a, 3a) with individual-level predicates are ambiguous[25] – allowing

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23 Individual-level predicates are contrasted to kind-level predicates in this discussion (Brugger 1993: 12). Since the present study focuses on individual- and stage-level predicates, it is beyond the scope of this study to discuss kind-level predicates.

24 Bare plurals and bare mass singulars are highlighted (frame in bold) since, due to variation in bare plurals and bare mass singulars in English, German, and French, the empirical study focuses on these DPs.

25 As confirmed by Chierchia (1998) for English: "A dog barks [generic interpretation possible]" (374).

generic and non-generic interpretations, and bare singular count nouns (1b, 2b, 3b), indefinite singular mass nouns (1c, 2c, 3c), and bare plural mass nouns (1h, 2h, 3h) (as well as partitive indefinite plural mass noun phrases in French as in (3i)) are ungrammatical. Bare mass singulars and bare plurals with individual-level predicates have generic reference in English (1d, 1 f) and German[26] (2d, 2 f) and are ungrammatical in French (3d, 3 f). In French, the indefinite singular mass partitive construction with *du* (*de* + *le* comparable to *of* + theSGMASC) (henceforth 'indefinite singular mass partitives') (3e) and the indefinite plural partitive constructions with *des* (*de*+definite article comparable to *of*+the+PL)[27] (henceforth 'indefinite plural partitives') (3g) have non-generic reference. According to Chierchia (1998: 391), the 'de + definite article' construction

> is a regular existential quantifier (with all the scopal properties of quantifiers). It combines with plural and mass nouns and has the existential readings of English bare arguments as a proper subset of its own readings. […] This construction occurs in several of the Romance languages, like French or Rumanian, but not in all […]. The typologically most striking observation is that the bare partitive construction appears to be impossible in languages with bare arguments: nothing like it seems to exist in Germanic or Slavic languages.
>
> (Chierchia 1998: 391)

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26 In English and German, bare mass singulars and bare plurals can be combined with individual-level predicates allowing [+generic] interpretations and with stage-level predicates allowing [-generic] interpretations (as demonstrated for English in (1d, 1 f, 4d, 4 f) and for German in (2d, 2 f, 5d, 5 f)). However, since bare mass singulars and bare plurals with stage-level predicates (see (4d, 4 f)) are the non-canonical way to express [- generic], in contrast to, e.g., definite mass singulars and definite plurals with stage-level predicates (see (4k, 4l)), which are the canonical way to express [-generic], bare mass singulars and bare plurals are more frequently combined with individual-level predicates and therefore express more frequently generic reference than non-generic reference.

27 According to Chierchia, Guasti, and Gualmini (2001), "[f]or indefinite kind reference (as in 'fireman are available') French/Italian will have to resort to a plural form of the indefinite article (namely the partitive 'des' the+PL in French)" (42).

Table 1.1: Indefinite and bare singulars and plurals in English, German, and French – count and mass nouns in subject position followed by an individual-level predicate

	Singular	Count		Mass	
		[-definite]	generic [±]	[-definite]	generic [±]
English	Sg	(1) a. A shark is dangerous b. *Shark is dangerous	[±] *	(1) c. *A milk is white d. Milk is white	* [+]
German	Sg	(2) a. Ein Hai ist gefährlich b. *Hai ist gefährlich	[±] *	(2) c. *Eine Milch ist weiß d. Milch ist weiß	* [+]
French	Sg	(3) a. Un requin est dangereux b. *Requin est dangereux	[±] *	(3) c. *Un lait est blanc d. *Lait est blanc e. Du lait est blanc.	* * [+]
	Plural	[-definite]	generic [±]	[-definite]	generic [±]
English	Pl	(1) f. Sharks are dangerous	[+]	(1) h. *Milks are white	*
German	Pl	(2) f. Haie sind gefährlich	[+]	(2) h. *Milch sind weiß	*
French	Pl	(3) f. *Requins sont dangereux g. Des requins sont dangereux	* [+]	(3) h. *Laits sont blancs i. *Des laits sont blancs	* *

Table 1.2 presents definite singular and plural count and mass nouns in subject position in combination with individual-level predicates in English, German, and French.[28] In all three languages, definite singulars (1j, 2j, 3j) with individual-level predicates are ambiguous[29] and definite plural mass nouns are ungrammatical (1m, 2m, 3m). The interpretation of definite mass singulars varies; definite mass singulars with individual-level predicate are ambiguous in French (3k) but not in English (1k) and German (1k), in

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28 Definite plurals and definite mass singulars are highlighted (frame in bold) since, due to variation in definite plurals and definite mass singulars in English, German, and French, the empirical study focuses on these DPs.

29 According to Krifka et al. (1995), as cited in Chierchia (1998), "the singular definite generic is somehow limited to 'well-established' kinds" (379).

which non-generic readings only are possible. The interpretation of definite plurals varies in all three languages; definite plurals with individual-level predicates are ambiguous in French (3l), have non-generic reference only in English[30] (1l) and Standard German (2l), and are ambiguous in some varieties of German (2l).

Table 1.2: Definite singulars and plurals in English, German, and French – count and mass nouns in subject position followed by an individual-level predicate

	Singular	Count		Mass	
		[+definite]	generic [±]	[+definite]	generic [±]
English	Sg	(1) j. The shark is dangerous	[±]	(1) k. The milk is white	[-]
German	Sg	(2) j. Der Hai ist gefährlich	[±]	(2) k. Die Milch ist weiß	[-]
French	Sg	(3) j. Le requin est dangereux	[±]	(3) k. Le lait est blanc	[±]
	Plural	[+definite]	generic [±]	[+definite]	generic [±]
English	Pl	(1) l. The sharks are dangerous	[-]	(1) m. *The milks are white	*
German	Pl	(2) l. Die Haie sind gefährlich	[?±]	(2) m. *Die Milch sind weiß	*
French	Pl	(3) l. Les requins sont dangereux	[±]	(3) m. *Les laits sont blanc	*

Table 1.3 shows indefinite and bare singular and plural count and mass nouns in subject position in combination with stage-level predicates in English, German, and French.[31] In all three languages, indefinite singulars (4a, 5a, 6a) with stage-level predicates have non-generic reference only and bare singular count nouns (4b, 5b, 6b), indefinite singular mass nouns (4c,

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30 See, e.g., Chierchia (1998), "English […] also has the definite article, but disallows generic or kind-oriented uses of it (*The) dogs bark" (393).

31 Bare plurals and bare mass singulars are highlighted (frame in bold) since, due to variation in bare plurals and bare mass singulars in English, German, and French, the empirical study focuses on these DPs.

5c, 6c), and bare plural mass nouns (4h, 5h, 6h) (as well as partitive indefinite plural mass noun phrases in French as in (6i)) are also ungrammatical with stage-level predicates. Bare mass singulars and bare plurals with stage-level predicates allow non-generic interpretations in English[32] (4d, 4 f) and German (5d, 5 f) and are ungrammatical in French (6d, 6 f). French uses indefinite singular mass partitives (6e) and indefinite plural partitives (6g).

Table 1.3: Indefinite and bare singulars and plurals in English, German, and French – count and mass nouns in subject position followed by a stage-level predicate

	Singular	Count		Mass	
		[-definite]	generic [±]	[-definite]	generic [±]
English	Sg	(4) a. A shark is hungry b. *Shark is hungry	[-] *	(4) c. *A milk is available d. Milk is available	* [-]
German	Sg	(5) a. Ein Hai ist hungrig b. *Hai ist hungrig	[-] *	(5) c. *Eine Milch ist verfügbar d. Milch ist verfügbar	* [-]
French	Sg	(6) a. Un requin a faim b. *Requin a faim	[-] *	(6) c. *Un lait est disponible d. *Lait est disponible e. Du lait est disponible	* * [-]
	Plural	[-definite]	generic [±]	[-definite]	generic [±]
English	Pl	(4) f. Sharks are hungry	[-]	(4) h. *Milks are available	*
German	Pl	(5) f. Haie sind hungrig	[-]	(5) h. *Milch sind verfügbar	*
French	Pl	(6) f. *Requins ont faim g. Des requins ont faim	* [-]	(6) h. *Laits sont disponibles i. *Des laits sont disponibles	* *

Table 1.4 presents definite singular and plural count and mass nouns in subject position in combination with stage-level predicates in English, German, and French. In all three languages, definite singulars (4j, 5j, 6j),

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32 Definite mass singulars and definite plurals with stage-level predicates are the canonical way to express [-generic], whereas bare mass singulars and bare plurals with stage-level predicates are the non-canonical way to express [- generic].

definite mass singulars (4k, 5k, 6k), and definite plurals (4l, 5l, 6l) with stage-level predicates have non-generic reference only and definite plural mass nouns are ungrammatical (4m, 5m, 6m).

Table 1.4: Definite singulars and plurals in English, German, and French – count and mass nouns in subject position followed by a stage-level predicate

	Singular	Count		Mass	
		[+definite]	generic [±]	[+definite]	generic [±]
English	**Sg**	(4) j. The shark is hungry	[-]	(4) k. The milk is available	[-]
German	**Sg**	(5) j. Der Hai ist hungrig	[-]	(5) k. Die Milch ist verfügbar	[-]
French	**Sg**	(6) j. Le requin a faim	[-]	(6) k. Le lait est disponible	[-]
	Plural	[+definite]	generic [±]	[+definite]	generic [±]
English	**Pl**	(4) l. The sharks are hungry	[-]	(4) m. *The milks are available	*
German	**Pl**	(5) l. Die Haie sind hungrig	[-]	(5) m. *Die Milch sind verfügbar	*
French	**Pl**	(6) l. Les requins ont faim	[-]	(6) m. *Les laits sont disponible	*

As demonstrated in Tables 1.1–1.4, the choice of the predicate affects the interpretation of DPs (but not the grammaticality). The interpretation of DPs followed by individual-level predicates varies from DPs followed by stage-level predicates in English, German, and French in the following way: indefinite and definite singulars are ambiguous with individual-level predicates and allow non-generic interpretations with stage-level predicates in English, German, and French. Bare mass singulars and bare plurals allow generic interpretations in English and German with individual-level predicates and non-generic interpretations with stage-level predicates and are ungrammatical in both cases in French. Definite mass singulars are ambiguous in French with individual-level predicates, allow non-generic interpretations with stage-level predicates, and allow non-generic interpretations in English and German in both cases. Definite plurals with individual-level predicates are ambiguous in French, allow non-generic readings in English and Standard German, and have non-generic reference with stage-level predicates in all

three languages. In French, indefinite singular mass partitives and indefinite plural partitives express generic reference with individual-level predicates but not with stage-level predicates.

Bare singular count nouns, indefinite singular mass nouns, bare plural mass nouns, and definite plural mass nouns are ungrammatical in combination with both predicates in all three languages (as well as partitive indefinite plural mass noun phrases in French).

Thus, based on the examples in Tables 1.1–1.4, generic reference cannot be expressed with stage-level predicates but with individual-level predicates in combination with certain DP structures (e.g., with indefinite and definite singulars, bare plurals, and bare mass singulars in English).

1.2.1.2 Determiner Phrases in Object Position with Intensional and Extensional Predicates

In the empirical study, we deal with intensional predicates (16a) and extensional predicates (16b). The choice of the predicate is one of the linguistic contexts determining generic or non-generic interpretations.

(16) a. I like sharks.
     b. I see sharks.

Table 1.5 presents indefinite (including bare) singular and plural count and mass nouns in object position preceded by an intensional predicate.[33] In all three languages, indefinite singulars (7a, 8a, 9a) have non-generic reference and bare singular count nouns (7b, 8b, 9b), indefinite singular mass nouns (7c, 8c, 9c), and bare plural mass nouns (7h, 8h, 9h) (as well as partitive indefinite plural mass noun phrases in French as in (9i)) are ungrammatical. Bare mass singulars and bare plurals in object position have generic reference in English (7d, 7 f) and German (8d, 8 f) and are ungrammatical in French (9d, 9 f). French uses indefinite singular mass partitives (9e) and indefinite plural partitives (9g).

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33 Bare plurals and bare mass singulars are highlighted (frame in bold), since, due to variation in bare plurals and bare mass singulars in English, German, and French, the empirical study focuses on these DPs.

Table 1.5: Indefinite/bare singulars and plurals in English, German, and French – count and mass nouns in object position preceded by an intensional predicate

	Singular	Count		Mass	
		[-definite]	generic [±]	[-definite]	generic [±]
English	**Sg**	(7) a. I like a shark b. *I like shark	[-] *	(7) c. I like a milk d. I like milk	* [+]
German	**Sg**	(8) a. Ich mag einen Hai b. *Ich mag Hai	[-] *	(8) c. *Ich mag eine Milch[a] d. Ich mag Milch	* [+]
French	**Sg**	(9) a. J'aime un requin b. *J'aime requin	[-] *	(9) c. *J'aime un lait d. *J'aime lait e. J'aime du lait	* * [+]
	Plural	[-definite]	generic [±]	[-definite]	generic [±]
English	**Pl**	(7) f. I like sharks	[+]	(7) h. *I like milks	*
German	**Pl**	(8) f. Ich mag Haie	[+]	(8) h. *Ich mag Milchs	*
French	**Pl**	(9) f. *J'aime requins g. J'aime des requins	* [+]	(9) h. *J'aime laits i. *J'aime des laits	* *

[a] This sentence is ungrammatical in Standard German (**Ich mag eine Milch* is comparable to the English sentence **I like a milk*) and cannot be used to express someone liking milk in general as in *I like milk*. However, it might be used in colloquial (spoken) German in order to express the desire to have a glass of milk (*Ich mag eine Milch* instead of *Ich möchte ein Glas Milch haben*, which translates to *I would like to have a glass of milk*). Whether *Ich mag eine Milch* is used in spoken German or not is not relevant for the current discussion since this sentence refers to a specific glass of milk and therefore does not have generic reference.

Table 1.6 presents definite singular and plural count and mass nouns in object position preceded by an intensional verb.[34] In all three languages, definite singulars (7j, 8j, 9j) are ambiguous and definite plural mass nouns are ungrammatical (7m, 8m, 9m). The interpretation of definite mass singulars

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34 Definite plurals and definite mass singulars are highlighted (frame in bold), since, due to variation in definite plurals and definite mass singulars in English, German, and French, the empirical study focuses on these DPs.

varies; definite mass singulars are ambiguous in French (9k) but not in English (7k) and German (8k), in which only non-generic readings are possible. The interpretation of definite plurals in object position with intensional verbs varies in all three languages; definite plurals are ambiguous in French (9l), allow non-generic interpretations only in English (7l) and Standard German (8l), and are ambiguous in some varieties of German (8l).

Table 1.6: Definite singulars and plurals in English, German, and French – count and mass nouns in object position preceded by an intensional predicate

	Singular	Count		Mass	
		[+definite]	generic [±]	[+definite]	generic [±]
English	Sg	(7) j. I like the shark	[±]	(7) k. I like the milk	[-]
German	Sg	(8) j. Ich mag den Hai	[±]	(8) k. Ich mag die Milch	[-]
French	Sg	(9) j. J'aime le requin	[±]	(9) k. J'aime le lait	[±]
	Plural	[+definite]	generic [±]	[+definite]	generic [±]
English	Pl	(7) l. I like the sharks	[-]	(7) m. *I like the milks	*
German	Pl	(8) l. Ich mag die Haie	[?±]	(8) m. *Ich mag die Milchs	*
French	Pl	(9) l. J'aime les requins	[±]	(9) m. *J'aime les laits	*

Table 1.7 presents indefinite (including bare) singular and plural count and mass nouns in object position preceded by the predicate *see*.[35] In all three languages, indefinite singulars (10a, 11a, 12a) have non-generic reference only, and bare singular count nouns (10b, 11b, 12b), indefinite singular mass nouns (10c, 11c, 12c), and bare plural mass nouns (10h, 11h, 12h) (as well as partitive indefinite plural mass noun phrases in French as in (12i)) are ungrammatical. Bare mass singulars and bare plurals allow

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35 Bare plurals and bare mass singulars are highlighted (frame in bold), since, due to variation in bare plurals and bare mass singulars in English, German, and French, the empirical study focuses on these DPs.

non-generic interpretations in English (10d, 10 f) and German (11d, 11 f) and are ungrammatical in French (12d, 12 f). French uses indefinite singular mass partitives (12e) and indefinite plural partitives (12g).

Table 1.7: Indefinite/bare singulars and plurals in English, German, and French – count and mass nouns in object position preceded by an extensional predicate

	Singular	Count		Mass	
		[-definite]	generic [±]	[-definite]	generic [±]
English	Sg	(10) a. I see a shark b. *I see shark	[-] *	(10) c. I see a milk d. I see milk	* [-]
German	Sg	(11) a. Ich sehe einen Hai b. *Ich sehe Hai	[-] *	(11) c. *Ich sehe eine Milch[a] d. Ich sehe Milch	* [-]
French	Sg	(12) a. Je vois un requin b. *Je vois requin	[-] *	(12) c. *Je vois un lait d. *Je vois lait e. Je vois du lait	* * [-]
	Plural	[-definite]	generic [±]	[-definite]	generic [±]
English	Pl	(10) f. I see sharks	[-]	(10) h. *I see milks	*
German	Pl	(11) f. Ich sehe Haie	[-]	(11) h. *Ich sehe Milchs	*
French	Pl	(12) f. *Je vois requins g. Je vois des requins	* [-]	(12) h. *Je vois laits i. *Je vois des laits	* *

[a] This sentence is ungrammatical in Standard German (*Ich mag eine Milch* is comparable to the English sentence *I like a milk*) and cannot be used to express someone liking milk in general as in *I like milk*. However, it might be used in colloquial (spoken) German in order to express the desire to have a glass of milk (*Ich mag eine Milch* instead of *Ich möchte ein Glas Milch haben*, which translates to *I would like to have a glass of milk*). Whether *Ich mag eine Milch* is used in spoken German or not is not relevant for the current discussion since this sentence refers to a specific glass of milk and therefore does not have generic reference.

Table 1.8 presents definite singular and plural count and mass nouns in object position preceded by an extensional verb. In all three languages, definite singulars (10j, 11j, 12j), definite mass singulars (10k, 11k, 12k) and definite plurals (10l, 11l, 12l) have non-generic reference only and definite plural mass nouns are ungrammatical (10m, 11m, 12m).

Table 1.8: Definite singulars and plurals in English, German, and French – count and mass nouns in object position preceded by an extensional predicate

	Singular	Count		Mass	
		[+definite]	generic [±]	[+definite]	generic [±]
English	Sg	(10) j. I see the shark	[-]	(10) k. I see the milk	[-]
German	Sg	(11) j. Ich sehe den Hai	[-]	(11) k. Ich sehe die Milch	[-]
French	Sg	(12) j. Je vois le requin	[-]	(12) k. Je vois le lait	[-]
	Plural	[+definite]	generic [±]	[+definite]	generic [±]
English	Pl	(10) l. I see the sharks	[-]	(10) m. *I see the milks	*
German	Pl	(11) l. Ich sehe die Haie	[-]	(11) m. *Ich sehe die Milchs	*
French	Pl	(12) l. Je vois les requins	[-]	(12) m. *Je vois les laits	*

As demonstrated in Tables 1.5–1.8, the choice of the predicate affects the interpretation of DPs in object position. However, changing the predicate does not affect the grammaticality, i.e., an ungrammatical sentence does not become grammatical by replacing the predicate. The interpretation of DPs in object position preceded by intensional verbs varies from DPs preceded by extensional verbs in the same way as DPs in subject position followed by individual- or stage-level predicates. Generic reference cannot be expressed by DP structures in combination with extensional verbs (Chierchia 1998: 364) and stage-level predicates but with intensional verbs and individual-level predicates.[36]

By comparing Tables 1.1–1.4 on DPs in subject position with Tables 1.5–1.8 on DPs in object position, one can state that the same DP structures[37]

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36 "*ruin my garden* and *see* are predicates that apply in the first place to objects (i.e., non-kinds)" (Chierchia 1998: 364).

37 These DP structures are the following: in English: bare mass singulars, bare plurals, and definite singulars; in German: bare mass singulars, bare plurals, definite singulars, and possibly definite plurals; in French: indefinite singular mass partitives, indefinite plural partitives, definite singulars, definite mass singulars, and definite plurals.

with generic reference in subject position combined with individual-level predicates also have generic reference in object position combined with an intensional predicate, with one exception – indefinite singulars in subject position followed by an individual-level predicate have generic and non-generic reference (examples 1a, 2a, 3a), whereas in object position preceded by an intensional predicate, indefinite singulars have non-generic reference (examples 7a, 8a, 9a) in all three languages. However, this contrast will not be considered in the empirical study, since all three languages pattern together with regards to indefinite singulars. Furthermore, the DP structures that are ungrammatical in subject position are also ungrammatical in object position (e.g., in English, bare singulars, indefinite mass singulars, bare mass plurals, and definite mass plurals are ungrammatical in subject and object position, regardless of the choice of the predicate).

Subject and object positions are examined in order to include both individual-level predicates following the DP and intensional predicates preceding the DP and in order to control for possible differences in subject and object positions. As discussed in the next section, within Chierchia's (1998) type 2 languages (e.g., Romance), French and Italian differ with regards to bare arguments. French requires an article in all argument positions, and Italian requires an article in subject position but a phonological null determiner for plural phrases in object position is possible. The subject-object contrast is included in the empirical study in order to test whether the acceptance of bare arguments varies in subject versus object position.

1.3 Theoretical Approaches to Generic Reference

One of the most influential studies on generic/kind-reference is Carlson's (1977) analysis of English bare plurals that are contrasted to indefinite singulars. His main argument is that bare plurals in English are kind-referring (the DP refers to kinds rather than individuals), which claims that they are non-ambiguous. He argues that bare plurals are not the plural indefinite version of indefinite singulars, since they differ beyond the singular-plural-contrast. Bare plurals can rather be compared to proper names since both denote kinds. The major difference between kinds and individuals is the location. An individual can only be at one location at a time, whereas kinds can be at several locations at the same time. Bare plurals

can only be interpreted as non-generic when occurring with a stage-level predicate; then, the non-generic quantifier can be found in the predicate and is not part of the DP (bare plurals), since bare plurals are always kind-referring.[38] Carlson (1977) summarizes his assumption that bare plurals express kinds in English in the following way: "Let us agree then to treat bare NPs as a proper name of a kind, and let us think of kinds as being abstract individuals. In this treatment, Bare NPs are treated semantically as if they were unanalyzable wholes" (443). However, even if the predictions with regards to generic and non-generic interpretations are correct, his analysis "does not take into account the fact that bare plurals involve a plural morpheme" (Mari et al. 2013: 8). As a Neocarlsonian, "Chierchia has shown how to integrate Carlson's proposals within a formal frame-work which uses lattice structures (to account for plurality), operators, and type-shifting rules (to establish a link between kinds and properties)" (Mari et al. 2013: 4) (Chierchia 1998 is discussed in the next sections). Mari et al. (2013) present two proposals "developed contra Carlson and Chierchia" (4): (a) the ambiguity hypothesis (Diesing 1992; Gerstner-Link and Krifka 1993; Wilkinson 1991), which assumes bare plurals to be ambiguous by allowing a generic and a non-generic interpretation, although this has been shown by Dayal (1999) not to be "tenable for the interpretation of bare nominals in languages without determiners" (Mari et al. 2013: 19); and (b) the property-denotation hypothesis (Krifka 2004) arguing that bare plurals denote properties (Mari et al. 2013: 3–19).

Mari et al. (2013) claim that

> it can be shown that most, if not all, DPs can be interpreted as kind-referring given the appropriate context, and [...] [it can be] assume[d] that there is no generic determiner, but that the source of genericity in the nominal domain is anchored in the noun itself, which is ambiguous and may describe a property of kind rather than a property of individual. To account for the varieties of linguistic forms which are interpreted as referring to kinds, [...] a distinction between two

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38 Carlson (1977) suggested that English bare plurals refer to kinds, a claim that has been disagreed with by researchers arguing that bare plurals are ambiguous (e.g., Krifka 1988; Wilkinson 1991; Diesing 1992; Longobardi 1994, 1996; Gerstner and Krifka 1995; Chierchia 1998).

types of kind-referring DPs [is being introduced]: DPs which refer directly to a kind and DPs which refer indirectly to a kind.

<div align="right">Mari et al. (2013: 4)</div>

It is assumed that generic DPs belong to the syntax-semantics interface, since the DP itself is syntactic and its reference semantic. Thus, when analyzing generic DPs, we are interested in the syntactic structure of the DP on the one hand (e.g., do bare nouns occur in language A, B, and C, and if so, is the assumption that the D position is filled with a null determiner?) and in the interpretation of the DP on the other (e.g., what is the denotation of a DP? which factors determine the interpretation of a DP?). It is argued that the syntactic structure and the semantics of a DP are mapped onto each other,[39] which leads to the particular interpretation of the DP (e.g., Chierchia 1998).

Chierchia (1998) summarizes the principles that "the syntax-semantics interface is based on" (339) as follows:

a   Syntactic categories at the relevant level of representation, say LF, are mapped onto corresponding semantic types (thereby determining for each expression what its denotation is going to be).
b   Logical Forms are compositionally interpreted using a small set of universal rules (like functional application and abstraction).
c   Local type mismatches can be solved through a highly constrained set of universally available type shifting operations. These apply either in the lexicon or, possibly, as part of the compositional interpretation of phrases.

<div align="right">(Chierchia 1998: 339–340)</div>

Furthermore, Chierchia (1998) points out that crosslinguistic variation regarding a-c has to be analyzed in order to find out whether semantic reference differs across languages, or whether crosslinguistic variation is reduced to syntax. He argues that "the existence of interface conditions giving rise to semantic variation is both empirically supported and theoretically well grounded (or groundable) within current theories of UG and language learning" (340). It has been argued that interface issues are more complex to acquire than structures falling in one linguistic domain only (e.g., Rothman 2008a; Rothman and Slabakova 2011; Slabakova 2016).

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39 See, e.g., Kabatek and Wall (2013): "if a unified analysis with a direct mapping of syntactic and semantic categories and assuming a universal DP structure is pursued" (11).

Before analyzing DPs with generic reference in more depth, we will have a short look at the syntactic structure of DPs as far as relevant for the empirical study.

In the syntactic literature (e.g., Chierchia 1998; Longobardi 1994), it is controversially debated whether a determiner (D) position that is not overtly filled – such as in the case of a bare noun – is left empty or whether the noun (N) raises to D. It will be argued based on Chierchia (1998) that the D position is left empty if an overt determiner is lacking. After having presented the syntax of the DP, the denotation of the DP as well as the factors influencing the DP's reference will be discussed in light of the Nominal Mapping Parameter (Chierchia 1998).

Kabatek and Wall (2013), who analyzed bare nominals in Romance languages[40] by contrasting bare nouns to nouns with overt determiners, point out that "even the most ambitious overview of the research on nominal determination must remain piecemeal" (5). I agree with the authors in that referring to recent volumes (e.g., Sleeman and Perridon 2011; Ghomeshi, Paul and Wiltschko 2009; Müller and Klinge 2008; Stark, Leiss and Abraham 2007; Vogeleer and Tasmowski 2006; Coene and D'hulst 2003a, 2003b as cited by Kabatek and Wall 2013) and monographs (e.g., Alexiadou, Haegeman and Stavrou 2007; Rijkhoff 2002 as cited by Kabatek and Wall 2013) on nominal determination seems more appropriate than attempting to summarize "this dynamic area of research" (5) in which "many of the basic questions still remain unsettled" (5). Thus, rather than summarizing several theoretical approaches – which would lead to a simplification of each approach – I will, in the following, restrict the analysis of generic DPs in English, German, and French to the theoretical perspective of the Nominal Mapping Parameter (Chierchia 1998).[41]

Based on Abney's (1987) DP hypothesis,[42] which suggests that the noun phrase is a projection of the determiner rather than the noun and that

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40 For a literature review on bare nouns in Romance languages, see Kabatek and Wall (2013: 5–8).

41 Further influential theoretical approaches are proposed by, e.g., Longobardi (1994) and Dayal (2002, 2011).

42 The DP hypothesis is controversially debated; some of the weaknesses are outlined by Lyons (1999: 296–298). Since these debates do not affect my analysis

"determiners are the head of full nominal arguments" (Chierchia, Guasti and Gualmini 2001: 13), DPs are discussed in the following rather than NPs.

```
            DP
          /    \
        D       NP
        |        |
       the       N
                 |
                boy
```
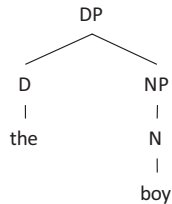
Figure 1.1: The syntactic structure of the DP (Chierchia, Guasti and Gualmini 2001: 5)

The interest in DPs occurred due to the interest in functional categories, which are grammatical rather than lexical (Lyons 1999: 43). The D position can be filled by determiners (e.g., articles such as 'a' or 'the', quantifiers such as 'some' or 'every', demonstratives such as 'this' or 'that'), which are the functional head. In the NP, the N position is filled by a lexical noun and the specifier position can be filled by a modifier or a complement (Chierchia et al. 2001: 5–6). In the generative approach, the structure of the DP is assumed to be the one demonstrated in Figures 1.1 and 1.2.

```
                 DP
               /    \
       (specifier)   D'
                    /   \
                   D     NP
                   |    /   \
                   |  (specifier)  N'
                   |              |
                   |              N
                   |              |
                  this           car
```
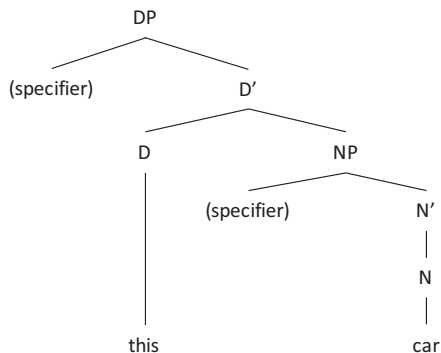
Figure 1.2: The syntactic structure of the DP (Lyons 1999: 43)

(as they refer to structures, e.g., double determination and possessives, not relevant for my empirical study), they are not included, and a simplified view is presented here.

Since 'bareness' is not defined in a unique way throughout the literature (Kabatek and Wall 2013: 8), it is inevitable to define bareness for the purpose of this study.

> Most of the studies on English in the tradition of the classical paper by Carlson (1977), for example, deal with plural nouns which are bare in the sense that they lack an overt pre-nominal determiner. […] English bare plurals are standardly assumed to be DPs.
>
> (Kabatek and Wall 2013: 9–10)

Turning to the semantics of the DP, Chierchia et al. (2001) argue, based on modern semantics, that Figure 1.3 demonstrates the denotation of the DP.
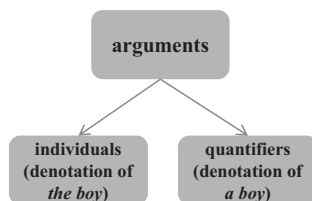
Figure 1.3: The semantic structure of the DP (Chierchia et al. 2001: 7)

The general assumption is that "each constituent has a denotation" (Chierchia et al. 2001: 6). Information about these constituents, which are individuals in our world, consists of predicated properties. These predicates that refer to individuals are true or false in reference to our world knowledge. Count nouns, such as *boy*, can be used as predicates as in (17) and can "restrict quantifiers" (Chierchia et al. 2001: 6) as in (18).

(17) John and Bill are nice boys
(18) every boy smokes = every x which *is a boy* smokes
                              (examples from Chierchia et al. 2001: 6)

Furthermore, Chierchia et al. (2001) argue that determiners turn predicates into arguments (individuals and quantifiers). The DP *the boy* denotes an individual and the quantificational DP *every boy* quantifies "over individuals" (6). As shown in Figure 1.3 "[b]oth individuals and quantifiers are argumental, because they are associated with constituents that occupy the canonical argument positions of clauses (i.e., the subject/object/indirect object position)" (Chierchia et al. 2001: 6).

In a next step, Chierchia et al. (2001) apply these findings to more complex properties of DPs, such as the singular/plural and the mass/count distinctions. Thus, so far we have learnt that count nouns can a) be used as predicates and b) restrict quantifiers and that determiners turn predicates into arguments, which are either individuals or quantifiers. Turning to the singular/plural distinction, a singular count noun such as *table* is "true of each individual table. The plural form *tables*, again a predicate, applies, instead, to any possible group of tables" (7). Plural and singular DPs are similar, since in our domain of discourse both have to be countenanced, singular individuals and plural individuals. "A plural DP will either denote a group [...] or quantify over groups" (8) (e.g., some tables). The singular/plural distinction is often marked by overt morphology. In contrast, the count/mass distinction is not. It is characteristic for mass nouns that they cannot be pluralized (e.g., milk/*milks), as already demonstrated in section 1.1; they cannot occur with numerals (e.g., *one milk/two milks); and they "need classifier/measure phrases to be quantized" (8) (e.g., three liters of milk). The three types of mass nouns – which do not differ in regards to the morphosyntactic characteristics just mentioned – are nouns of substances (e.g., water, milk), collectives (e.g., furniture), and abstract (e.g., hope, beauty). The reason that mass nouns cannot be pluralized is based on their meaning. The semantics of mass nouns is controversially debated in the literature. Following Chierchia (1998),[43] mass nouns are "the neutralization of the singular/plural distinction" (8), since they can refer to individual entities (e.g., "that table is cheap furniture" (9)) as well as to groups of these entities (e.g., "that table and that chair are cheap furniture" (9)). In English, mass nouns can occur as bare arguments in subject position as in (19a) and in object position as in (19b) (see also Section 1.2), which leads to the question as to whether mass nouns can be predicates, since predicates have to occur with a determiner in argument position.

(19) a. Milk is white
b. I like milk

According to Chierchia et al. (2001), the syntax of bare mass nouns could either be as in (20a), in which D is not projected and the bare NP is combined with a VP, or as in (20b), in which the D position is phonologically empty.

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43 A contrasting debate in reference to the syntax and semantics of mass nouns can be found in, e.g., Link (1983).

(20) a. [NP milk [VP is white]]
  b. [DP ∅ milk [VP is white]]
       (examples adapted from Chierchia et al. 2001: 10)

Bare mass nouns as in (21a) refer to kinds; *milk* refers to the milk-kind, since milk as such, and not only a portion of milk, is white. Thus, "[m]aximal plural individuals (e.g., the totality of gold portions, the totality of dogs, etc.) can be identified with kinds" (14). Kinds are "qualitatively homogeneous totalities and bare mass nouns can be used to refer to them" (10–11). Bare plurals and bare mass singulars are both used for kind-reference in English,[44] which leads Chierchia et al. (2001) to suggest that English bare plurals and bare mass singulars have identical syntax and semantics. In a next step, this claim is analyzed across different languages in order to check for crosslinguistic variation in the syntax and semantics of DPs[45] (Chierchia et al. 2001: 11).

 Across the Germanic languages, bare plurals and bare mass singulars are grammatical, their distribution is similar, and bare singular count nouns are ungrammatical (see also Section 1.1). In Romance languages, bare nouns are either ungrammatical (as in French) or their distribution is narrower (as in Italian) than in Germanic. In French, as already demonstrated in Section 1.2, the definite article has to be used for definite contexts as in (3k/21a) and (3j/22a and 3l/22b), and partitives[46] as in (6e/22c and 3g/22c) for indefinite contexts. Mass nouns are also not allowed in the plural, as shown in (3m/21b).

(21) mass nouns in French
   a. le lait est blanc
   b. *les laits sont blancs
   c. du lait coule parterre

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44 It depends on the particular theory one uses with regard to whether bare plurals and bare mass singulars refer exclusively to kinds or not (Chierchia et al. 2001: 11).

45 I will limit the discussion on crosslinguistic variation to Germanic and Romance languages, which includes the three languages (English, German, French) discussed in the present study, and also includes Chinese very briefly where necessary to understand the NMP.

46 Chierchia et al. (2001) call the partitives " 'bare partitives' " (12), which might be misleading since the partitives *du* (*de* + *le*) and *des* (*de* + *les*) contain a 'hidden' article. Therefore, 'bare partitive' might lead to confusion.

(22) count nouns in French
      a. le requin est dangereux
      b. les requins sont dangereux
      c. des requins sont dangereux

Italian also does not allow bare arguments in subject position but, in contrast to French, allows them in object position.[47]

As shown in Table 1.9, in the Germanic and Romance languages, the singular/plural and mass/count distinctions are marked. The main difference between German and English on the one hand and French on the other is the presence of bare nouns, which are allowed in Germanic languages for plural count nouns and singular mass nouns but are disallowed (as in French) or restricted in Romance languages.

Table 1.9: Typology of article versus bare noun systems in Germanic and Romance (adapted[a] from Chierchia et al. 2001: 13)

Language	Articles	Plural marking	Mass/count distinction	Presence of bare nouns
Germanic	Yes	Yes	Yes	Yes (pl/mass)
Romance	Yes	Yes	Yes	No (or restricted)

[a] 'adapted' since Chinese is not included in Table 1.9 as in Chierchia et al. (2001:13).

Chierchia et al. (2001) summarize that "[a]rticles turn predicates into arguments. However, bare plurals and bare mass nouns can also occur as arguments. In such a role they appear to be used to refer to kinds" (14).

When children acquire a language, be it L1 or L2, they are faced with the task of figuring out whether bare nominal arguments are allowed, and if so, in which contexts (Chierchia et al. 2001: 15), as will be discussed in more detail in Chapters 2 and 3. Table 1.9 shows that English allows bare nominal arguments, whereas French does not. Thus, native speakers of English have already figured out that bare nominal arguments are allowed for plural count nouns (bare plurals) and singular mass nouns (bare mass

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47 In contrast to Chierchia (1998), Dobrovie-Sorin and Laca (2003) argue that in Spanish, Italian, and Romanian, bare plurals in object position and bare singulars are predicates rather than arguments and that null determiners are not involved (Kabatek and Wall 2013: 7).

singulars). Therefore, the challenge in acquiring L2 French is to learn that bare nominal arguments are not allowed and that kind-reference/generic reference is expressed differently, i.e., by definite singulars, definite plurals, and definite mass singulars.[48] In contrast to that, L2 German learners do not have to face this task, since bare nominal arguments are allowed in English and German. In Chapter 2, we will analyze the child L2 learners' tasks in more detail.

1.3.1 The Nominal Mapping Parameter (Chierchia 1998)

I will now turn to Chierchia's (1998) Nominal Mapping Parameter (NMP), which investigates kind/generic reference across languages. DPs differ in their denotation crosslinguistically, and Chierchia (1998) analyzes reference to kinds crosslinguistically. The NMP offers an explanation for "crosslinguistic variation in the distribution of bare nominal arguments" (Chierchia et al. 2001: 37), arguing that the existence of articles blocks free type shifting from predicates to arguments and vice versa; for example, "the existence of bare plurals in English blocks plural definites from being generic in English. In contrast, in Romance, the absence of the bare plural allows the definite to expand its interpretative range" (Pérez-Leroux et al. 2004: 1).

The NMP claims that the syntactic category N is mapped into their interpretations, i.e., into arguments or predicates. Based on the occurrence of predicates and arguments (including the occurrence of bare nominal arguments and the way they refer to kinds), the NMP divides languages into three different types. As discussed in Section 1.3 and demonstrated in Figure 1.4, count nouns are either predicates (in predicate position and as restrictors of quantifiers) or arguments (as individuals or quantifiers). Even though determiners turn predicates into arguments, bare plurals and bare mass nouns can also occur as arguments when referring to kinds.

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48 In addition to indefinite singulars, indefinite plural partitives, and indefinite singular mass partitives as demonstrated in Section 1.2. Since the focus is on the structures relevant in the empirical study in Chapter 3, these three DPs are listed.
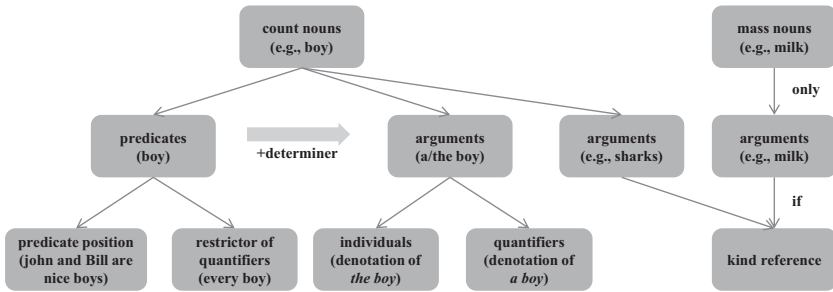
Figure 1.4: Count and mass nouns as predicates and arguments (based on Chierchia 1998)

Thus, as demonstrated in Figure 1.5, nouns occur as predicates (in predicate position and as restrictors of quantifiers) or arguments (as individuals, quantifiers or "devices for kind reference"/"names of kinds" (Chierchia 1998: 352)).[49]
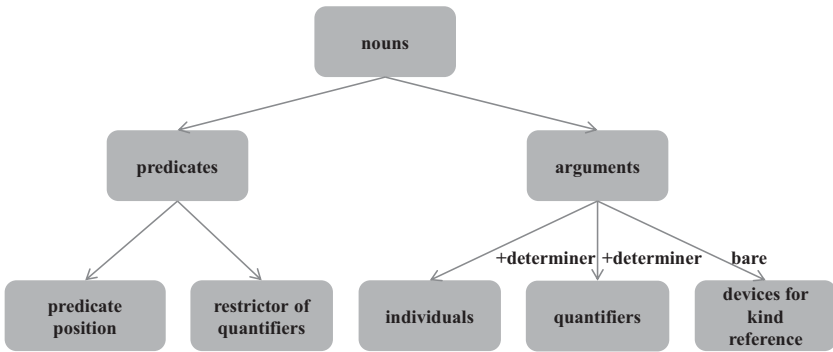
Figure 1.5: Nouns as predicates and arguments (based on Chierchia 1998)

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49 Chierchia et al. (2001) explain when defining the NMP that "interpreting any symbolic array […] involves, minimally, mapping its syntactic structures into individuals and properties/relations (i.e., predicates) so that, in virtue of this mapping, configurations of symbols wind up decoding information on how things are arranged" (37/38) and add that "[t]ypically one assumes that proper names map into individuals and verbs into predicates. But what do common nouns map into? Sometimes they seem to play the role of proper names (e.g., when they are used in English to refer to kinds); sometimes they seem to act as predicates (e.g., when they are used to restrict the range of quantifiers)" (38).

A count or mass noun in its semantic origin is either: (a) kind-denoting, (b) predicate denoting, or (c) free, i.e., it will turn into kind or predicate denoting. Based on these three semantic options, the NMP explains this variation of count and mass nouns across languages. According to Chierchia (1998), each language chooses one of these options, which leads to "the major properties of its nominal system" (Chierchia et al. 2001: 38).

The features [±arg] and [±pred] are suggested to constrain "the way in which the syntactic category N (and its phrasal projection NP) are mapped into their interpretations" (353). Thus, [+arg] means that N can be mapped into arguments "(i.e., for common nouns, kinds)" (353), [+pred] means that N can be mapped into predicates.

The three language types will be presented in the following, but a focus will be put on type 2 and 3, since they are relevant for the empirical study in Chapter 3, which is conducted in French and German with native speakers of English.

Type 1 languages, such as Chinese, choose option a), i.e., all common nouns start out as kind-denoting. These languages do not require articles, as common nouns can occur without a determiner in argument position and therefore allow sentences such as 'boy hugs girl' ([+arg, -pred]) or " 'I saw dog' (by analogy with 'I saw that kind of animal') and 'dog bark' (by analogy with 'a dog barks')" (Chierchia et al. 2001: 39). Thus, determiners are not required in singular and plural phrases for count and mass nouns in subject and object positions. NP [+arg, -pred] languages consist of "a category-type mapping that makes NPs argumental" (Chierchia 1998: 354), and "all nouns are going to be, in some sense, mass" (353).

Type 2 languages, such as the Romance languages, choose option b), i.e., all common nouns start out as predicate denoting. "[S]ince predicates by definition cannot occur in argumental positions, such a language should disallow bare nominal arguments altogether" (Chierchia 1998: 355). Common nouns are predicates or property/relation denoting which allows them in argument positions only if D is projected, e.g., 'The boy hugs the girl' ([-arg, +pred]). "It is of course conceivable that a language has a phonologically null D. French, evidently, doesn't" (355). Furthermore, it is argued that properties are sensitive to number distinctions, which refers to the singular/plural distinction, and that properties are " 'sortal' (i.e., kind related)" (Chierchia et al. 2001: 41), leading to count and mass properties. Plural marking is necessary for count nouns, but not for mass nouns, since "they

apply to aggregates of arbitrary size" (Chierchia et al. 2001: 42). In type 2 languages, definite kind-reference (e.g., "sharks are dangerous" or " 'dodos are extinct' "(42)) is expressed by using the definite plural article (e.g., "les requins sont dangereux"). The definite plural article is used in order to turn properties into kinds, since "kinds may be equated with the totality of their instances" (42) and the definite plural article applies to properties and refers to the maximum of which the property is true. Indefinite kind-reference (e.g., "sharks are hungry" or " 'firemen are available' " (42)) is expressed by an indefinite plural article, such as the partitive *des* in French (e.g., "des requins ont faim"). Figure 1.6 summarizes that common nouns denote properties/relations or are predicative in type 2 languages (such as French), leading to (i) the fact that bare arguments are ungrammatical, (ii) the distinction between mass and count nouns, (iii) plural marking for count nouns, (iv) kind-reference through plural articles, and (v) the obligatory projection of D.
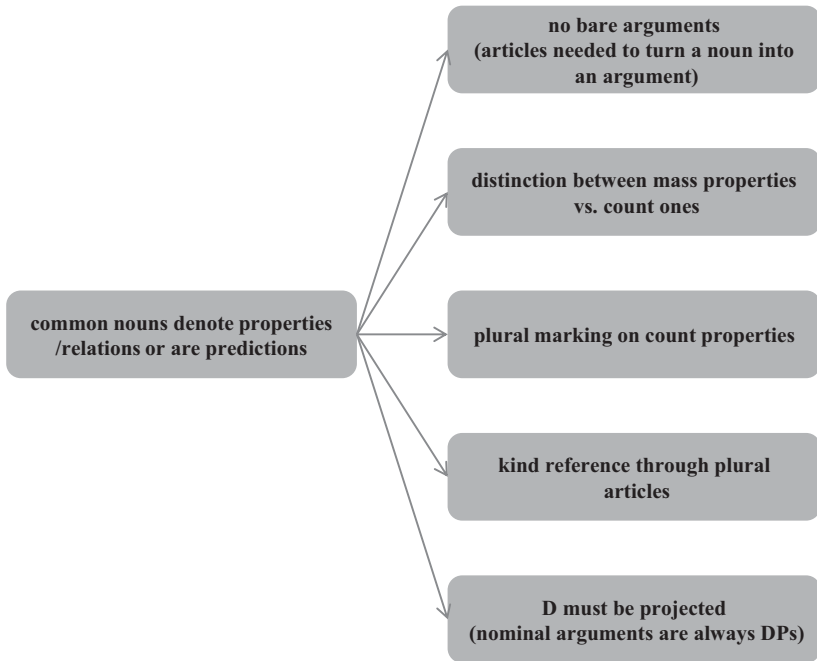
Figure 1.6: The semantics of common nouns in type 2 languages (Chierchia et al. 2001: 43)

"[M]odulo the availability of a null D, we will have either no bare arguments or bare arguments restricted by conditions that typically govern the distribution of phonologically null elements" (Chierchia 1998: 356) as in Italian or Spanish.

Type 3 languages, such as Germanic languages, choose option (c), i.e., all common nouns are free to start out as kind-denoting (argumental) or predicate denoting (property/relation denoting). Argumental and predicative DPs are possible, e.g., 'The boy hugs the girl', 'Boys hug girls' ([+ arg, +pred]), and "their phrasal projections can be freely shifted back and forth through the available type shifting operators" (Chierchia 1998: 356). Germanic languages are similar to Romance in reference to singular count nouns and like Chinese with regard to mass and plural nouns. In type 3 languages, nouns can start out as kinds but can be turned into predicates or they can start out as predicates and be turned into arguments. Two types of sortal properties in semantics are those of count and mass. Mass nouns refer to aggregates such as "water" in small amounts or in maximum amounts, such as the "totality of water in the universe [...], the water-kind" (45). Thus, type 3 languages can use mass nouns in argument position as kinds as in (23a) or in predicative position as predicates as in (23b) depending on the context.

(23) a. water is scarce [the water kind (the totality of water) is scarce]
　　　b. most water is polluted [most quantities of water are polluted]
<div align="right">(Chierchia et al. 2001: 45)</div>

In summary, in English and German, mass nouns start out as kind-denoting similar to type 1 languages and are turned into predicates when needed. However, count nouns start out as predicate denoting similar to type 2 languages, and they can be kind-denoting in argument position in the plural but not in the singular. A count noun (e.g., "dog") refers to individuals and cannot be turned into kinds (in argument position), as shown in (24a), whereas the plural of a count noun (e.g., "dogs") applies to a group or to the totality of these individuals. Therefore, the plural can be used for kind-reference as in (24b), which is comparable to singular mass nouns.

(24) a. *Dog is widespread.
　　　b. Dogs are widespread.
<div align="right">(examples from Chierchia et al. 2001: 46)</div>

Thus, in English and German, the projection of D is optional; bare plurals and bare mass nouns are grammatical, and other nominal arguments require a determiner. In (25), "the major characteristics" (Chierchia 1998: 357) of an NP [+arg, +pred] language are summarized.

(25) NP [+arg, +pred]
    a. The language has the mass/count distinction (the N ⇒ arg option yields mass nouns, whereas N ⇒ pred yields count nouns)
    b. Mass nouns will occur as bare arguments; (singular) count nouns won't.
    c. Free use of '∩'[50] is allowed by the category-type mapping. But it is defined (it yields kinds) only for plurals; as a consequence plurals will be able to occur as arguments.

<div align="right">(Chierchia 1998: 357)</div>

In summary, type 1 languages (e.g., Chinese) are kind-denoting (argumental), type 2 languages (e.g., French) are predicate denoting (predicative), and type 3 languages (e.g, English and German) are both kind- and predicate denoting, i.e., kind-denoting for plural count and mass nouns and predicate denoting for singular count nouns.

For type shifting, the tools '∩' and '∪' are used due to "a principal that seems to be fundamental for the architecture of grammar, which says […], 'Language-particular choices win over universal tendencies' […], or 'Don't do covertly what you can do overtly.'" (Chierchia 1998: 360). Thus, if a language can overtly achieve its goal (e.g., by using a structure that expresses the same meaning as one of the type shifting operations), then types should not shift covertly. Type shifting only happens as a "'last resort'" (360) if there are no overt ways to achieve the goal. If there are overt ways to express a meaning, these block the particular type shifting operations. This is called the *Blocking Principle* (360). Thus, if a determiner D expresses the same meaning as achieved by a type shifting operation ("that Universal Grammar makes available" (Chierchia 1998: 361)), D blocks the type shifting operation. This explains why in article-less

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50 Chierchia (1998) defines '∩' as the corresponding kind of a property: "If DOG […] is the property of being a dog, then let ∩DOG be the corresponding kind. Conversely, if d is the dog-kind, let ∪d be the property DOG of being a dog. '∩' and '∪' are maps that allow us to get a kind from the corresponding property and vice versa" (349), and "[t]hese operations ['∩' and '∪'] map properties (i.e., intensional entities) into individuals (and vice versa)" (359).

languages like Chinese or Russian (type 1 languages), bare arguments can "have a generic, definite, or indefinite meaning, depending, presumably, on the context" (Chierchia 1998: 361), i.e., in these languages, there is no article blocking type shifting operations and "the type assignment lets such languages shift freely from pred to arg" (361). In contrast, in type 3 languages such as English and German, the article blocks free shifting from predicate to argument and bare plural arguments block the generic reading for definite plural arguments.[51] Type 3 languages allow "bare NPs to refer to kinds. And that would be *all* that is needed to explain their behavior" (Chierchia 1998: 363). In type 3 languages, bare arguments (comparable to indefinite singulars) occur with "kind-selecting predicates" (Chierchia 1998: 363) (i.e., individual-level predicates) having a "universal reading in generic contexts" (363) and with "non-kind-selecting predicates" (363) (i.e., stage-level predicates) having "an existential one in episodic contexts." Chierchia (1998) explains the fact that bare arguments such as *sharks* can also have a non-generic reading with the Derived Kind Predication[52] (DKP), which is "a type shifter that applies on demand" (365). The sentences in (26) in an episodic context have a non-generic interpretation, since "whenever an object-level argument slot in a predicate is filled by a kind (in an episodic frame), the type of the predicate is automatically adjusted by introducing a (local) existential quantification over instances of the kind" (364).

(26) a. Sharks are hungry.
    b. Sharks are around the boat.

The sentences in (27) are ambiguous. One interpretation is generic, "Dogs are biting dogs" (365), and the other is non-generic, "Each dog is biting itself" (365), depending on the way the pronoun is read, i.e., "as a kind-level or as an object-level variable" (365).

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51 "English-like languages, in spite of having the definite article, must use bare NPs for generic and kind predication" (Chierchia 1998: 394).

52 The Derived Kind Predication, which is a type shifting mechanism is defined by Chierchia (1998): "whenever an object-level argument slot in a predicate is filled by a kind (in an episodic frame), the type of the predicate is automatically adjusted by introducing a (local) existential quantification over instances of the kind" (364).

(27) a. Dogs were biting themselves.
    b. Goldfish were biting people who were admiring them.

<div align="right">(examples from Chierchia 1998: 365)</div>

Furthermore, Chierchia (1998) argues that the DKP explains "why mass nouns and bare plurals pattern alike – a story which crucially rests on what kinds are" (366). Chierchia (1998) argues based on Lewis (1975) and Carlson and Pelletier (1995) that "the generic operator is a modalized universal quantifier" and that "the generic operator Gn is part of the verbal aspect, and thus, licensed within an appropriate aspectual functional head (cf. Chierchia 1995a and the references there)" (366). The according tree structure and its semantics are shown in (28).

(28) a. tree (from Chierchia 1998: 366)
    b. Gn s [C(f, s)] [smoke(f, s)]
       'Every situation s of the appropriate type containing Fred is a situation in which Fred smokes.'

<div align="right">(Chierchia 1998: 366)</div>

'C' […] is a variable, whose value is supplied by the context. Intuitively, its purpose is to restrict the domain of Gn to appropriate individuals and situations. In the case at hand, it restricts the domain of Gn to situations where the factors that typically trigger smoking for Fred are satisfied. The scope of Gn is its c-command domain, while its restriction is what locally c-commands it (in the case at hand, the subject). Let us say that the variables bound by Gn are obtained from material in its restriction via a process of accommodation (see, e.g., Kratzer 1995, Chierchia 1995a, and many others) (Chierchia 1998: 366–367).

Furthermore, "the universal reading of bare plurals in generic contexts" is shown in (29).

(29) a. Dogs bark.
    b. Gn x, s [∪∩dog(x) ∧ C(x, s)][bark(x, s)]

<div align="right">(Chierchia 1998: 367)</div>

In type 2 languages, such as French,

the syntax-semantics map for the category NP in Romance is NP[-arg, +pred]. As pointed out above, a language with this setting will have the mass/count distinction, but will systematically tend to disallow bare arguments, as the semantic type of NPs is unsuited to canonical argument position. French basically fits this bill (Chierchia 1998: 383).

According to Chierchia (1998: 386), French and Italian differ, since Italian has a null Determiner and French does not.[53] "[A]s generic and kind-level readings are concerned, Romance fills its gaps by means of the plural definite article. Unlike what happens in English, the definite plural readily admits of generic and kind-oriented interpretations" (Chierchia 1998: 392). Chierchia shows for Romance languages (using Italian as an example) that generic readings for definite plurals are possible as generic sentences (e.g., *Les chiens aboient*), and in combination with an individual-level/kind-seeking predicate[54] (e.g., *Les chiens sont répandus, Les requins sont dangereux*).

Chierchia (1998) argues that the Avoid Structure Principle, which states "Apply SHIFT at the earliest possible level" (393) as "economy-based constraint" (393), explains that the definite plural cannot be used for generic reference, since "English, given its category-type map, can apply SHIFT at the NP level, something that is impossible in Italian. Evidently, when this option is available, it must be chosen over one which involves projecting D" (Chierchia 1998: 393).

The NMP can be used as an acquisition device, since the three types are presented as a parameter setting model by Chierchia (1998). It is suggested that N(ouns) can have two features, ± arg(umental) and ± pred(icative), in order to describe the way nouns are realized in varying languages. These two features constrain the way N is mapped into its interpretation, as shown for the three language types in (30).

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53 "If NPs in Italian are predicates like in French, they can only be arguments if a D position is projected. We are thus led to conclude that Italian bare arguments are in fact DPs with a null D. […] It is a slight variant and update of what has been proposed in the work of Contreras, Torrego, and Longobardi. The innovation contributed by the present account is that the necessity of projecting D in Romance is motivated by the category-type assignment hypothesized for this language family. Further differences concern the semantics, […] bare arguments in Italian, when grammatical, should have the same semantics as their English counterparts" (Chierchia 1998: 386–387). Based on the differences between French and Italian, it could be argued that Romance has to be divided into type 2a (French) and type 2b (Italian).

54 In the case of an individual-level predicate, "there will be a type mismatch. However, to get at the kind (given what kinds are) it suffices to abstract over worlds/situations" (Chierchia 1998: 392).

(30) *The Nominal Mapping Parameter (NMP)*: N ⇒ [±pred, ±arg]
     [-pred, +arg] every (lexical) noun is mass ⇒ Chinese
     Mass/count languages
     [+pred, -arg] bare arguments disallowed {no ∂ ⇒ French
     [+pred, +arg] bare arguments allowed {articles ⇒ Germanic (E/G)
                                        (adapted[55] from Chierchia 1998: 400)

Based on the NMP, Chierchia (1998) makes some predictions for L1 acqui-sition. He assumes the child to initially go through a Chinese stage, then through a Romance stage, and finally through a Germanic stage based on the subset principle (Wexler and Manzini 1987), "according to which one should start with the setting that rules out the most, so that the child can revise his hypothesis, if need be, on the basis of positive evidence" (Chierchia 1998: 400). Accordingly, the child will only go through the stages necessary for the target language, i.e., if the input provides evidence for the Romance stage, the child will not move on to the Germanic stage. Following the subset principle, the child would initially use [-pred, +arg], use nouns as mass, omit articles, and use all nouns as kind-denoting. If the child finds evidence in the input for the initial setting to be wrong, e.g., evidence for the singular-plural contrast has been found early on in child grammar (e.g., De Villiers and De Villiers 1973), the child moves on to the Romance stage, which does not allow bare arguments. If "bare arguments (in ungoverned positions)" (Chierchia 1998: 401) occur in the input, the child moves on to the Germanic stage. Furthermore, it is predicted that the pace will vary for a child acquiring French in comparison to English/ German. The child is expected to find evidence in the input for the target grammar in French (e.g., "that the singular-plural contrast exists and/or that numerals can combine directly with nouns" (401), which leads to "the right setting for the parameter, which disallows bare arguments" (401)) faster than a child acquiring English and having to find out "whether a noun refers to a kind (and hence is mass and can be a bare argument) or to a predicate (and hence is count and, in the singular, cannot be a bare argument)" (401). Chierchia (1998) points out that the NMP is a contrast to the assumption that the syntax-semantics map is language universal

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55 The languages not relevant for this discussion were excluded here (i.e., Slavic and Italian) and the sequence was adapted to types 1–3 described above.

"and that, as a consequence, the category D must always be projected for argumenthood" (402).

This parameter setting model will be applied to child second language acquisition in Chapter 2. The NMP leads to predictions in reference to the acquisition of DPs with generic reference in L2 French and L2 German presented in Chapter 2.

Subject and object positions are examined in order to include both individual-level predicates following the DP, and intensional predicates preceding the DP. In order to control for possible differences in subject and object positions, i.e., within the Romance type, French and Italian differ since French requires an article in all argument positions, whereas Italian requires an article in subject position but a phonological null determiner for plural phrases in object position is possible.

1.3.2 The Universal Scale of Definiteness (Dayal 2004)

Another theoretical account for generic reference is Dayal's (2004) proposal of a universal scale of definiteness to elucidate plural/mass kinds variation across languages. Under this account, rather than parameter setting to distinguish between three language types (see the NMP in Section 1.3.1), languages are considered to fall on a continuum of the degree to which the definite determiner is lexicalized. Of importance to this universal scale are the type-shifting operations ∩ ('down'), mapping "properties to functions from situations to the maximal entity that satisfies that property in that situation" (Dayal 2004: 399), and ι, which maps "properties to the unique/maximal individual satisfying that property" (Ionin, Montrul and Santos 2011a: 969). Though ∩ and ι are like operations, ι is a constant function to an individual that is established contextually, while ∩ is a function whose extension varies according to the situation (Dayal 2004: 421).

To lay the foundation for this crosslinguistic continuum, Dayal (2004) first establishes that the definite determiner present in definite singular generic constructions has the same properties that are typically associated with the definite determiner. In other words, there is no "definite generic determiner," but rather definite determiners select the maximal entity from an ordinary set – in the case of non-generic reference – or a set of "taxonomic entities" for generic reference contexts (Dayal 2004: 433). The

assumption that the definite determiner merely selects from different sets for generic and non-generic reference means that how a generic construction is expressed crosslinguistically depends on how ι is available: If ι is encoded lexically, then the language will have definite generic constructions, but if ι is realized as a covert type-shift, the generic construction will be bare (435). Though the ∩ 'down' operation can also be realized as an overt or covert type-shift, the lexical (overt) encoding will be the determiner encoding ι, thus making ∩ and ι the same function, despite the different intentions of expression (437). There is, however, a non-linear relationship between these operations as regards definiteness, with ι being higher on the proposed universal scale than ∩. As a consequence, a language cannot lexicalize ∩ without also lexicalizing ι. Crosslinguistic variation in the realization of generic definite contexts occurs as languages 'choose' different cut-off points on this scale with respect to the degree of lexicalization of the definite determiner.

In order to situate different languages on a universal scale, Dayal considers languages which lexicalize both ∩ and ι to be at one end and languages which lexicalize neither ∩ nor ι to be at the other (2004: 421). Determiner-less languages such as Hindi, Russian, and Chinese can clearly be placed at the latter end, as neither operation is lexicalized. Languages with determiners, on the other hand, vary as to whether they appear at the other end of the scale, lexicalizing both operations, or whether they fall somewhere between and thus can be considered hybrids.

Romance languages – including French – are languages which lexicalize ∩ and ι and therefore appear at the opposite end of the scale from determiner-less languages. The lexicalization of both these operations is evident in the fact that in French, as with other Romance languages, such as Italian, definite marking is used for both singular and plural kinds given that bare singulars and plurals are ungrammatical (31) in these languages (Dayal 2004: 438).

(31) a. Le chien / *chien est répandu.
         The dog / *dog is widespread
     b. Les chiens / *chiens sont répandus.
         The dogs / *dogs are widespread
                              (examples translated from Dayal 2004: 438)

Like Romance languages, German also lexicalizes both ∩ and ι, though it does not as clearly fit at the end of the scale and thus represents a hybrid to some degree. In German, kind-reference can use either bare or definite plurals/mass singulars (32):

(32) a. (Die) Pandabären sind vom Aussterben bedroht.
         'Pandas are facing extinction.'
     b. (Das) Gold steigt im Preis.
         'Gold is getting more expensive.'

<div align="right">(examples from Krifka et al. 1995)</div>

While at first glance it may appear as though this optional definiteness in German runs contra to the "Blocking Principle" (Chierchia 1998; see Section 1.3.1), Dayal argues that together the scale of definiteness and the "Blocking Principle" can accommodate the German data by considering the distinction between canonical and non-canonical functions of the definite determiner (2004: 442). Under this view, in languages such as German, where both operations are lexicalized, the canonical meaning of the definite determiner is represented by ι and the non-canonical meaning by ∩ (442). If the "Blocking Principle" is considered to only apply to the canonical function of the determiner, then German falls at the same end of the scale as Romance languages. The difference between the two language types is that for Romance languages the "Blocking Principle" applies to both the canonical and non-canonical functions of the determiner, while for German it applies only to the former (442).

Unlike French and German, which can be placed at the end of the scale of definiteness (with some minor exceptions in the case of German), English clearly constitutes a hybrid. In English, only ι is lexicalized and thus bare plurals and mass singulars express kind (33):

(33) a. Sharks are dangerous.
     b. Milk is white.

In sum, while Dayal's proposal for crosslinguistic variation with respect to definiteness makes some assumptions in line with Chierchia's NMP (e.g., the important role of the "Blocking Principle"), the way in which languages are classified differs fundamentally. For Dayal, definiteness is a continuum of the degree to which maximality (ι) and kind formation (∩) are lexicalized. Determiner-less languages such as Russian appear at

one end of this continuum (lexicalizing neither ∩ nor ι), with languages including French and German, lexicalizing both operations, at the other end. Languages such as English are hybrids, falling along the continuum, in this case, lexicalizing ι but not ∩.

1.4 Summary

Generic reference varies crosslinguistically. In English, German, and French, generic reference differs with regards to bare plurals, definite plurals, bare mass singulars, and definite mass singulars. The grammatical context influences the interpretation of these DPs. Individual-level and intensional predicates rather lead to generic reference, whereas stage-level and extensional predicates rather lead to non-generic reference.

The theoretical proposals presented in this chapter are the NMP and the universal scale of definiteness. According to the NMP, the category N is mapped into its interpretations, into arguments or predicates. Based on the occurrence of predicates and arguments (including the occurrence of bare nominal arguments, e.g., bare plurals and bare mass singulars, and its interpretation, e.g., kind-reference), languages are divided into three types, (1) [+ arg, -pred], like Chinese; (2) [-arg, +pred], like Romance; (3) [+arg, +pred], like Germanic. The existence of articles is argued to block type shifting. Chierchia (1998) argues that definite plurals in Germanic are blocked from having generic reference, since bare plurals exist, which can have generic reference. In Romance, the fact that bare arguments are ungrammatical allows generic reference for definite plurals.

According to Dayal's universal scale of definiteness, Germanic and Romance languages differ in whether type shifting operations apply overtly, i.e., with an overt determiner, or covertly, i.e., bare, without an overt determiner. Dayal (2004) claims that both definite and bare subjects can refer to kinds in German. According to her, German is a "mixed type in allowing plural kinds to be definite or bare" (Dayal 2004: 397). Determiner-less languages appear at one end of this continuum (lexicalizing neither ∩ nor ι), with languages including French and German, lexicalizing both operations, at the other end. Languages such as English are hybrids, falling along the continuum, in this case, lexicalizing ι but not ∩.

Thus, the crosslinguistic differences that were observed in the first part of the chapter in a rather descriptive way are explained in the second part of the chapter in an analytic way. Chierchia's division in three language types results in type 3 languages, such as English and German, being similar to type 2 languages, such as French, with regard to singular count nouns and different with regard to mass and plural nouns, which confirms the observations from the first part of the chapter. Dayal's continuum places languages on a continuum based on the degree to which the definite determiner is lexicalized.

Chapter 2 Child Second Language Acquisition of Generic Reference

2.1 Introduction

This chapter deals with the learning task a child second language learner is faced with when acquiring functional categories,[56] in particular generic DPs.

Section 2.2 deals with second language acquisition discussing the way children acquire a second language[57]. The question whether cL2 learners have access to Universal Grammar in the same way as L1-children, i.e., whether the L2 is governed by universal principles and whether the language-specific parameters and features are reset and reassembled according to the L2 grammar, will be debated in this section. This research project examines the L2 acquisition of generic reference in terms of three generative second language acquisition theories: the Full Transfer/Full Access Hypothesis (Schwartz and Sprouse 1994, 1996), the Feature Reassembly Hypothesis (Lardiere 2000, 2009), and the Bottleneck Hypothesis (Slabakova 2008, 2016), which are complementary to each other, or to be more precise, which build upon each other. These theoretical proposals will be applied in the empirical study in Chapter 3. The major claims of each hypothesis will be summarized in this chapter. The FTFA claims that the initial state of L2 acquisition is the final state of L1 acquisition, which means that the starting point of the L2 grammar is the already acquired L1 grammar and the initial state of the L2 system will be restructured by accessing Universal

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56 Functional categories or functional morphology can be defined as follows: "*Functional morphology*: Morphemes that carry the grammatical meanings in a language, such as tense, aspect, definiteness, person, number, gender etc. It comprises inflectional morphemes, which are bound, and free morphemes, such as determiners and auxiliaries in English" (Slabakova 2016: 420). Thus, definiteness is a functional category, determiners are free morphemes.

57 Section 2.2 focuses on cL2A. However, this does not necessarily mean that none of this information is relevant for aL2A, but rather that most of the aspects discussed, i.e., the influential factors, the L2A theoretical proposals, etc. are relevant for L2A in general.

Grammar. Thus, functional categories in L2 are initially available. The FRH maintains that a different algorithm needs to be acquired for the assembly of abstract features. If the features and algorithms in L1 and L2 are the same, there will be no difficulty. The more features need to be reassembled, the more difficulty will be faced by the L2 learner. The BH argues that the L2 learner's learning tasks are to map forms to interpretations, to map forms to grammatical features, which involves feature reassembly, and to identify the grammatical contexts. Due to the complexity of this task, the area of functional morphology related to referentiality will cause difficulties for the L2 learner if L1 and L2 differ, and therefore, the acquisition of functional morphology is expected to take longer. According to the BH, L2 teaching efficiency increases if functional morphology is explicitly taught in the case of an L1–L2 mismatch.

Section 2.2.1 discusses factors influencing child L2 acquisition, section 2.2.2 deals with the child L2 developmental course, section 2.2.3 focuses on individual L2 learner variation, and section 2.2.4 deals with immersion education, arguing that immersion programs are a natural L2 learning context in an educational setting. The immersion program at Waddell Academy will be presented in section 2.2.4.1, since all L2 learners who participated in the empirical study are either enrolled in the L2 German or in the L2 French full language immersion program at Waddell Academy. Section 2.2.5 discusses the theoretical approaches to L2A relevant for the empirical study and in section 2.2.6 the major claims of section 2.2 will be summarized.

The acquisition of generic DPs focusing on cL2 learners acquiring generic reference will be discussed in Section 2.3. A review of the literature on the acquisition of generic reference in various acquisition populations focusing on Germanic and Romance languages will be presented in section 2.3.1. Based on previous findings and on crosslinguistic variation in English, German, and French, the learnability of generic reference will be examined by investigating the child L2 learner's learning tasks in section 2.3.2. As we have seen in Chapter 1, the way generic reference is expressed varies crosslinguistically. Since several features are involved when acquiring generic DPs (e.g, [±definite], [±singular], [±count], [±subject]) as well as the possibly new linguistic contexts (e.g., the choice of the predicate, the adverbial cues such as "in general, normally"), L2A of generic reference is a complex process. In accordance with the FRH and the BH, the complexity of the feature

reassembly processes in the L2 learner's interlanguage grammar, the bottleneck of functional morphology that has to be passed, the poverty of the stimulus, and the maturational constraints are argued to cause L2 learner difficulties when acquiring generic reference. The FTFA, the FRH, and the BH assume the L2 child to start out with the L2 initial state being the final state of L1A. Thus, all the features involved in expressing generic reference in the L1 will be transferred in the initial L2 grammar. The learner's task is to reassemble the features and to acquire the contexts in which these features can be reassembled in order to express generic reference based on UG interacting with the L2 input. In addition, factors such as cognitive maturation, length of L2 exposure (LoE), and individual variation will be taken into consideration. L2 development will be investigated by dividing the L2 learner groups according to LoE and proficiency (in Chapter 3).

The research questions and hypotheses for the empirical study, which are motivated by the FTFA, the FRH, the BH, and the NMP, will be presented in Section 2.4.

2.2 Child Second Language Acquisition

This section will first define child second language acquisition and then introduce the second language acquisition process.

Child L2 learners are first exposed to a second language between the ages of four to seven years[58] (e.g., Meisel 2011; Schwartz 2003, 2004; Unsworth 2005). This age range is determined by the following assumptions. The acquisition of first language grammar is mostly completed at the age of four (Meisel 2011); after that, mainly lexical items are being added. Thus, the precondition for cL2A is that one grammar is in place when the child is exposed to another language. However, there is also evidence for the fact that in first language acquisition "a lot of complex constructions are not acquired by children until much later than the age of 4" (Slabakova

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58 This age range varies slightly in the literature. Schwartz (2003) suggests four to seven years, while Unsworth (2005, 2008) and Haznedar and Gavruseva (2008) both suggest four to eight years. However, the age range is based on the same theories, and the difference is so minimal that it does not affect the assumptions in the current study. The child L2 learners in this study (see Chapter 3) were initially exposed to the L2 between the ages of 4;10 to 6;6 years.

2016: 143). Thus, at the age of four, the L1 grammar is supposedly mainly acquired. The upper point of seven years of age is based on the critical period hypothesis[59] (CPH) (Lenneberg 1967). The CPH states that after a certain age, language learning mechanisms cease to be available, and therefore, language learning supposedly differs before and after this critical period. The existence of such a critical period and the exact age at which it begins are subjects of controversy, and the latter varies in the literature from eight years to puberty. Therefore, the definition of an L2 child is based on the most conservative form of the CPH in order to exclude further influencing factors. Thus, the upper limit of seven years assures that the language acquisition processes remain as in (2)L1A (Schwartz 2003).

How are second languages acquired by children (and adults), and what are the L2 learners' learning tasks? In order to answer these questions, the factors that play a role in the acquisition process need to be analyzed, including which components of language acquisition are innate, which components are transferred from the first language, and which properties can be acquired through input in the second language.

According to the generative approach, for L1A (and L2A), three factors are essential, according to Chomsky (2005), as pointed out by Slabakova (2016):

a. Genetic endowment
b. Experience
c. Principles not specific to the faculty of language.

<div align="right">(Slabakova 2016: 5)</div>

Genetic endowment relates to Universal Grammar (UG), a language acquisition device that all human beings are born with. Experience is what we gain by being exposed to input. The principles could be "principles of data analysis" (6) or "of efficient computation" (6).

The second language acquisition process is influenced by the same factors in addition to the first language, i.e., the first language(s) (L1), UG or the Language Acquisition Device (LAD), and linguistic input in the second language (L2).

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59 The critical period hypothesis will be discussed further in this chapter in the section on age.

The L2 learner that starts acquiring a second language has by definition acquired a first language (L1), including the L1 grammar. Therefore, the starting point for L2A is the L1. Almost all SLA researchers[60] agree that the L1 influences the L2A process. The influence of the L1, the so-called L1-transfer[61] (Odlin 1989), leads to properties of the L1 being transferred to the L2.

Universal Grammar (Chomsky 1959, 1965) is an innate capacity consisting of principles and parameters. The principles are language universal, whereas the parameters are language specific. Access to UG allows the L2 learner to use the universal principles, which provide knowledge on language as such, for L2A, and to reset the parameters acquired in the first language. In the meantime, it has been shown that parameter resetting does not do justice to the complexity of the L2A process and that the L2 learners' learning task is rather feature reassembly (Lardiere 2009), which will be discussed in Section 2.2.5.

Thus, the L2 learner starts out with the L1 grammar transferred to the L2, and with access to UG, which enables the L2 learner to reassemble the features that have been transferred from the L1. What the L2 learner needs in the next step is information about the properties of the L2 which will be received through experience, i.e., the L2 input. By being exposed to the L2, the L2 learner acquires lexical items in the L2 as well as the L2 grammar through mapping and feature reassembly.

The influence of these three factors (L1, UG, L2 Input) leads to the developmental course of the L2, as demonstrated in Figure 2.1. The child's second language – the 'interlanguage'[62] (Selinker 1972) – is dynamic and systematic in its development and develops from interlanguage 1 to interlanguage 2 to

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60 See Slabakova (2016) – she points out one set of researchers who do not agree.

61 The terms transfer and crosslinguistic influence are used interchangeably in this study. Thus, I do not make a distinction between transfer (copying of a representation) and crosslinguistic influence (a more transient processing phenomenon) (see, e.g., Rothman 2015).

62 "The concept of interlanguage was proposed independently in the late 1960s and early 1970s by researchers such as Adjémian (1976), Corder (1967), Nemser (1971) and Selinker (1972)" (White 2003: 1). The term 'interlanguage' is "attributed to Larry Selinker, based on ideas by Uriel Weinreich" (Slabakova 2016: 421).

interlanguage n, representing L2 development. There might be a stage at which the L2 stops developing, which is the point of ultimate attainment representing the outcome of L2 acquisition and therefore the L2 endstate.
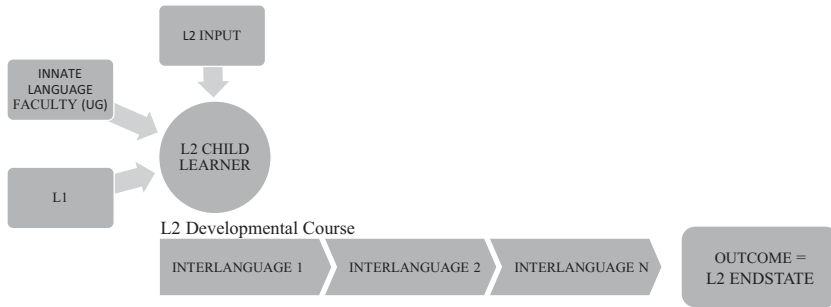
Figure 2.1: Child second language acquisition

Selinker (1972) analyzes the contrast between the native language (NL), the target language[63] (TL), and the interlanguage (IL). This approach is based on the contrastive analysis (CA) between the L1 and L2 predicting errors based on the differences between the two languages, which has nonetheless been shown to be insufficient to explain all errors (e.g., Slabakova 2016: 171). A comparison reveals that the adult L2 learners' utterances differ from the "set of utterances which would have been produced by a native speaker of the TL had he attempted to express the same meaning as the learner" (Selinker 1972: 24), leading to the assumption of "the existence of a separate linguistic system based on the observable output which results from a learner's attempted production of a TL norm. This linguistic system we will call 'interlanguage' (IL)" (24). The interlanguage consists of "the utterances which are produced when the learner attempts to say sentences of a TL" (24). The interlanguage follows a system that consists of "rule-governed behavior" (White 2003: 1). Thus, the errors an L2 learner produces are not random, but predictable, since they are part of a system. This system, however, might differ from the L2 learner's L1 system, from

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63 The target language is defined by Selinker (1972) as "the second-language the learner is attempting to learn" (24).

the target language's child L1 developmental system as well as from the target language's adult L1 system. "It can contain hybrid grammatical rules as well as additional rules due to overgeneralization of specific target features" (Slabakova 2016: 421). In contrast to CA, the concept of interlanguage "being systematic allows the researcher to make predictions and *explain*, not just describe, behavior" (Slabakova 2016: 172). Furthermore, L2 learners with various L1s have been shown to go through comparable developmental stages when acquiring complex structures, i.e., from the initial state to "various interlanguage stages at which deterministic changes are discernible" (Slabakova 2016: 172 referring to Lightbown and Spada: 2006) to the L2 endstate. "Fossilization" (Selinker 1972: 25), the L2 endstate, refers to a state when development ceases in one or several areas independent of further L2 input (including instruction and explanations) (25). In Selinker (1992), the concept of interlanguage has been reexamined, leading to "a richer language transfer perspective" (259), to the assumption that "[s]urface-structure equivalences are not enough" (260), and that "the level of deep-structure grammatical transfer" (260) needs to be analyzed, leading to a UG-based approach. According to Slabakova (2016), based on White (1989, 2003), in generative SLA, the "interlanguage grammar is a system of UG-provided principles and parameter settings" (Slabakova 2016: 172). Thus, access to universal principles and evidence from the L2 input lead to parameter resetting, or feature reassembly (Lardiere 2009), which leads from one developmental sequence to the next.

Following this generative concept of interlanguage, I will argue that the child L2 learner is influenced by the first language, Universal Grammar, and the L2 input. The interlanguage in cL2A will be discussed in Section 2.2.2 in the context of child L2 development in comparison to other acquisition populations.

In the next section (in Section 2.2.1), L1-transfer, UG, and L2 input among further factors influencing cL2A will be discussed.

2.2.1 Influential Factors

Besides the three factors of L1 transfer, UG, and L2 input, which are part of the core of second language acquisition, there are many further psycholinguistic, sociolinguistic, sociopsychological, sociocultural,

neurolinguistics, and educational factors within and beyond the generative approach that have an impact on the second language acquisition process. These factors can be classified as internal and external factors (e.g., Hopp 2011; Unsworth, Hulk and Marinis 2011). Among others, L2A is influenced by a number of internal factors, including the first language(s), access to Universal Grammar, age of onset, the chronological age, cognitive abilities, maturation, intrinsic motivation, personality, social identity, and interculturality, and by external factors, including input quantity and quality, length of exposure, the conditions of acquisition (majority/minority language), the type of exposure/learning context (in educational settings including the types of instruction), occasions for language use, access to native speakers of the L2, socioeconomic status, parents' educational background, language hierarchies, and extrinsic motivation. Thus, L2A is a complex process requiring interdisciplinary research. However, it is hardly possible to disentangle all these variables. The factors relevant for my empirical study (presented in Chapter 3) will be discussed in the following section and include internal factors such as L1-transfer, access to Universal Grammar, age and cognitive maturation as well as external factors such as L2 input, type, and length of exposure.

The second language acquisition process is influenced by the first language leading to **L1-transfer**. "[G]rammatical knowledge that can reasonably be traced back to the influence of the native language" (Slabakova 206: 422) is an L1-transfer effect. If we assume a Russian native speaker is learning L2 German, the L2 learner will, for example, most likely show L1-transfer effects by omitting articles in L2 German. Russian is an articleless language, which means that definiteness is not marked by morphemes, such as the indefinite or definite article as in German. Thus, the L2 learner is expected to show L1-transfer effects by dropping the article in the initial state. However, researchers might not always agree on whether an L2 learner's performance can 'reasonably' be traced back to the L1 or whether the performance can be explained differently, such as by a universal stage that all learners go through.

Odlin (1989) defines the term 'transfer' as follows: "Transfer is the influence resulting from similarities and differences between the target language and any other language that has been previously (and perhaps imperfectly) acquired" (27). However, as discussed in Section 2.2, in the context of CA,

the differences and similarities between two languages can predict some errors or L1-transfer effects, but they are insufficient to account for all L1-transfer effects due to their complexity, since some structures might be similar on the surface level and different on the deep-level or vice versa. Researchers agree that the L1 does have a major impact on L2 acquisition, since L1-transfer effects have been found for different linguistic domains. However, the question that remains to be answered is the one that Schwartz (2013) poses recently: "What transfers?". The question is not anymore whether there are L1-transfer effects or not, but rather what it is that is being transferred. Are the overt structures transferred, or is it rather the underlying linguistic knowledge (as already suggested by Selinker 1992)? Is the amount of transfer the same for each linguistic domain, e.g., is transfer in morphology the same as in syntax? Furthermore, is there a difference in interface structures, e.g., are structures in the syntax-semantics interface transferred any differently since they are more complex due to the involvement of more features? I will return to these questions in the discussion in Chapter 4.

A different term used for transfer is "crosslinguistic influence" (CLI) (e.g., Odlin 1989: 1). The term L1-transfer is typically used in the context of L2A referring to influence from the first language, whereas the term "crosslinguistic influence" is rather used in the context of bi- and multilingual acquisition when two or more languages influence each other.

Children acquiring an L2 have already fully acquired the grammar of one language. According to the Full Transfer/Full Access Hypothesis (FTFA) (Schwartz and Sprouse 1994, 1996), which will be discussed in Section 2.2.5, full transfer from the L1 leads to the L1 grammar being the initial state of L2A.

> Within the Principles and Parameters framework, principles transfer from UG or from the L1 (it is impossible to tease these apart), while parameter values transfer from the native language, at the initial stage of L2 acquisition (Schwartz and Sprouse 1994, 1996)
>
> (Slabakova 2016: 422).

Within the generative framework, **Universal Grammar** is one of the major components explaining language acquisition. In language acquisition, "certain properties of language are too abstract, subtle and complex to be acquired without assuming some innate and specifically linguistic

constraints on grammars and grammar acquisition" (White 2003: 3). UG, a concept developed by Noam Chomsky (1959, 1965), is an innate language faculty which consists of principles and parameters. Principles are language universal and parameters language specific. An example of a principle is the Overt Pronoun Constraint (Montalbetti 1984, as cited in White 2003: 8) – a principle that can be applied to all languages. Another example includes "grammatical functions such as subject and object, the rule that every sentence must have a subject, be it pronounced or not, as well as a subject-object asymmetry" (Slabakova 2016: 8). Principles do not have to be learned but will be confirmed by linguistic input. An example for a parameter is the Null Subject Parameter (± null subject) (Hyams 1986), which can vary from one language to the other (e.g., English is a -null subject parameter language (*I see a cat*) since the overt subject is obligatory (*I see a cat* vs. *See a cat) in contrast to Spanish, which is a +null subject parameter language and the subject does not have to be expressed overtly (*Veo un gato*)). In summary,

> Universal Grammar, according to generative linguistics, contains a blueprint of all the rules that a speaker will need to generate all and only acceptable sentences in a language. This blueprint includes universal rules, operating in all human languages, as well as the options for the variable rules, or parametric options
>
> (Slabakova 2016: 9).

The concept of UG is constantly redefined due to "a reflection of development and growth within linguistic theory" (White 2003: 3). As mentioned at the beginning of Section 2.2, resetting in the form of parameters has been questioned, and it has been suggested that the complexity of the resetting process can rather be explained by feature reassembly (Lardiere 2009). This claim is confirmed by deMena Travis (2008), who claims that "[f]eatures are the heart of recent Chomskyan syntactic theory and within this theory at the heart of language variation. Therefore, any study of language acquisition done within this framework is now a study of the acquisition of features" (23).

UG forms the child's initial state prior to the exposure to the L1 (or L2). Once the child is exposed to the L1/2, the lexicon of the particular language is acquired and parameters and/or features are set or reset according to the particular language. The principles and parameters of UG form the grammar that is restructured due to the child processing the input.

White (2003: 3) summarizes the arguments for an innate component in L1 acquisition (see also Aitchison 1976; Chomsky 1959, 1965, 1981, 1986; O'Grady 1997; Pinker 1994, as cited in White 2003: 3): Human beings have a language capacity exclusively; language acquisition does not depend on intelligence; the acquisition process is fairly the same for different children, varying languages and cultures; language acquisition is relatively fast and no instruction is required; children's creativity exceeds the provided input. It has been suggested by the emergentist or usage-based approach that this innate component is not specifically responsible for language acquisition, but is rather general in nature, and only emerges in combination with its usage (e.g., O'Grady 1987, 1996, 1997, 2003).

Within the generative approach, it is debated whether UG access is restricted to children acquiring their first language or whether cL2 learners and aL2 learners also have access to UG, and if so, to what extent. One of the approaches to answer this question is to compare L1 grammars to interlanguage grammars. Questions as to whether factors such as age and maturation play a role still require further analysis, e.g., whether cL2 learners have less access to UG than L1-children, who are younger and less mature, and more access than aL2 learners, who are older and more mature, and whether access to UG is relevant for each linguistic domain.

Age is another influential factor in second language acquisition. The **age of onset** – or **age of acquisition** (e.g., Slabakova 2016) – refers to the age at which exposure to the target language started "in a linguistically rich environment" (Slabakova 2016: 419). Its effect on L2A will be examined in the discussion of age effects. Age of onset is also used in the delineation of different language acquisition populations (as illustrated in Figure 2.2 in Section 2.2.2).

The major question in language acquisition has traditionally been whether nativelike attainment can be achieved by all learners or whether age affects L2A, meaning that it might be impossible to reach nativelike attainment if exposure to the target language started after a certain age. However, recent research has instead focused on whether all linguistic areas are affected by age effects in the same way; which factors are crucial in early age of onset, leading to nativelikeness in an L2; and whether the learning context affects ultimate attainment (Muñoz 2013).

Lenneberg's (1967) Critical Period Hypothesis (CPH) claims that the first language must be acquired within a certain time window in order to achieve nativelike attainment. This claim is the same for L2A: If the age of onset is beyond the critical period, nativelike attainment is assumed to be impossible. Studies by Johnson and Newport (1989), Abrahamson and Hyltenstam (2009), and Abrahamson (2012) confirm the CPH, since according to these studies, adult L2 learners do not achieve "complete, in all respects nativelike linguistic performance" (Slabakova 2016: 86). An acquisitional "rate advantage" (Muñoz 2013: 13) has been shown for older L2 learners, "and an ultimate attainment advantage for younger starters" (13) in the area of morphology and syntax (e.g., Krashen, Long and Scarcella 1979, as mentioned in Muñoz 2013). In light of these findings and several studies showing nativelike performance by adult L2 learners in specific areas (e.g., Montrul and Slabakova 2003), sensitive periods according to linguistic areas have been proposed (Muñoz 2013; Slabakova 2016). Thus, linguistic areas are shown to be affected by age constraints in different ways (e.g., Long 1990), though the nature of these constraints are under debate. Long (1990) argues that all linguistic areas "are affected by maturational constraints" (Muñoz 2013: 13), with phonology affected earlier than morphology or syntax, whereas Scovel (1988) argues that only phonology is influenced by age constraints.

Another relevant consideration with age effects is the interaction between age and learning context, specifically explicit versus implicit learning. As pointed out by Slabakova (2016) and Lenneberg's (1967), CPH maintains that from puberty onwards, languages can no longer be acquired by pure exposure, or 'implicit learning' comparable to L1A, but rather require "a conscious and labored effort" (Lenneberg 1967: 176 as cited in Slabakova 2016: 86), or 'explicit learning'. "The implication is that, successful or not, language acquisition achieved through explicit learning is irrelevant to the Critical Period Hypothesis" (Slabakova 2016: 88). However, studies on Poverty of the Stimulus[64] learning contexts in instructed adult

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64 The Poverty of the Stimulus will be discussed in Section 2.3.2. In the studies mentioned here, adult L2 learners in instructed learning contexts were analyzed, and the phenomena tested were not explicitly instructed in the L2 classrooms, and were therefore argued to be a Poverty of the Stimulus learning context.

L2 classrooms (e.g., Montrul and Slabakova 2003) have offered counterevidence to the CPH in that adult L2 learners performed like native speakers in syntax and at the syntax-semantics interface, which, Slabakova argues (2016: 90), cannot be a result of explicit rule learning (see also Rothman 2008b and Slabakova 2006).

In naturalistic learning contexts (e.g., Snow and Hoefnagel-Höhle 1978) as well as instructed learning contexts, older L2 learners have been found to have a "short-term rate advantage" (Muñoz 2013: 14) since they achieve a higher proficiency level than younger learners in the same amount of time (e.g., Muñoz 2006, 2008), a fact that may be attributable to the "superior cognitive maturity […] which grants older learners greater efficiency in learning" (Muñoz 2013: 14). However, the younger L2 learners have "superior implicit learning skills" (14), which consequently lead to greater results with regard to ultimate attainment, but only in combination with "massive exposure to the target language" (14) (e.g., DeKeyser 2000; Wesche 2002). Thus, it has also been shown that with regards to ultimate attainment, an early age of onset does not necessarily guarantee nativelikeness, since further requirements such as a high quantity of comprehensible, rich L2 input, need to be fulfilled in order to achieve nativelike attainment (e.g., Abrahamson and Hyltenstam 2009). Muñoz (2013) further elaborates that "in the absence of massive exposure, younger learners in instructional settings seem to be deprived of this long-term advantage" (14). L2A in immersion programs has also been considered in light of age of onset. Such studies showed that L2 learners in early immersion programs achieve greater listening comprehension as well as oral production skills and fluency compared to late immersion L2 learners, though comparable results in reading comprehension and writing skills for early and late immersion (e.g., Turnbull, Lapkin, Hart, and Swain 1998).

Slabakova offers the following summary, which is very appropriate for this discussion of age effects:

> One conclusion that we can all agree on is that if age of acquisition is after puberty, there are very few individuals in a group, and frequently none, who display a complete mastery of the second language, including phonetics and phonology. However, looking at specific properties of morphosyntax and meaning acquisition, research frequently uncovers successful adult learners.
>
> (Slabakova 2016: 90)

In this spirit, adult L2 learners can at least achieve nativelikeness in certain linguistic areas. Furthermore, a consensus can be reached that an early age of onset does not automatically lead to nativelike attainment, since additional factors that are at least as influential as age have to be considered in combination with age effects.

For the empirical study presented in Chapter 3, the debate on age of onset is not relevant as age of onset is a constant variable and all the L2 learners started being exposed to the L2 between the ages of 4;10 to 6;6 years, clearly establishing them as child L2 learners. However, age does play a role when comparing my empirical data on cL2A to studies on L1A and aL2A, and the background of the CPH is necessary in order to contextualize the definition of cL2A. Furthermore, the debate on implicit and explicit learning connected to age is relevant to the present empirical study, since the subjects are enrolled in a full language immersion program as child L2 learners (a context of implicit learning in a school immersion setting, which will be discussed in Section 2.4).

In the empirical study, age at testing varies, and the question as to whether the L2A process is affected by the L2 learners' difference in age at testing still needs investigation. This leads us to the next factor to be discussed: cognitive maturity.

When analyzing cL2A, **cognitive maturity** is an additional influential factor to take into account. As Paradis (2011) points out, "cognitive maturity as represented by chronological age" (214) is one of the child-internal factors which, based on previous research, may potentially influence cL2 learners' acquisition rates. The fact that younger children acquiring a second language are cognitively less mature than older children is assumed to be relevant for child L2 learners between 4 and 7 years old when first exposed to the L2. At issue is the extent to which cognitive maturity influences the cL2A process and the age at which different linguistic areas are influenced by cognitive development and previous linguistic experience (from L1A). In the context of the present empirical study, the question is whether the children are assumed to be cognitively mature enough at the age of testing (range of 5;7–12;2 years) for the acquisition of phenomena falling at the syntax-semantics interface – i.e., generic DPs – and whether syntax and the corresponding semantics are acquired at the same time or subsequently.

Meisel (2009) has argued that maturational changes in the language making capacity (LMC) in early childhood development lead to differences between (2)L1 and cL2 (as well as aL2) acquisition. More specifically, he posits that the acquisition of certain morphosyntactic properties will differ depending on whether the age of onset is before or after 4 years old. Thus, for Meisel (2009), (2)L1 and cL2 acquisition are fundamentally different, with developmental stages of cL2A being more similar to aL2A. It is worth noting, however, that Meisel's focus is on properties acquired in early cL2A.

While Paradis (2009) agrees "with Meisel that neuro-cognitive maturity could result in fundamental differences between cL2 and (2)L1 learners" (41), she emphasizes that differences can result in enhancement, rather than just limitation. There is no reason to assume that the extensive neuro-cognitive development that children experience up to age 5 could not affect innate linguistic knowledge in addition to various learning mechanisms (Paradis 2009: 41).

In some domains, cL2A can be faster or more efficient than L1A as shown by, e.g., Paradis, Rice, Crago and Marquis (2008) for tense-marking in English and Golberg, Paradis, and Crago (2008) for receptive vocabulary. As a result of neurological development and linguistic experience garnished from L1A, cognitive learning mechanisms may become more efficient over time. Thus, in linguistic domains with shared knowledge in L1 and L2 and given increasing cognitive development, cL2 learners' acquisition might in fact accelerate rather than be hindered by the delayed age of onset for cL2A as compared to L1A.

Along the same lines, Rothman, Long, Iverson, Judy, Lingwall, and Chakravarty (2016) found that an older age of onset in cL2A in immersion education led to facilitation when acquiring passive constructions, a property which emerges at later stages of acquisition. In a longitudinal study, cL2 learners whose age of onset was later acquired passives faster than cL2 learners with an earlier age of onset. Consistent with Paradis (2008, 2009, 2010, 2011), Rothman et al. (2016) argue that language development is partially constrained by cognitive and linguistic development which leads to some properties being acquired at a later stage at certain ages and they also draw attention to the fact that cL2 data is useful to inform the interplay between general linguistic and cognitive development.

In cL2A, it is further relevant to consider the particular nature of the properties in question, as the level of complexity often determines the stage at which properties are acquired. More complex properties require more computational space and carry heavier cognitive resource demands in processing and for these reasons are often acquired later, when age and cognitive maturity is higher. By extension, then, older children may have an advantage in the acquisition of more complex properties, given their greater working memory and additional development in cognitive abilities.

Abrahamsson (2013) offers a neurolinguistic theory on the myelination of the cortical areas, which is "more or less equal to the successive maturation of the brain" (149). It states that

> the primary sensory, motor, and auditory areas around the central fissure in the left hemisphere are fully developed and fully myelinated at age 1, while the grammatical/systematic linguistic (i.e. Broca's and Wernicke's) areas around the Perisylvian fissure are fully myelinated at around age 5–6. Still other, so-called higher-order association areas (responsible for vocabulary, meaning/semantics, facts/knowledge of the world), which are spread out over the entire cortex, become myelinated much later – if at all (see Pulvermüller and Schumann, 1994).
> (Abrahamsson 2013: 148)

Thus, maturity plays a role in the areas of morphology and syntax until the age of 5–6, whereas its role is much longer-lasting in the area of semantics, including the syntax-semantics interface. This claim is in line with behavioral language researchers who affirm that cognitive maturity is an important factor in interpreting structures such as scalar implicatures that require the child to compare their own perspective with that of another. Slabakova (2016: 131–132) argues that such computation requires significant processing power that children prior to puberty are not cognitively mature enough to handle, though researchers such as Guasti et al. (2005) claim that successful interpretation can be achieved in prepubescent children when the other person's perspective is made explicit for the child.

The evidence offered by behavioral and neurolinguistic researchers shows that cognitive maturity will play an important role in the present empirical study, as even though the age of onset is a constant variable for all participants, age at testing ranges between 5;7 and 12;2 years old. Since the grammatical linguistic areas are fully developed by age 5–6 in terms of syntax, cognitive maturity should not affect the cL2 learners' performance

in that regard, though maturity effects may emerge at the syntax-semantics interface, given that the areas of the brain responsible for semantics are fully developed much later. Furthermore, the complexity of interface phenomena will require more computational space and consume more processing resources which may lead to a targetlike acquisition at an older age (which also means a more advanced interlanguage stage since age at testing and LoE correlate in the present study).

After having discussed all relevant internal factors, we will now turn to the external factors, the first being input quality and quantity.

Linguistic **input** is inevitable for language acquisition as shown for L1A in the case of 'Genie' (Curtiss 1977; Rymer 1993), a child that had not been exposed to language. The words, sentences, or discourse in spoken and written form that the L2 child hears or reads in the target language is linguistic input. The quality and quantity of the L2 input affect the L2A process, as evidenced by empirical data (e.g., Unsworth 2016; Weitz 2015).

Examining **input quality**, it is most important that the input is comprehensible and meaningful to the L2 learner. Slabakova (2016) defines comprehensible input as follows:

> *Comprehensible input* is language that we can understand by linking the linguistic form with an extralinguistic situation, for example, hearing the sentence *The dog wants to go out* in the presence of a familiar dog, maybe the family dog, who is lingering by the door and looking at the speaker, begging. The mapping of linguistic form (in this case, the sentence) and meaning (the extralinguistic situation) is absolutely crucial for language acquisition, as neither of these two sides of language on its own constitutes knowledge of language, without the other side.
>
> (Slabakova 2016: 6)

Thus, the L2 learning process requires linguistic input that can be mapped onto meaning. By receiving input that is far beyond the proficiency level of the L2 learner without any scaffolds, such as visuals, objects, or gestures, the L2 learner will not be able to disentangle the linguistic input into words, phrases, or sentences and will therefore not be able to map the input onto meaning. The L2 learner needs input that is meaningful to him. This is what Krashen (1982) called "i+1"; the ideal input is one step ahead of the learner and therefore comprehensible. However, in order to convey meaning, the speaker can also use scaffolds in order to support the linguistic input and to make it meaningful to the L2 learner by putting it in an extralinguistic

context. The input has to be rich, i.e., high quality, which is the case when the input is manifold, by ranging over a wide variety of topics relevant and interesting for the L2 child in order to deliver lexical items in various semantic areas for successful vocabulary growth. The L2 child needs interaction with an interested, interesting, and sensitive person to talk to, rather than drills, identical repetition, corrections, and prompts to talk in complete sentences (Tracy 2008: 9). The input needs to be appropriate for the particular age group. The L2 child needs the chance to experiment with the language, i.e., to use the L2, since language needs to be used in order to be acquired. The input should be action oriented and be connected to a meaningful context, the extralinguistic situation. Corrective feedback is a way to deliver more meaningful, high-quality input by reacting to an L2 learner's utterance in an encouraging way. To the L2 learner's utterance, 'I goed to the zoo', the corrective feedback could be 'Ah, you went to the zoo. Which animals did you see?'.

According to Slabakova (2016), "continued high-quality comprehensible linguistic input emerges as the indispensable condition for successful language acquisition, overriding potential critical periods (at least in some modules of the grammar)" (xiv).

Input quality was not analyzed as part of the empirical study in Chapter 3. However, the interviewer conducted the interviews in the immersion school as part of the school day and observed the L2 classrooms. The L2 learners enrolled in a full language immersion program receive L2 input in various contexts and subjects throughout their school day, along with corrective feedback. Even though the L2 input is received in a school setting, the immersion context is more comparable to a naturalistic learning situation than to a foreign language classroom, since it is a content-based learning approach. Thus, language is used in order to convey meaning.

The minimal **input quantity** and the necessary input quality leading to successful L2 acquisition, i.e., ideally nativelike attainment, are hotly contested. As already mentioned in the context of the age factor, for younger L2 learners in the context of implicit learning, massive exposure to the target language is necessary. It is generally agreed that intensive (e.g., several hours per day) and continuous (e.g., over years) exposure to the L2 is the requirement for successful L2A. The ideal L2 outcome of *successful* L2A is nativelike attainment, which is an ambitious ultimate attainment goal.

Measuring input quantity and quality is a challenging task due to the complexity, e.g., which criteria are used in order to evaluate the quality, and in order to measure length of exposure, the hours per week, per month, and per year need to be counted, and possible times abroad also need to be included in the analysis.

In the empirical study, input quantity was measured based on a language background questionnaire that was filled out by the interviewer with each participant and in cooperation with the class teachers. The input quantity is represented by the **length of L2 exposure**, i.e., the time the L2 child was exposed to the L2 from the age of onset until the age at testing. All children included in the study were first exposed to the L2 in the immersion classroom and either started in kindergarten (k) or in grade 1. None of the L2 learners lived abroad or spent more than 3 weeks in a row in a country where the L2 is spoken.

Connected to the input, which varies in different learning contexts, is the **type of exposure**. Supposedly, the L2A process is affected by the learning context, i.e., whether the L2 is acquired in a naturalistic or an instructed context. In the context of a classroom setting, the differentiation between content-based and language-based approaches is necessary because the type of instruction varies. Also, part of the type of exposure is whether the target language is spoken by speakers outside of the L2 community in the country of residence, and if so, is it a majority or a minority language in that country. The L2 community could be a daycare center/school, family and friends, or a majority or minority in the country of residence, etc. In L2 immersion programs, the L2 is used at least 50 % of the school day for certain subjects that are taught in the L2, and in most cases, the majority language outside of the classroom differs from the L2.

After having discussed the factors influencing cL2A, we have seen that all factors correlate with each other (to various degrees) and need to be taken into consideration when analyzing cL2 development. We will turn to child second language development in the next section. First, the study of cL2A will be presented, and cL2 development will be examined in contrast to (bilingual) first language development, adult second language development, and third language development in order to analyze what findings in cL2A can add to the field of SLA.

2.2.2 Child Second Language Development

The child L2 developmental course in some ways resembles the developmental course of bi- and monolingual first language acquisition ((2)L1A) and in other ways the developmental course of adult second language acquisition (aL2A) (e.g., Haznedar and Gavruseva 2008; Schwartz 2009; Slabakova 2016). Due to similarities among cL2A, (2)L1A, aL2A, and L3A, contrasting these populations will provide details on language acquisition mechanisms and processes (e.g., Haznedar and Gavruseva 2008; Slabakova 2016).

The language acquisition populations are shown on a timeline in Figure 2.2, the scale representing the age of onset. In L1A, one language is acquired from birth; in 2L1A, two languages are acquired simultaneously from birth; in sequential 2L1A, one language is acquired from birth and the exposure to a second language starts between the ages of 0–3 years; in cL2A, one language is acquired from birth and the age of onset for second language acquisition ranges from 4 to 7 years; and in aL2A, one language is acquired from birth and a second language is acquired at the age of onset of 8 years or older.

Birth		4-7 Years	8 Years or Puberty (Age 11-14) and Later	
L1A/2L1A	**Sequential 2L1A**	**cL2A**	**aL2A**	
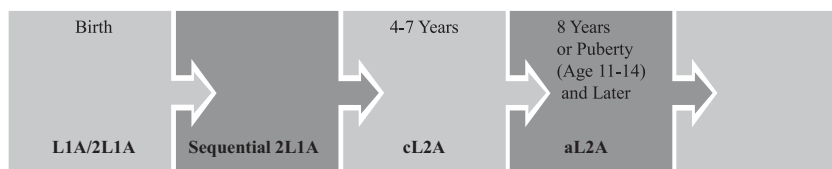
Figure 2.2: Timeline: Age of onset and the corresponding language acquisition populations

L2 and 2L1 children differ, since in bilingual language acquisition, the grammar of two languages is acquired either in parallel, simultaneously, or sequentially, whereas in cL2 acquisition, one grammar is complete when the second one is acquired. However, according to Haznedar and Gavruseva (2008: 3), cL2 learners are called 'successive bilinguals' since the acquisition of the L1 is completed at the point of exposure to the L2. However, the term 'successive bilinguals' in itself suggests that cL2 learners are closer to L1/2L1 children than to aL2A. Thus, it remains to be seen whether this term

is objective enough (see also Lakshmanan 1995: 322, fn. 5 and Schwartz 2003: 1). In order to stay in the logic, one would have to assume that 2L1 children are exposed to both languages at birth (simultaneously) or to one language at birth and to the other one before the age of 4 years (sequentially/successive). This definition separates L2 children from 2L1 children.

According to Schwartz (2009: 66), it is sufficient to compare language development in cL2A to L1A as opposed to 2L1A, since 2L1A takes the same developmental route as L1A (Meisel 2001; Patuto, Repetto and Müller 2011).

Cognitive and biological maturation is one of the major differences between these populations. While the L2 child is more mature than L1 and 2L1 children at the age of onset of acquisition, they are less mature than L2 adults (Schwartz 2004: 2). In addition, L1 and L2 children are both below the cut-off point of the CPH, and both L2 children and adults have already fully acquired their first language.

Studying cL2 learners and contrasting these to L1 children, aL2 learners, and L3 learners may provide answers to theoretical issues as pointed out by Schwartz (2004). If L2 children follow the same developmental course as L2 adults, this would suggest that both populations have access to UG. If, however, the developmental course differs, this suggests that L2 adults do not have access to UG in contrast to L2 children having access to UG based on the CPH, which assumes the cut-off point at the age of 8 years.

As pointed out by Schwartz (2009: 64), more studies have focused on the endstate than on the development of cL2A, and only in recent years have studies focused on cL2A alone.[65] However, it is important to analyze cL2 development since "[T]he developmental perspective tells us about the shape of Interlanguage over time, i.e. about the route of Interlanguage development or about the shape of Interlanguage at particular points along that route" (Schwartz 2009: 64). Thus, research on L2 development examines what happens from the first exposure to the L2 until the endstate,

---

65 Research on the endstate focuses on whether a particular population can attain nativelikeness or not, and analyzes the relevant factors for the outcome. Most of the studies dealing with cL2A compared cL2A to other populations, e.g., to aL2A by discussing to what degree age of onset affects the endstate and to L1A comparing L2 knowledge to L1 knowledge (Schwartz 2009: 64–65).

whether all acquisitional groups (e.g., L1 children, L2 children, L3 children, L2 adults, L3 adults) take the same route, and whether they end up with the same endstate, i.e., nativelike or non-nativelike endstate. Therefore, the developmental perspective will provide information about cL2 development over time and about whether cL2 development is more similar to typical L1 development, to aL2 development, or to neither.

When analyzing L2 development, it has to be kept in mind that development is often non-linear since "for dynamic systems the relation between cause and effect is often nonlinear, that is, there is no proportionate effect for a given cause" (de Bot and Larsen-Freeman 2011: 12). One of the factors responsible for non-linearity is that different variables are interconnected (e.g., proficiency, LoE, age at testing, cognitive maturation). Therefore, "in addition to the direct effect of the variables, there is interaction between the variables, and this interaction is dynamic in the sense that it changes due to the impact the factors have on each other" (13). Thus, non-linear development is more likely than linear development for L2 developmental courses.

According to Schwartz (2004) and Unsworth (2005), studies by Johnson and Newport (1989) and DeKeyser (2000) on the age factor and L2 ultimate attainment have shown that children who are exposed to the L2 before the age of 8 years perform like L1 children in reference to morpho-syntax. These findings suggest that L1 and L2 children use the "same acquisition processes" (Schwartz 2004: 2). However, cL2A does not necessarily repeat L1A due to several factors, e.g., cognitive maturation, type of exposure/learning context, emotional binding, and whether there are any developmental differences or differences in the time course of acquisition. Therefore, the developmental paths in all populations need to be analyzed. Figure 2.3 provides an overview of all child acquisitional populations, and Figure 2.4 presents cL2A in the context of adult L2/L3 acquisition populations. The assumption is that Universal Grammar is available to L1, L2, and L3 children whereas access to Universal Grammar is questioned for adults acquiring an L2 or L3.
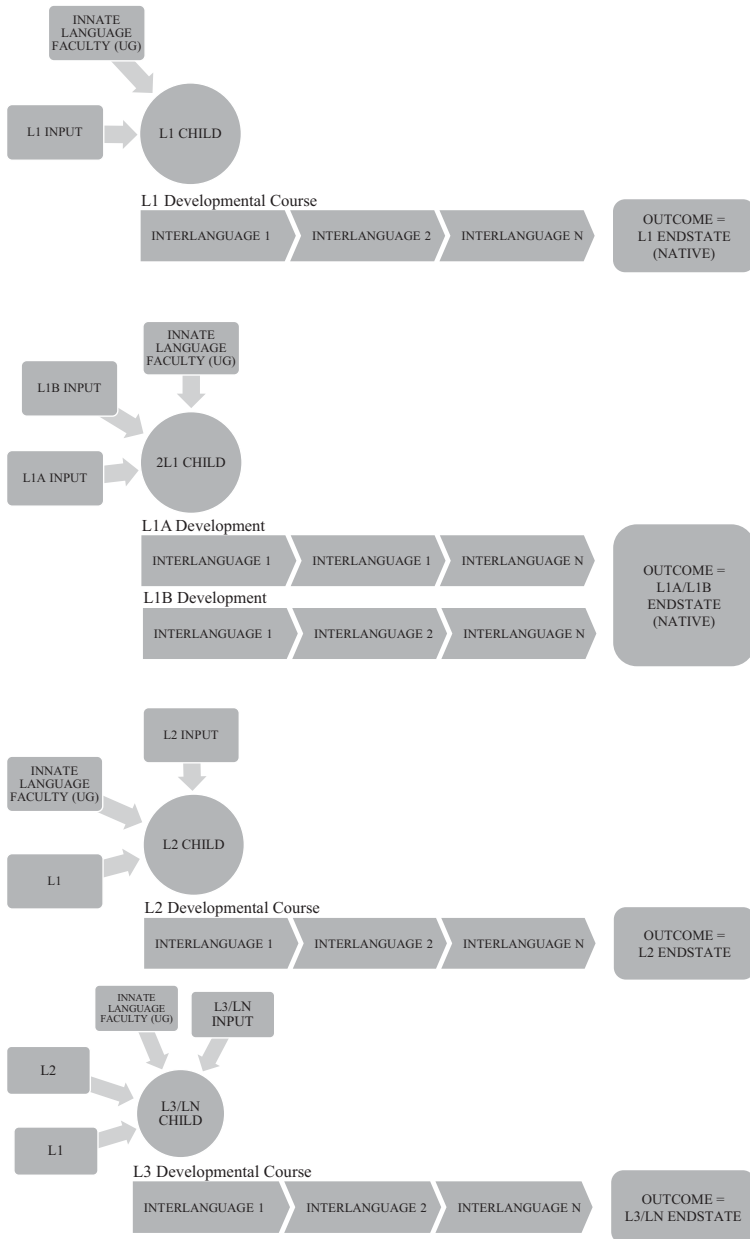
Figure 2.3: Child second language acquisition in the context of further child acquisition populations
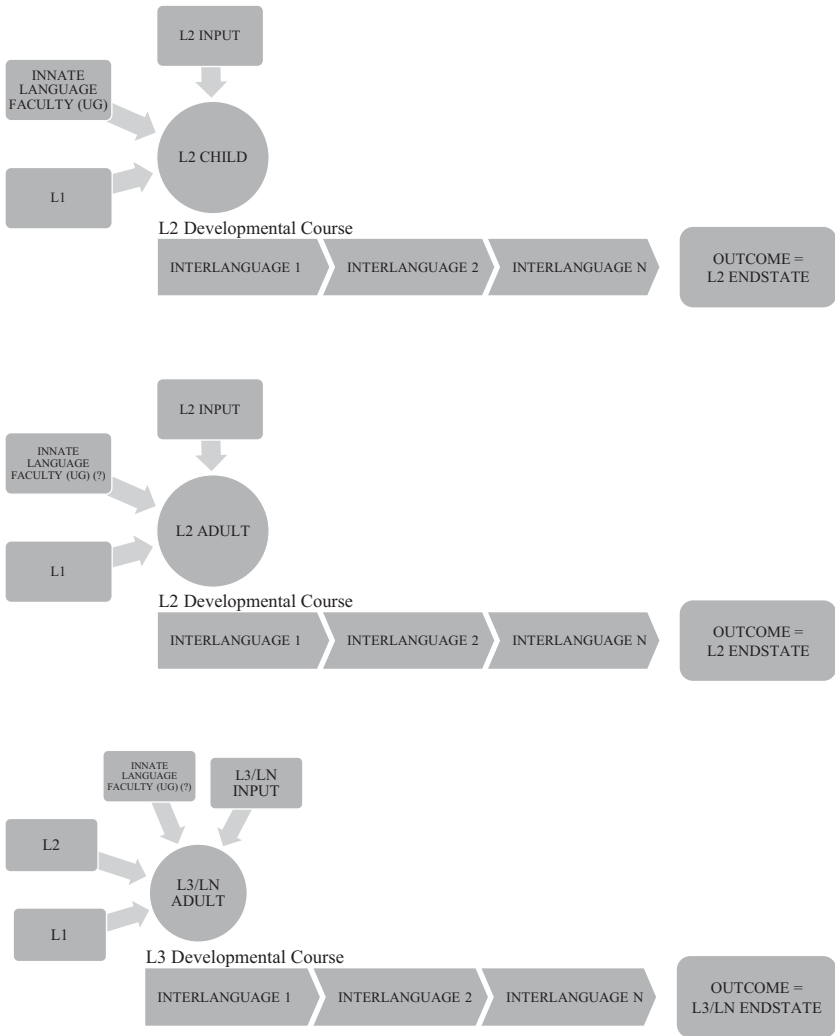
Figure 2.4: Child second language acquisition in the context of adult L2/L3 acquisition populations

Schwartz (2003, 2004) argues in the 'Domain by Age Model' (see Figure 2.5) that in reference to the course of development, cL2A resembles aL2A with respect to syntax (black arrows) but L1A with respect to inflectional morphology (grey arrow). With regards to the endstate, differences between the L1 child and (at least) the L2 adult are assumed.
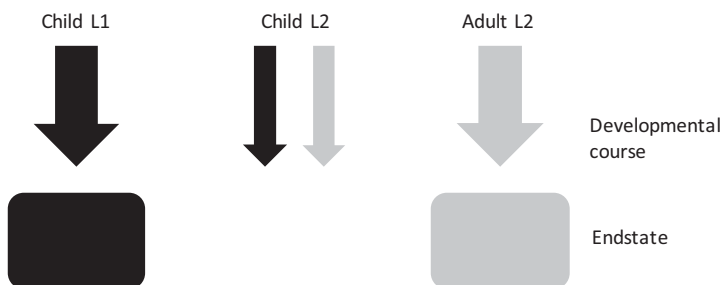
Figure 2.5: Illustration of the Domain by Age Model (Schwartz 2009)

Schwartz (2009) takes an example from Unsworth (2005) analyzing scrambling in Dutch that provides evidence for L2 children and L2 adults following the same developmental paths, differing from L1 children due to L1-transfer effects. L1 children did not follow this path, since they were not influenced by another language. Unsworth (2005) analyzed three proficiency levels in L2 children and L2 adults. The results show that L2 children and L2 adults with the same proficiency level pattern together by going through the same developmental sequences. Thus, proficiency was the indicator as opposed to age, which suggests that L2 adults also have access to UG. This finding leads to the suggestion that L2 children and L2 adults follow the same developmental course in the area of syntax, as shown in the Domain by Age model. The other claim in the Domain by Age model that cL2A resembles L1A with respect to inflectional morphology has been developed on the basis of Weerman's (2002) data, in which both L1 and L2 children show overgeneralization in the area of inflectional morphology in Dutch. However, according to Schwartz (2009), there is also counterevidence suggesting that L1 and L2 children show developmental differences on their way to the targetlike acquisition.

Based on Schwartz (2009) and data by Tran (2005) (as cited in Schwartz 2009), Herschensohn, Stevenson, and Waltmunson (2005), and Li (2012), there is evidence for L1 development differing from cL2 development in the area of inflectional morphology. Therefore, Slabakova (2016: 147) suggests a new version of the Domain by Age model, presented in Figure 2.6.
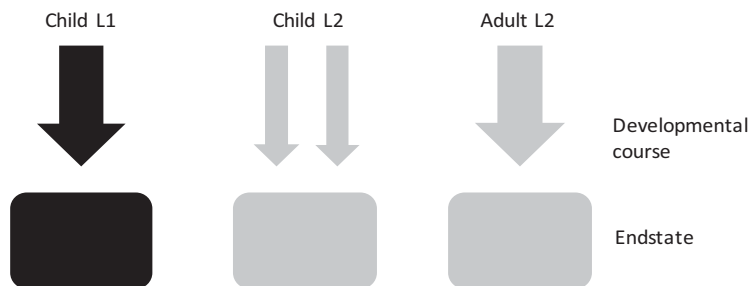
Figure 2.6: Illustration of the Domain by Age Model, second version (Slabakova 2016: 147)

Based on this evidence, it has been suggested that cL2 and aL2 development resemble each other with respect to syntax and inflectional morphology. This may be explained by "the presence of an already learned language in the mind/brain of the learners, that is, bilingualism itself" (Slabakova 2016: 146).

2.2.3 Individual Variation

Several factors lead to individual learner variation, e.g., L2 exposure (inside and outside of the immersion classroom), proficiency, age, maturation, cognition, different learner types, and motivation.

With regard to the L2 developmental course, it is assumed that all L2 learners with identical L1s and L2s will pass the same interlanguage stages. However, with regard to the timeframe, variation is expected, i.e., L2 learners reach an interlanguage stage n after x years of L2 exposure, with x varying among L2 learners. Thus, L2 learner 1 reaches interlanguage stage x, which includes certain features to be reassembled, after having been exposed to the L2 for 2;8 years, and even if L2 learner 1 and

2 resemble in terms of LoE, proficiency, and age at testing, L2 learner 2 has not reached the same interlanguage stage after 2;8 years, but a few months later. Differences up to a certain degree are expected, even though length of L2 exposure is generally a reliable predictor with regards to proficiency and performance. Even more reliable are age at testing, LoE, and proficiency combined. However, some grammatical areas, such as functional morphology, are expected to cause difficulties which are likely to remain even in advanced interlanguage stages. Thus, some L2 learners will acquire functional morphology in advanced stages, others take longer, and others might not achieve targetlikeness at all. Therefore, in terms of functional morphology, individual learner variation is expected.

2.2.4 Child Second Language Acquisition in Immersion Education

Immersion education is a content-based approach without explicit grammar instruction. The second language is used as the medium of instruction in order to convey meaning and is not the focus of instruction.

> Immersion is defined as a method of foreign language instruction in which the regular school curriculum is taught through the medium of the language. The foreign language is the vehicle for content instruction; it is not the subject of instruction.
>
> (Met 1993).

Thus, not language itself, but the subject matter taught in the second language is the center of attention. L2 learners learn the subject matter and acquire the L2 along the way. The way the L2 is acquired resembles L1A since the language is acquired in a natural way without explicit language instruction. Thus, immersion classrooms are natural L2 acquisition in an educational setting.

Immersion programs can be full/total or partial immersion. In full language immersion programs, in the initial years, all subjects are taught in the second language, whereas in the partial immersion program, 50 % of the subjects are taught in the second language. Full immersion "is the most effective way to developing foreign language proficiency" (Met 1993: 1) due to the high amount of L2 exposure. The goals of immersion programs are the following:

1) developing a high level of proficiency in the foreign language;
2) developing positive attitudes toward those who speak the foreign language and toward their culture(s);
3) developing English language skills commensurate with expectations for student's age and abilities;
4) gaining skills and knowledge in the content areas of the curriculum in keeping with stated objectives in these areas.

(Met 1993: 1)

Immersion education has been argued to be the most successful way for L2A in educational settings, leading to high L2 proficiencies in particular with regards to listening and reading comprehension, fluency in speaking and writing, and vocabulary acquisition.

2.2.4.1 The Immersion Program at Waddell Academy

Waddell Language Academy, formerly Smith Academy of International Languages, is a public elementary and middle school (k-8) in Charlotte, North Carolina, USA, offering full language immersion programs. Data collection at Waddell Language Academy was conducted in 2008 and 2009. At the time, a total of five immersion programs in the following languages were offered: German, French, Spanish, Japanese, and Chinese.[66] All immersion programs are situated in the same building complex, and each immersion program follows the same instructional approach. Therefore, Waddell Language Academy offers a unique research setting, which allows a direct comparison of two language groups in the same L2A context with identical teaching styles and methodologies.

Waddell Language Academy attracts students from various cultural and linguistic backgrounds. Since the school is a 'magnet school', its students come from various socioeconomic backgrounds. Waddell Language Academy being a public school, tuition fees are waved. As Bongartz and Rohde (2015) point out in the context of inclusion in L2 classrooms, the magnet school concept follows an inclusive classroom philosophy.

Diese Sicht ist notwendigerweise auch international, da es insbesondere im nord-amerikanischen Raum schon eine etwa fünfzig Jahre zurückreichende

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66 Currently (in 2022), four immersion programs are offered since the Spanish immersion program was moved to a different school.

Tradition mit inklusiver Unterrichtsphilosophie gibt, wie sie in der *magnet school*–Idee zum Tragen kommen, in der inklusiv-gemischte Klassenverbände nach dem Grundsatz der Attraktivität von zum Beispiel Immersionsprogrammen in einer Fremdsprache entstehen, weil sich Eltern für diese Schulen in öffentlicher Trägerschaft entscheiden. In solchen Schulen stehen viele Ressourcen zur Verfügung, von der individuellen Zielvereinbarung für alle SchülerInnen (vgl. Nuss 2014) hin zu *literacy facilitators* und intensive psychosozialer Beratung im Rahmen des Schulalltags. Empirische Befunde zum Zweitspracherwerb mehrsprachiger SchülerInnen und zur Entwicklung von und Wechselwirkung mit Lese- und Schreiberwerb wurden dort erstmals erhoben (vgl. Turnbull, Lapkin & Hart 2001; Lazaruk 2007) und wirken für die nunmehr auch bei uns durchgeführten Erhebungsverfahren impulsgebend.

<div align="right">(Bongartz and Rohde 2015: 13)</div>

Thus, differentiation in the L2 classroom and supporting each individual student in his needs and his learning development is part of the concept.

The school's Language Immersion Philosophy follows the following goals:

1. to achieve proficiency in the target language (listening, speaking, reading, and writing),
2. to acquire comparable English Language Arts skills as peers in traditional schools,
3. to reach cultural competency in surface features and deep features of cultural perspectives, practices, and products,
4. to gain mastery in content areas compared to peers instructed in traditional school.

<div align="right">(Charlotte-Mecklenburg Schools 2022)</div>

At Waddell Language Academy, the students use the L2 as the lingua franca in their school day. 80 % of all subjects are taught in the L2. The students attend the school for approximately 35 hours per week and are exposed to the L2 for about 28 hours per week. The multilingual and multicultural atmosphere forms the basis of the school. In the hallways, all signs are multilingual, e.g., the welcome sign lists 'welcome' in all five languages. Walking through the hallway, one can hear French from one classroom, German from the other, Chinese from the next, etc. The school environment is inspiring, forming an ideal setting for L2A and for learning in general.

2.2.5 Theoretical Approaches to Second Language Acquisition

In generative second language acquisition research, several theoretical proposals on L2A have been suggested. Among these are the Full Transfer/

Full Access Model (Schwartz and Sprouse 1994, 1996), the Feature Reassembly Hypothesis (Lardiere 2000, 2007, 2008, 2009), and the Bottleneck Hypothesis (Slabakova 2008, 2016).[67] These three hypotheses are in line with regards to UG access and L1 transfer by assuming full transfer (including functional categories) from the first language and full access to UG. The FRH and the BH both focus on the L2A of functional categories. Based on these three hypotheses in combination with the NMP, the research questions and predictions for the empirical study have been formed. Empirical evidence for functional categories with regards to various parameters and feature values is necessary. So far, only a few studies in cL2A of L2 German and L2 French with a focus on generic reference have been conducted. The goal of this research project is to provide further empirical evidence, which will be analyzed in light of these three theoretical proposals.

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67 Further theoretical proposals include among others the Minimal Trees Hypothesis (Vainikka and Young-Scholten 1994, 1996), the Failed Functional Features Hypothesis (Hawkins and Chan 1997), the Missing Surface Inflection Hypothesis (Haznedar and Schwartz 1997; Prevost and White 2000), the Fluctuation Hypothesis (Ionin, Ko and Wexler 2004), the Interpretability Hypothesis (Hawkins and Hattori 2006; Tsimpli and Dimitrakopoulou 2007). The Minimal Trees Hypothesis claims that L2 grammars initially lack functional categories. Functional categories are supposed not to be transferred from the L1 and are therefore absent. This hypothesis has been heavily counterargued in the past (e.g., Gess and Herschensohn 2001). The Failed Functional Features Hypothesis posits full transfer of the L1 in the L2 initial state and partial access to UG, which suggests that UG does not restructure the L2 grammar and therefore functional features that are not part of the L1 will not be acquired in the L2. According to the Missing Surface Inflection Hypothesis, L2 learners use the default form when the mapping from abstract categories to morphological forms is acquired but not always implemented. The surface inflection is missing, and therefore, L2 learners fall back on the default form. The Fluctuation Hypothesis predicts an overuse of the definite article; articles are supposed to be governed by a semantic parameter (the Article Choice Parameter).

2.2.5.1 *Full Transfer/Full Access Model (Schwartz and Sprouse 1994, 1996)*

The major claim of the Full Transfer/Full Access (FTFA) model is that the initial cognitive state of L2A is the final state of L1A. The acquired L1 grammar is fully transferred to the L2 learner's initial state of L2A, and the initial state of the L2 system will be restructured by accessing Universal Grammar (UG) and by receiving L2 input. Having full access to UG gives the L2 learner access to parameters and features which are reset and reassembled based on the L2 learner's L2 experience in the form of L2 input. With regards to functional categories, this means that L1 functional categories are transferred into the initial L2 grammars, which are then restructured due to UG access.

> UG makes all parameter values and features available to the learner, as they are needed in accounting for the L2 input and building L2 functional categories. Successful acquisition is in principal possible, based on the L2 linguistic experience, although in certain areas of the grammar where input may be misleading, full convergence is not guaranteed (Schwartz and Sprouse 1996).
>
> (Slabakova 2016: 217)

Thus, in cases in which the L2 input does not provide positive evidence for certain grammatical phenomena, since "the positive data needed are highly obscure, being very complex and/or very rare" (Schwartz and Sprouse 1996: 42), or since "the data needed to force restructuring simply do not exist (e.g., negative data, which are (claimed to be – Schwartz 1993) ineffective)" (Schwartz and Sprouse 1996: 42), L2A might not necessarily result in nativelikeness, supporting fossilization in L2A (e.g., White 1989: 168, 176 as cited in Schwartz and Sprouse 1996: 42).

The initial state of L2A was debated in the mid-1990s "in terms of the relationship between two sources of L2 knowledge" (Slabakova 2016: 216): the L1 grammar and access to UG. The discussion revolved around whether there is full transfer, partial transfer, or no transfer from the L1 grammar, and also whether in the post-initial state L2A is constrained by UG, and if so, whether L2 learners have full access, partial access, or no access to UG in combination with L2 input. Second language acquisition theories

have proposed various combinations of these two sources[68] (Slabakova 2016: 216).

Schwartz and Sprouse (1996) suggest the FTFA model by contrasting the hypothesis to the Minimal Trees hypothesis (Vainikka and Young-Scholten 1994, 1996) and the Weak Transfer hypothesis (Eubank 1993/94) presenting empirical data in support of the FTFA model and as counterevidence for the two other hypotheses. The Minimal Trees Hypothesis suggested full access to UG and partial transfer, lexical categories were supposed to be transferred in contrast to functional categories, and the Weak Transfer hypothesis suggested full access to UG and "no transfer of the values associated with functional categories" (Schwartz and Sprouse 1996: 40).

The FTFA model claims that

> "the entirety of the L1 grammar (excluding the phonetic matrices of lexical/morphological items) is the L2 initial state (hence the term 'Full Transfer'). [...] [i]t contends that all the principles and parameter values as instantiated in the L1 grammar immediately carry over as the initial state of a new grammatical system on first exposure to input from the target language (TL). This initial state of the L2 system will have to change in light of TL input that cannot be generated by this grammar; that is, failure to assign a representation to input data will force some sort of restructuring of the system ('grammar'), this restructuring drawing from options of UG (and hence the term 'Full Access'). In some cases, this restructuring may occur quite rapidly; in others, much more time may be needed. As this process of restructuring continues, each intermediate system is a distinct Interlanguage (grammar). The course that L2 development takes is determined in part by the initial state, in part by input, in part by the apparatus of UG and in part by learnability considerations."
>
> (Schwartz and Sprouse 1996: 41).

Furthermore, Schwartz, and Sprouse (1996) emphasize that based on Bley-Vroman (1983), the interlanguage needs independent analysis, since even if grammatical phenomena are identical in the interlanguage and the target language, the underlying analysis might differ. According to the FTFA model, even if the initial state and in most cases, the endstate of L1A and L2A differ, the cognitive processes underlying L2 development are assumed

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68 For an overview of these theoretical proposals on L1-transfer and access to UG, see, e.g., Slabakova (2016: 216–221).

to be the same in L1A and L2A. It is argued "that the final states of L2 acquisition do not systematically replicate the final state of L1 acquisition, precisely because the constraints on the processes (i.e., UG and learnability principles) are constant, whereas the initial states are distinct" (Schwartz and Sprouse 1996: 42). With regards to L2 development, it is important to follow up on the development from the initial state to several interlanguage stages since

> the cause of any (developmental) differences in the L2 acquisition of a particular language that covary with native language must be present from the beginning (namely, must be the result of the L2 initial state), precisely because the cause of such covariation cannot be in the input, since this remains constant.
>
> (Schwartz and Sprouse 1996: 67)

With regards to cognitive aspects in the interlanguage, Schwartz and Sprouse (1996) claim with regards to similarities in L1A and L2A that in order to obtain interpretations "at LF, the lexical item[s] […] must be marked with the relevant *features* in the Interlanguage lexicon and in the Interlanguage syntax, just as such items would be marked in [the] L1" (68). Schwartz and Sprouse (1996) conclude by stating that

> the reason 'everything transfers' in L2 acquisition is because 'everything' – including all the semantically based functional elements necessary for coherent interpretations together with all the syntactically based functional elements required by the computational system – is necessary for there to be a natural-language grammar in the first place.
>
> (Schwartz and Sprouse 1996: 69)

With regards to the empirical study, the FTFA hypothesis claims that L2 German learners and L2 French learners transfer all the L1 functional categories from English into their initial L2 grammars, and due to UG access, the features will be reassembled. Thus, definiteness will be transferred from the L1 as well as the semantics of definiteness, which will be reset and reassembled based on UG and linguistic experience in the L2. Comparing the empirical data to studies in L1A will provide further evidence on whether the cognitive processes underlying development leading to restructured interlanguages are the same in L1A and L2A or not.

In the following section, child L2 studies that tested the FT/FA will be presented.

2.2.5.2 *Feature Reassembly Hypothesis (Lardiere 2009)*

The Feature Reassembly Hypothesis suggests that formal features that have been assembled in L1A have to be reassembled in L2A. "Features – phonological, formal, and semantic – are the primitive, elemental units that make up the lexical items of every language, and the differences between languages are due to differences among these features" (Lardiere 2009: 1). Therefore, the set of features for the lexical item in the L2 has to be reassembled, which might include acquiring new features, to reject L1 features that do not occur in the L2, and to reassemble known features based on the L2 grammar. Furthermore, the possibly new linguistic contexts in which these features appear have to be acquired in order to acquire the L2 grammar.

> Within minimalist syntactic theory, in particular, syntactic differences and their interpretive consequences are hypothesized to be limited to those items that make up (or head) *functional categories* such as C, T, or D, each of which comprises sets of one or more formal features such as [±wh], or [±past], or [±definite] […]. Features can be bundled together onto functional categories in different, language-specific ways, and even differently for different clause types within the same language (Hegarty 2005, p. 8). It is thus the task of the language acquirer to discern these specific configurations of features from the properties and placement of particular lexical items present in the linguistic input.
>
> (Lardiere 2009: 2)

The features are assumed to exist as a universal set of features that belong to the genetic endowment. As mentioned in section 2.2.1, when discussing Universal Grammar, parameters and features are restructured in the L2 learners' interlanguage grammar based on UG in combination with the L2 experience. Thus, the assumption is that features are available in L1A and L2A due to access to UG, which are reassembled in the L2 based on the L2 input. As already mentioned, feature reassembly rather does justice to the complexity of the process than parameter resetting.

Lardiere (2009) formulates the L2 learner's learning tasks as follows:

- With which functional categories are the selected features associated in the syntax, and how might this distribution differ from the feature-matrices of functional categories in the L1?
- In which lexical items of the L2 are the selected features expressed, clustered in combination with what other features?
- Are certain forms optional or obligatory, and what constitutes an obligatory context? More specifically, what are the particular factors that condition the

> realization of a certain form (such as an inflection) and are these phonological, morphsyntactic, semantic, or discourse-linked?
>
> <div align="right">(Lardiere 2009: 3)</div>

Thus, the L2 learner has to match the features to the functional categories possibly with a differing distribution from the L1 and the features and feature clusters to the lexical items and has to differentiate between optional and obligatory contexts. Due to crosslinguistic variation, "[t]he feature matrices of functional categories must also be assembled for each language" (Lardiere 2009: 10).

With regards to the empirical study, the English native child L2 learner needs to reassemble the following features and feature clusters when acquiring generic reference in L2 French or L2 German: [±generic] involves the features [±definite], [±singular], [±count], [±subject], in combination with the linguistic contexts, e.g., the following predicate [±individual-level], the preceding predicate [±intensional], and the lexical cues, such as *in general*.

2.2.5.3 *Bottleneck Hypothesis (Slabakova 2008, 2016)*

The motivation for the Bottleneck Hypothesis is to increase L2 teaching efficiency by focusing on grammatical areas that are more difficult for L2 learners to acquire instead of spending time on aspects that "will come to the learner for free" (Slabakova 2016: 46). It is assumed that "acquiring the functional morphology of a second language, together with the related syntactic and semantic effects, should prove to be more difficult" (Slabakova 2016: 46). When acquiring functional morphology in combination with the related semantics, the L2 learner's tasks are to "1) map forms to correct interpretations (grammatical meanings), 2) map forms to possibly different grammatical features (feature addition, subtraction, and general reassembly) and 3) identify the grammatical contexts for the morpheme occurrence" (Slabakova 2016: 395). Due to the complexity of this task, which increases with the interaction of several features and varying grammatical contexts, the L2A of functional morphology is supposed to take longer, i.e., to be acquired with increasing proficiency, which typically results from increased LoE. However, these difficulties are likely to remain problematic

and are therefore even challenging to advanced L2 learners. An additional difficulty are non-overt parameter values.

> L2 acquisition is also predicted to be especially difficult when the target parameter values are not fixed in overt functional morphology by signaled by various (lexical, word order) means or left to the discourse to supply. This is so because a specific grammatical meaning (say, tense) is not predictably and uniformly signaled by one and the same morpheme every time it needs to be encoded. The learner has to attend to various cues and signals in the surrounding situation and the discourse in order to deduce the meaning.
>
> (Slabakova 2016: 46–47)

This is also the case for generic reference since no language has a generic marker in the overt functional morphology that is solely generic. Thus, the L2 learner needs to focus on various cues and signals in order to acquire generic reference.

The preconditions of the BH are based on the FTFA and on the FRH, which leads to suggesting that the BH is built upon these two theoretical proposals. The BH also assumes the final state of L1A to be the initial state of L2A. In case of a mismatch between L1 and L2 features, feature reassembly is required. Three sources are assumed to influence L2A: the L1, UG, and L2 input providing properties (including morphemes and their semantics) of the L2. The BH and the FRH "place lexical learning of the functional lexicon at the heart of acquisition" (Slabakova 2016: 219). Slabakova (2016) argues that the acquisition of functional morphology is the most important task of L2 learners since it includes acquiring "the whole parametric profile of the new language" (46).

> If language variation is (predominantly) captured in the lexicon, and more specifically in the functional lexicon, then it makes sense to think of language acquisition as acquiring the functional lexicon of the target language.
>
> (Slabakova 2016: 46)

These findings have to be regenerated to L2 teaching by focusing on the mismatches between L1 and L2 in the area of functional morphology. Typically, generative SLA does not focus on L2 teaching since the general assumption is that UG in combination with the L2 input will lead to restructuring of the L2 grammar, which (in combination with further factors) leads to successful L2A. However, Slabakova (2016) argues that findings in generative SLA have "direct implications for the second language classroom. […]

there is solid evidence that SLA instruction does help acquisition (Norris and Ortega 2000; Spada and Tomita 2010)" (390). However, Slabakova's (2016) focus is adult L2A. Implications for cL2A in particular in immersion settings will be discussed in Chapter 4.

2.2.6 Summary

Child second language acquisition is argued to be influenced by three sources: the innate language acquisition device or Universal Grammar, L1 transfer effects, and L2 input. L1 transfer leads to the initial state of L2A, subsequently, the L2 is restructured by UG and the L2 input. This leads to several interlanguage stages ending with the (possibly nativelike) L2 endstate. Whether nativelikeness will be achieved depends on several influential factors such as age, L2 input quantity and quality, type of L2 exposure, instructional methodologies, motivation, access to native speakers in the L2, etc. The cL2 developmental course supposedly resembles and differs in comparison to (2)L1A and aL2A. There is evidence for cL2A resembling aL2A with respect to syntax and inflectional morphology.

The theoretical proposals presented in this chapter claim full transfer from the L1 and full access to UG (FTFA). The L2 grammar will be restructured through feature reassembly (FRH). The L2 learner's tasks are to map forms to the appropriate interpretations, to map forms to (new) grammatical features, which leads to feature reassembly, and to identify the grammatical context, functional morphology occurs in (BH). The area of functional morphology is expected to cause difficulties in the case of a mismatch between L1 and L2, which might lead to functional morphology being acquired at a later interlanguage stage (BH).

2.3 Child Second Language Acquisition of Determiner Phrases with Generic Reference in English, German, and French

According to Gavarró, Pérez-Leroux and Roeper (2006) on L1A,

> [t]here are good reasons to believe that the linguistic expression of generic reference represents a challenging learning problem for the child. Children seem to acquire generic knowledge quickly and efficiently from a single instance (see Gelman and Tardif 1998; Pappas and Gelman 1998; Hollander et al. 2002;

> Gelman, Star and Flukes 2003). But how does the child figure out that a given statement has generic reference? No single morpheme directly encodes genericity in any language, and there is a wide range of crosslinguistic variation in how generic meanings are represented (Dayal 2002).
>
> <div align="right">(Gavarró et al. 2006: 53)</div>

Thus, acquiring generic reference is supposed to be a challenge in L1A (see also Lazaridou-Chatzigoga, Katsos and Stockall 2015 for an overview of studies on L1A and a discussion on combining theoretical and experimental considerations and research methods). In cL2A, the cL2 learner is confronted with the challenge to figure out how generic reference is expressed in the L2 due to crosslinguistic variation and the non-existence of a morpheme encoding generic reference. The cL2 learner's learning tasks when acquiring generic reference will be investigated in this section. Section 2.3 applies the findings on crosslinguistic variation in generic reference explained by the NMP presented in Chapter 1 to child second language acquisition based on the claims presented in section 2.2 in order to investigate the L2 learner's learning tasks when acquiring generic reference. First, the literature on the acquisition of generic reference will be reviewed, then, in Section 2.3.2, the learnability of DPs with generic reference in child second language acquisition in L2 German and L2 French will be investigated.

Within research on second language acquisition of functional categories (e.g., deMena Travis 2008; Lardiere 2008; Liceras, Zobl and Goodluck 2008; Tsimpli and Mastropavlou 2008; Slabakova 2019), several studies analyzed further phenomena in the syntax-semantics interface, such as the interpretation of quantifiers and other scopebearing expressions (e.g., Dekydtspotter, Sprouse Anderson 1997; Dekydtspotter and Sprouse 2001; Gil and Marsden 2013; Marsden 2004), tense and aspect (e.g., Gabriele 2005; Slabakova 2003; Slabakova and Montrul 2003), argument structure and interpretation (e.g., Oshita 2001; Montrul 2005) and the interpretation of definite and bare nominals (e.g., Choi and Ionin 2021; Choi, Ionin and Zhu 2018; Chondrogianni, Vasić, Marinis and Blom 2015; Gil 2019; Hawkins and Hattori 2006; Ionin and Choi 2021; Ionin, Ko and Wexler 2004; Ionin and Montrul 2010; Slabakova 2006; Snape, Hirakawa, Hirakawa, Hosoi and Matthews 2014; Snape 2018, 2019; Yamada 2019). Several studies focused on L2A of definiteness and its semantics in Germanic and Romance languages (e.g., Bruhn de Garavito 2008; Hopp 2011; Ionin

2003, 2006, 2008; Ionin, Ko and Wexler 2008; Ionin, Zubizaretta and Maldonado 2008; Pérez-Leroux et al. 2004; Pérez-Leroux, Gavarró and Roeper 2011; Schöneberger 2015). Furthermore, several studies investigated generics in typical adult populations (e.g., Barton, Kolb and Kupisch 2015; Czypionka and Kupisch 2019; Ionin, Montrul and Santos 2011a; Lazaridou-Chatzigoga, Katsos and Stockall 2017; Lazaridou-Chatzigoga and Stockall 2013; see also Lazaridou-Chatzigoga 2019 for an overview; Redolfi, Soares, Czypionka and Kupisch 2021). Empirical evidence on the acquisition of generic reference in Germanic and Romance will be presented in the next section (Section 2.3.1).

2.3.1 A Review of the Literature

In the following, empirical evidence on the acquisition of generic reference in Germanic and Romance languages in monolingual first language acquisition (e.g., Brandone and Gelman 2013; Gavarró et al. 2006; Gelman, Leslie, Was and Koch 2015; Gelman, Leslie, Gelman and Leslie 2019; Gelman and Raman 2003; Gelman and Tardif 1998; Pérez-Leroux et al. 2004), bilingual first language acquisition (e.g., Barton 2016; Kupisch 2003; Kupisch 2012; Kupisch and Barton 2013; Kupisch and Pierantozzi 2010; Serratrice et al. 2009), adult second language acquisition (e.g., Cuza, Guijarro-Fuentes, Pires and Rothman 2012; Ionin, Grolla, Montrul and Santos 2014; Ionin and Montrul 2009; Ionin, Montrul and Crivos 2013; Montrul and Ionin 2010, 2012; Snape 2013; Snape, García Mayo and Gürel 2009, 2013), child second language acquisition (e.g., Ionin, Zubizaretta and Philippov 2009; Kolb 2014; Snape, Hirawaka, Hirawaka, Hosoi and Matthews 2013, 2014; Zdorenko and Paradis 2008, 2011), and adult third language acquisition (e.g., Hermas 2019; 2020; Ionin, Grolla, Santos and Montrul 2015; Ionin, Montrul and Santos 2011b) will be presented, in addition to empirical evidence on article use in native speaker populations (e.g., Barton, Kolb and Kupisch 2015; Czypionka and Kupisch 2019; Redolfi, Soares, Czypionka and Kupisch 2021);[69] some of these studies on acquisition focus on the developmental course others on the endstate.

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69 Some of the literature review on definite plurals with generic reference in English, German, and French has been presented in Kolb (2014: 3–4).

Contrasting Germanic and Romance acquisition of generic reference, Pérez-Leroux et al. (2004) point out that crosslinguistic variation in the syntax-semantics interface of DPs has been found even for languages with "comparable morphosyntactic inventory of determiners and number, as is the case of the Romance and Germanic languages (Chierchia 1998; Longobardi 1994, 2001; Vergnaud and Zubizaretti 1992)" (1), due to "the existence of bare plurals" (Pérez-Leroux et al. 2004: 1) which "blocks plural definites from being generic" (1).

In English, evidence has been found for L1 children passing several developmental stages when acquiring article semantics (e.g., Gelman, Star and Flukes 2002; Gelman and Bloom 2007). Developmental stages have also been found in L1A for the acquisition of definiteness: the predeterminer phase, the free variation phase, and the convergence phase (Chierchia, Guasti and Gualmini 2001). Based on the NMP, the predeterminer phase is the default phase, in which all nouns are kind-denoting and therefore like mass nouns. The free variation phase takes longer in Germanic languages since children have to find out whether the noun is an argument (kind-denoting) or a predicate (property-denoting). In the last phase, definiteness becomes targetlike before the age of 4. For reasons of economy, bare nouns have been argued to be the default, since they require less structure (Roeper 2003). In L1A, there is empirical evidence that children distinguish between generic and non-generic DPs at the age of 4 (or possibly earlier) in contrast to younger children, which therefore has been argued to be the cut off point for acquiring generic reference (e.g., Gelman and Raman 2003; Gelman et al. 2002; Hollander, Gelman and Star 2002). Thus, age is a significant factor in the acquisition of generic reference. Gelman and Raman (2003) found evidence for targetlike non-generic interpretations of definite plurals for 4-year-olds. However, Pérez-Leroux et al. (2004) found difficulties with generic reference at the age of 4–7 years, since children overaccepted generic interpretations of definite plurals, which is the 'Romance option' (study 1: 70–80 % for 4–6 and 6–7-year-olds with a slight decrease with increasing age, study 2: 30–40 % for 3–5-year-olds). Serratrice et al. (2009) argued that this discrepancy might be due to task effects since the design of the experiments differs methodologically. English monolingual children overaccepted generic definite plurals to the same extent as English-Italian bilingual children (Serratrice et al. 2009). Definiteness is acquired early in

L1 acquisition, whereas the "full range of interpretations of definites, and the restrictions that govern them, may be a delayed development" (Pérez-Leroux et al. 2004: 2). In contrast to L1 children, adult native speakers interpreted definite plurals above 90 % as non-generic (e.g., Montrul and Ionin 2010; Pérez-Leroux et al. 2004). In adult L2 acquisition, L1 transfer effects have been found from L1 Spanish (and L1 Korean) to L2 English, as well as an effect of LoE on L1 transfer effects, since Spanish native speakers showed an initial overacceptance of generic interpretations for definite plurals in L2 English, which decreased with increasing LoE (Ionin and Montrul 2010). In aL2A, L1 transfer effects in the acquisition of generic reference has also been found from L1 Spanish, L1 Japanese, and L1 Turkish in L2 English (Snape, García-Mayo and Gürel 2013). In aL3A, transfer effects have been found in L3 English from L1 Moroccan Arabic and L2 French when acquiring generic reference. Pre-intermediate L3 learners accepted definite mass singulars with generic reference; with increasing proficiency the acceptance rate of definite mass singulars as generic decreased (Hermas 2019). Furthermore, L3 learners of English were found to overinterpret definite plurals as generic due to transfer from both L1 Moroccan-Arabic and L2 French (Hermas 2020). According to Snape (2019), who provides an overview of the acquisition of articles,

> L1 transfer plays an important role in the acquisition of articles in L2 English. However, it is not only L1 transfer that could lead L2 learners to higher accuracy in suppliance. Other factors such as frequency of use, exposure to positive (and negative) evidence, level of proficiency, and type of task administered are all factors that need to be considered in determining whether L2 learners follow a target-like trajectory in L2 acquisition.
>
> (Snape 2019: 18)

Thus, while L1 transfer is an important factor, other factors have to be considered as well when analyzing the L2/3 learner's acquisition process.

In German, empirical evidence for overacceptance of generic interpretations for definite plurals has also been found for monolingual German and German-Italian bilingual children who explicitly allowed [±generic], i.e., ambiguous, interpretations of definite plurals (Kupisch and Pierantozzi 2010). Overacceptance of generic interpretations of definite plurals in German has also been found in 2L1A for French-German bilingual children (6–10 years old) but not for French-German bilingual

adults (Barton 2016). Based on these findings, Barton (2016) suggests that French-German bilingual children pass a developmental 'Romance stage' by accepting generic definite plurals in German, which is overcome until adulthood. Furthermore, bilingual German-French and German-Italian adults have been shown to accept and interpret less definite plurals as generic than monolingual German adults due to overcorrection rather than CLI from French or Italian (Kupisch and Barton 2013). Furthermore, monolingual German adults have been found to accept generic definite plurals (Barton, Kolb and Kupisch 2015; Kupisch and Pierantozzi 2010). The acceptance rate was higher with kind-level predicates than with individual-level predicates (Barton et al. 2015). Reaction times for definite plurals were found to be slower than for demonstratives and bare nominals suggesting that definite plurals are potentially ambiguous, which therefore leads to slower reaction times (Czypionka and Kupisch 2019). Monolingual children (37 %) overaccept the generic reading to a higher extent than monolingual adults (15 %) (Kupisch and Pierantozzi 2010).

In Romance, the developmental stages for the acquisition of definiteness in L1A have also been found: the predeterminer phase, the free variation phase, and the convergence phase (Chierchia, Guasti and Gualmini 2001). The free variation phase is shorter in Romance languages, since children realize faster that the article is required and do not have to judge noun by noun, which is less time-consuming. In the last phase, definiteness becomes targetlike before the age of 4. Furthermore, empirical evidence for a preference of generic interpretations for definite plurals has been found for monolingual Spanish children (3–6 years old) (Pérez-Leroux et al. 2004). In the developmental stages, age is a significant factor in the acquisition of article semantics in L1 Catalan, since 3-year-olds did not differentiate between bare and definite plurals and judged 33 % of all DPs as generic, 4-year-olds judged 33 % of the definite plurals as generic and 66 % of the bare plurals, and 5-year-olds did not judge any definite plurals as generic and more than 50 % of the bare plurals as generic (Gavarró et al. 2006). Bare nouns are hypothesized to be inherently generic and subject to DKP. Generic definite plurals in Italian were accepted by Italian monolingual children and adults as well as by Spanish-Italian and English-Italian bilinguals in an Acceptability Judgment Task (Serratrice et al. 2009). Italian monolingual children and adults and Italian-German bilinguals showed a generic

preference in the interpretation of definite plurals in a Truth Value Judgment Task (Kupisch and Pierantozzi 2010). French-German bilingual adults also showed a generic preference in the interpretation of definite plurals in French (Barton 2016). In adult L2 acquisition, L1 transfer has been found from L1 English to L2 Spanish in the interpretation of definite plurals since definite plurals were interpreted as generic around 50 % of the time in Spanish (Montrul and Ionin 2012). Furthermore, monolingual Italian adults interpret definite plurals both as generic and specific even if pictures, which refer to specific referents, are involved (Redolfi, Soares, Czypionka and Kupisch 2021). This finding suggests that involving pictures when testing article semantics does not lead to an overinterpretation of definite plurals as specific. In aL3A, transfer effects have been found from Spanish in L1 Spanish-L2 English and L1 English-L2 Spanish speakers acquiring generic reference in L3 Brazilian Portuguese, irrespective of whether Spanish was the L1 or L2 (Ionin, Montrul and Santos 2011). The L3 learners allowed definite plurals but not bare plurals as generic due to transfer from Spanish (not from English), whereas in Brazilian Portuguese, both allow a generic interpretation. Furthermore, transfer effects from Spanish have been found in L3 Brazilian Portuguese by L1 Spanish-L2 English and L1 English-L2 Spanish/French/Italian adults. The L3 learners showed a preference for definite plurals in generic contexts due to transfer from Spanish (both as L1 and L2) and a preference for bare plurals over bare singulars suggesting transfer from English but only when English is the L1 (Ionin, Grolla, Santos and Montrul 2015).

In summary, in English, German, and French, the following findings have been evidenced by empirical data:

- Definiteness is acquired in developmental stages: (1) children omit articles completely for a short period, (2) children omit articles freely – a phase that lasts longer in Germanic than in Romance languages, (3) the article use becomes targetlike before the age of 4.
- Generic reference is acquired in developmental stages.
- L1 and 2L1 children pass the same developmental stages acquiring generic reference.
- L1 and 2L1 children pass a developmental 'Romance stage'.
- Age has been shown to be an influential factor.

- LoE has been shown to be an influential factor.
- Definite plurals have been overaccepted or overinterpreted as [+generic] by monolingual and Germanic-Romance bilingual children up to the age of 4–10 years (depending on the experiment); in Romance, a generic preference has been found.
- In aL2A, L1 transfer effects have been found for the interpretation of definite plurals as generic (from L1 Spanish to L2 English and from L1 English to L2 Spanish) and recovery from L1 transfer effects with increasing LoE.
- In aL3A, transfer effects from both previously acquired languages have been found for the interpretation of definite plurals and definite mass singulars as generic (from L1 Moroccan Arabic and L2 French to L3 English).
- In aL3A, definite plurals have been allowed and preferred as generic due to transfer effects (from L1/L2 Spanish to L3 Brazilian Portuguese) whereas bare plurals have not been allowed as generic (due to transfer effects from Spanish), even though bare plurals express generic reference in the L1 and the L3 (L1 English and L3 Brazilian Portuguese)

In Germanic:

- Children differentiate between [±generic] DPs at the age of 4.
- The choice of the predicate influenced the acceptance rate of generic definite plurals.
- Monolingual adults allow 10–15 % of generic interpretations for definite plurals.
- Germanic-Romance bilingual adults accepted less generic definite plurals than monolingual German adults due to overcorrection.

In Romance:

- Bare and definite plurals were not differentiated and judged as generic (33 %) by 3-year-olds, definite plurals (33 %) and bare plurals (66 %) were judged as generic by 4-year-olds, and no definite plurals but bare plurals (more than 50 %) were judged as generic by 5-year-olds; bare nouns are hypothesized to be inherently generic and subject to DKP.
- Monolingual adults show a generic preference in the interpretation of definite plurals.

In the following, a few studies on the acquisition of bare and definite nominal arguments in Germanic and Romance will be presented in more detail. The studies on L1A in English provide further evidence on the final state of L1A for the participants in the empirical study in Chapter 3, who are English native speakers and whose ages range from 5;10 to 12;2 years.

The study by Chierchia, Guasti, and Gualmini (2001) on child L1 development in English, Swedish, French, and Italian investigates the omission of articles. Three developmental sequences have been found: the predeterminer phase, the free variation phase, and the convergence phase. Initially, children omit articles completely; after this short period, they omit articles freely – a phase that lasts longer in Germanic than in Romance languages – and finally, the article use becomes adult-like. Chierchia et al. (2001) argue that this development is based on Chierchia's (1998) NMP, according to which a default setting is adapted once enough evidence has been provided via the input. The predeterminer phase then is the default phase in which all nouns are kind-denoting and therefore like mass nouns. The free variation phase takes longer in Germanic languages since children have to find out noun by noun whether the noun is an argument (kind-denoting) or a predicate (property-denoting). In the Romance languages, on the other hand, the free variation phase is shorter since children realize faster that the article is required and do not have to judge noun by noun which is less time-consuming. The participants of the study were four English, two Swedish, four French, and six Italian speaking children who were recorded several times during the age range from 1;0 to 3;11 years. The data was spontaneous speech, most of them taken from the CHILDES database.

Gavarró et al. (2006) investigate bare and definite plurals in L1 Catalan. Based on an economy approach, Gavarró et al. (2006) argue that bare nouns "have a default generic reading" (51) and that "the initial mapping of nominals is always generic" (56). Their data in L1 Catalan shows that children differentiate between bare and definite plurals and their semantics by 4 years of age. 3-year-olds do not perceive this contrast. Gavarró et al. (2006) investigate the acquisition of bare and definite plurals in direct object positions in L1 Catalan. Their main argument is that "a theory of economy in language favors minimal structures as acquisition defaults" (51) which are automatically mapped to a certain meaning. Based on Chierchia (1998), they argue for typeshifting and suggest that "children's seeming

specificity is actually the result of pragmatically induced typeshifting" (56). In Catalan, bare nouns are grammatical in object position – under the precondition that the noun is a plural count noun (e.g., "Busco sabates") or a singular mass noun (e.g., "Busco farina") – but not in subject position. The authors also discuss the interpretations of different predicates, individual-level predicates (e.g., "Firemen are nice") having kind-reference and stage-level predicates (e.g., "Firemen are available") having existential reference, as well as the mass/count distinction based on Chierchia (1998). The task was a comprehension task including four items. Four short stories were told to the participants which were accompanied by pictures and followed by a question formed with a bare or definite plural in the object position, e.g., "Who needs (the) shoes?"/"Qui necessita (les) sabates?". Based on the story, "Cinderella" was judged as a specific answer and "the older sister" as generic since there are no specific shoes mentioned for the older sister who is barefoot in the story. Participants were 11 3-year-olds, 11 4-year-olds, 12 5-year-olds, and 10 adults. The adults judged the bare plurals as generic and the definite plurals as specific as expected. The 3-year-olds did not differentiate between bare and definite plurals and judged 1/3 of all DPs as generic. The 4-year-olds also judged 1/3 of the definite plurals as generic but also 2/3 of bare plurals and the 5-year-olds did not judge any definite plural as generic and more than half of the bare plurals as generic. Thus, age was a significant factor in reference to the developmental sequences. The authors conclude by suggesting a hypothesis: "Bare Nouns are inherently generic but are subject to Derived Kind Predication" (65).

Pérez-Leroux, Munn, Schmitt and DeIrish (2004) examine the interpretation of definite plurals in L1 English and L1 Spanish. In study 1 on the interpretation of definite plurals, in English, 11 children whose ages range from 4;5–6;0 years, 9 children from 6;5–7;3 years, and 12 adults participated. In Spanish, 7 children from 3;5–5;3 years of age and 6 children from 6;0–6;7 years participated. Eight stories with "atypical members of a kind [...] (spotted zebras, cats who love to be in the water, vegetarian tigers [...])" (3) accompanied by a picture were presented to the participants. Participants had to answer yes/no questions about the atypical members. Each story was followed by four questions: one immediate question, two fillers (one positive, one negative), and a delayed question. The results for English and Spanish show that all children show a preference for the generic

interpretations of the definite plurals (~ 70 % in English, ~ 80–95 % in Spanish), i.e., children answered 'yes' to the question "Do the zebras have stripes?" even if the zebras in the story have spots. In English, the adults performed targetlike and did not allow generic interpretations for definite plurals. According to the authors, the fact that the characters were introduced by name could possibly explain the very high number of generic interpretations in English since referring to the characters with a definite "would be a marked option" (5). In study 2, the stories from study 1 were presented in past tense and the characters were not introduced by name. In English, 10 children from 3;0–5;2 years and 12 adults participated, and in Spanish, 8 children from 2;9–4;7 years, 12 children from 5;0–7;6 years and 8 adults. In English, the children allowed ~ 30–40 % of generic interpretations for definite plurals and did not show any effect in regards to tense. The adults did not allow any generic interpretations of definite plurals. The authors explain the lower proportion of generic interpretations by an effect of past tense in the narrative and by the fact that the characters were not introduced by name. In Spanish, children allowed generic interpretations in the present tense question to ~ 60–70 % and adults to 72 %, and in the past tense question children to ~ 40–50 % and adults to ~ 3 %. Pérez-Leroux et al. (2004) support the NMP, according to which in English the generic interpretation for definite plurals is blocked due to the existence of bare plurals. The fact that bare plurals are ungrammatical in Romance languages leads to an expansion of the "interpretative range" (Pérez-Leroux et al. 2004: 1) of definite plurals. Chierchia argues that Romance DPs are "full DPs but English bare plurals are bare NPs" (Pérez-Leroux et al. 2004: 2). The avoid structure principle type-shifts NPs to kinds, which leads to the disallowance of generic interpretations of definite plurals (see Chapter 1 for details). The authors argue that "[t]he acceptance of generic readings for definite plurals is predicted by Chierchia`s (1998) proposal that the definite semantics is not different in both languages" (11). Therefore, they predicted that L1 English- and L1 Spanish-speaking children "have a grammar of definites that includes the possibility of the generic reading" (10), which is confirmed by study 1, since the English children allowed high rates of generic definite plurals and the Spanish children showed a 100 % preference for generic definite plurals. They concluded that the children do know what is possible since they do accept generic interpretations of the bare plurals

to ~ 90–95 %. However, they do not seem to know what is not possible by allowing generic readings for definite plurals. This phenomenon has also been found in reference to the acquisition of Principle B (the authors refer to Grodzinsky and Reinhart 1993).

Hollander, Gelman, and Star (2002) conducted two studies on L1 development of the interpretation of generic DPs in English. The distinction between generic and non-generic DPs was tested with generic bare plurals and non-generic DPs including "some" or "any" in order to find out "what generics mean to children and adults" (884), i.e., are "tigers" interpreted differently from "all tigers" and "some tigers." The major finding of their studies is that 4-year-olds and adults distinguish generic from non-generic DPs whereas 3-year-olds do not. They argue that semantics related to generic reference is acquired at age 4.

Gelman and Raman (2003) investigate the interpretation of generic DPs in child L1 English. They focus on linguistic forms (by comparing bare and definite plurals) and pragmatic contexts. The participants are 16 4-year-olds and 25 adults in study 1A, 18 2- and 16 3-year-olds in study 1B, 26 adults in study 2A, and 12 2-year-olds, 12 3-year-olds, and 12 4-year-olds in study 2B and 2C. All participants lived in the US (Midwest). Study 1A and 1B consist of a judgment task focusing on the presence/absence of the definite article, study 1A includes 20 items, study 1B 12 items. A picture was shown to the participants, accompanied by a question, e.g., the participants saw a picture of two penguins and were asked, "Here are two birds. Now I am going to ask you a question about (the) birds. Can (the) birds fly?" (Gelman and Raman 2003: 311, brackets added by the author). The bare plurals refer to the generic condition and the definite plurals to the non-generic condition. The children were tested orally; the adults received each question in written form and wrote down their judgment. Gelman and Raman (2003) found that even if the context biased the non-generic interpretation (since pictures are included), all participants of study 1A differentiate between generic and non-generic interpretations "with ease" (312) using the formal cues, i.e., interpreting the presence/absence of the definite article correctly as generic or non-generic. Study 1B was added in order to analyze younger children's interpretation of definite and bare plurals since 4-year-olds and adults judged in a similar way. The results show that even 2-year-olds use "form-class cues" (315) in order to distinguish generic

and non-generic interpretations. Gelman and Raman (2003) conclude that even young children have generic knowledge. In study 2, pragmatic cues are being examined. The participants are shown a picture and asked a question, e.g., they saw a picture of a tiny elephant and were asked "Are they big or small?" (mismatch condition). Study 2A consisted of 15 items, 5 mismatch (one referent, plural DP), 5 singular match (one referent, singular DP), and 5 plural match (two referents, plural DP) conditions. The adults chose specific responses for the singular and plural match conditions as predicted, i.e., they saw two small elephants, were asked whether they are big or small, and answered 'small'. The mismatch condition differed significantly from the two other conditions by leading to more generic (categorywide) interpretations, i.e., they saw a small elephant, were asked whether THEY are big or small and answered big to almost 50 %. Study 2B consisted of 10 items, 5 mismatch and 5 singular match conditions. All children allowed more generic (category-wide) interpretations in the mismatch than in the singular match condition similar to the adult group. However, the difference between the two conditions increased with age, i.e., the 2-year-olds allowed less generic interpretations than the 3- and 4-year-olds in the mismatch condition. Study 2C included 10 items, 5 mismatch and 5 plural match conditions. The children were age-matched with study 1A, 1B, and 2B. The 2-year-olds' responses did not differ significantly in the two conditions, whereas the 3- and 4-year-olds performed similarly to the adults by showing significant differences between the conditions. Gelman and Raman (2003) conclude that 3- and 4-year-olds combine information from linguistic cues and nonlinguistic context, whereas 2-year-olds focus on language form and do not combine the cues. In English, learning generics consists of filtering out the specific much rather than mapping "a formal set of cues onto a set of properties in the world. […] Any indication of specificity could be enough to block a generic interpretation" (Gelman and Raman 2003: 324). The relevant cues a speaker needs to recognize generics at least consist of morphosyntactic information, pragmatic information and world knowledge. In summary, according to the authors, young children understand the distinction between generic and non-generic DPs, 2-year-olds use linguistic form class, and children from 3 years on identify generics by a combination of formal and pragmatic cues. Thus, children use several linguistic and pragmatic cues in order to acquire and interpret generics.

Gelman and Bloom's (2007) study consists of three studies, all testing whether children and adults differentiate between generic and non-generic reference in L1 English. Participants were 14 adults (undergraduate students) in study 1, 21 children from 4;6–5;9 years in study 2, and 16 children from 4;6–5;5 years in study 3 who did not participate in study 2. The methodology was to present a total of 8 scenarios (short stories accompanied with pictures) with novel category names, which were each followed by two questions, e.g., "Now I am going to ask you a question about dobles: Do dobles have claws? Now I'm going to ask you a question about these dobles: Do these dobles have claws?". The scenarios varied in reference to the following conditions: a) intrinsic origins/property maintained (e.g., Dobles that grew up with claws and kept them), b) intrinsic origins/property lost (e.g., Dobles that grew up with claws but lost them), c) extrinsic origins/ property maintained (e.g., Dobles that put on claws and kept them), d) extrinsic origins/ property lost (e.g., Dobles that put on claws and lost them). Both children and adults differentiate between generic and non-generic reference since they answered yes to the question "Do dobles have claws?" even if the particular dobles in the pictures did not have claws. Adults in contrast to children distinguished between properties that were intrinsic from those that were extrinsic, since intrinsic properties were judged as generic even if they were lost, whereas extrinsic properties were not when they were lost, which was predicted by the authors. Gelman and Bloom conclude that children go through developmental sequences in reference to semantic interpretations.

The corpus study by Sneed (2005, 2008) focuses on caregivers' input to 20-month-old children by looking at NP-form and distribution. The database is taken from Susan Gelman and also based on data from Gelman and Tardif (1998) and Gelman and Raman (2003) by analyzing the book-reading context. Sneed (2005) follows Chierchia (1995, 1998) by arguing "that children know the inventory of determiner meanings made available by universal grammar" (2). The differences between individual- and stage-level predicates are discussed as well as subject/object distinctions. The results show that there are "statistical and distributional cues" (8–9) in the caregivers' input, which provides information about whether a DP is generic or not. The cues include "grammatical function, predicate type and NP form" (9).

Barton, Kolb, and Kupisch (2015) argue based on data by L1 German adult speakers that the definite article has grammaticalized further in German than in English by having moved from a "Germanic" toward a "Romance stage." The study investigates the distribution of the definite article with generic reference in spoken German. Participants were 54 adults with L1 German who were divided into different groups based on age, regional background, education, and proficiency in second languages. The task was an acceptability judgment task consisting of 18 test items with bare plurals (e.g., "Blue whales are facing extinction") and definite plurals (e.g., "The blue whales are facing extinction") including kind- and individual-level predicates. A short context biasing a generic interpretation was presented to the participant, followed by a test item, e.g., "Every child knows, (the) sharks are normally dangerous." Half of the DPs with individual-level predicates included an adverb such as "normally" or "in general," which served as a generic cue. The participants were asked to repeat or correct the sentences that were presented acoustically and visually to them. The authors found that definite article use is to some degree semantically optional in German since both bare plurals (99.5 %) and definite plurals (67.7 %) with generic reference were accepted, definite plurals were accepted more often with kind-level predicates (84.9 %) than with individual-level predicates (61.9 %), and age and education had a significant impact on the acceptance of the definite article. The adverbial cue did not have a significant effect.

Czypionka and Kupisch's (2019) study also investigates definite article use in L1 German adult speakers. In line with Barton et al. (2015), the authors argue that their findings point toward "an ongoing change in the semantics of definite articles" (1), suggesting that German is in the process of moving toward a more Romance-like stage. Two experiments were conducted on the reading preferences of German definites. The participants saw pictures of items with prototypical and non-prototypical characteristics and judged the truth value of sentences with demonstratives, definite articles, or bare nominals. While the definite article was often interpreted as specific, reaction times were significantly slower for definite articles than for demonstratives and bare nominals, indicating that definites are potentially ambiguous, which leads to slower reaction times in contrast to interpreting demonstratives and bare nominals.

Redolfi, Soares, Czypionka, and Kupisch (2021) conducted a study building up on Czypionka and Kupisch (2019). The experiments were adapted to Italian in order to investigate whether L1 Italian adult speakers interpret ambiguous definite plurals as generic or non-generic (specific) in a non-linguistic picture context. The authors found that L1 Italian speakers interpret definite plurals both as generic and specific even though pictures refer to specific referents. This finding suggests that involving pictures when testing article semantics is suitable and does not lead to an overinterpretation of definite plurals as specific.

In aL2A, Ionin and Montrul (2010) argue for parallels in L1 and L2 acquisition. They conducted a study with native speakers of Korean acquiring L2 English. They tested the findings by Pérez-Leroux et al. (2004) for adult L2 learners and also found evidence for an overacceptance of the generic interpretation in definite plurals. Their method was a truth-value judgment task. Korean is an article-less language, and English also does not allow a generic interpretation for definite plurals. Therefore, Korean native speakers go from not having an article to overaccepting generics. In a follow-up study, Ionin and Montrul (2010) compared these results to the results of native speakers of Spanish acquiring L2 English, and they did find L1-transfer of the properties of generic reference in plural DPs in addition to the phenomenon of overacceptance. They argue for the FTFA, since the Spanish native speakers overaccepted the generic interpretation of English definite plurals to a greater extent than the Korean natives. Among Spanish, Korean, and English, Spanish is the only language that allows a generic interpretation for definite plural phrases. Thus, an overacceptance of generics was found by all learners; in addition, L1-transfer effects have been found, since the Spanish speakers overaccepted more definite plurals as generic than the Korean speakers, which is due to the distribution of genericity in their L1. However, a

> follow-up study further shows that with advanced proficiency and increased immersion in the target language, Spanish-speaking learners of English […] are as target-like as Korean-speaking learners of English […] on the interpretation of definite plurals, which suggests that recovery from L1-transfer is possible (Ionin and Montrul 2010: 1).

Snape, García-Mayo, and Gürel (2013) conducted a study on aL2 English with varying L1s in order to investigate the role of the L1. The L1s were

Spanish, Turkish, and Japanese. Spanish has an article system, "Turkish has an indefinite article, but no definite article, and Japanese lacks an article system" (1). The study confirms full transfer from the L1 since L1 Spanish and L1 Japanese have different initial states when acquiring L2 English. The choice of the article corresponded with L1 transfer effects.

Ionin, Montrul and Santos (2011) investigate L1 English speakers acquiring L2 Spanish, L1 English-L2 Spanish (French) and L1 Spanish-L2 English speakers acquiring generic reference in L3 Brazilian Portuguese by focusing on definite and bare plurals. The native speaker adult control groups in English, Spanish, and Brazilian Portuguese performed as predicted in the literature, i.e., the L1 English group allowed only bare plurals for generic reference, the L1 Spanish group allowed only definite plurals for generic reference and the L1 Brazilian Portuguese group allowed both bare and definite plurals for generic reference. The L2 Spanish learners performed targetlike by allowing only definite plurals for generic reference, whereas the L1 English-L2 Spanish speakers and the L1 Spanish-L2 English speakers acquiring L3 Brazilian Portuguese did not perform target-like by allowing definite plurals for generic reference, but not bare plurals, due to CLI from Spanish (both as L1 and L2), not from English (both as L1 and L2).

Ionin, Grolla, Santos, and Montrul (2015) examined definite, indefinite, and bare nominals in L3 Brazilian Portuguese by L1 English-L2 Spanish/French/Italian and L1 Spanish-L2 English adults. The L3 learners showed a preference for definite plurals in generic contexts, suggesting CLI from Spanish (both as L1 and L2), as well as a preference for bare plurals over bare singulars, when English is the L3 learner's L1, suggesting CLI from English (only as L1). Furthermore, L3 learners showed a preference for non-generic rather than generic interpretations of bare nominals, which may, according to the authors, be explained by the way the L3 learners analyze L3 input.

Hermas (2019) examines L1 Moroccan Arabic-L2 French adults acquiring L3 English at three proficiency levels (pre-intermediate, intermediate, advanced) and focuses on the count-mass distinction when acquiring generic reference. The pre-intermediate group performed non-targetlike by accepting definite mass singulars with generic reference, the intermediate group accepted both definite and bare mass singulars interchangeably, and

the advanced group accepted exclusively bare mass singulars with generic reference. Thus, with increasing proficiency, CLI from the previously acquired languages decreases.

Hermas' (2020) study investigates the acquisition of generic reference in L3 English by L1 Moroccan Arabic-L2 French adults. While the L3 learners perform target-like on definite and bare singulars as well as on generic interpretations of bare plurals, even though bare plurals have non-generic reference in Moroccan Arabic and are ungrammatical in French, they overinterpret definite plurals as generic, presumably due to CLI (non-facilitation) from both previously acquired languages.

In summary, in L1A of English, definiteness is acquired before the age of 4. The semantics of definiteness including generic reference is acquired later in L1 English. Overacceptance of generic interpretations for definite plurals has been found in the age range of 4 to 10 years. In aL2A and aL3A, overacceptance of generic interpretations for definite plurals has also been found. L1/L2 transfer and recovery from L1/L2 transfer have been found.

2.3.2 Learnability of Generic Reference in Child Second Language Acquisition in L2 German and L2 French

Based on the crosslinguistic differences for generic reference in English, German, and French outlined in Chapter 1, the theoretical framework presented in Chapter 1, the theoretical proposals in L2A outlined in Section 2.2.5, and the empirical evidence presented in Section 2.3.1, the native English child L2 learner's learning tasks when acquiring generic reference in L2 German or L2 French will be analyzed.

In Chapter 1, crosslinguistic variation in generic reference between English, German, and French has been investigated. Based on the NMP, English and German (type 3 languages) differ from French (type 2 language) with regard to mass nouns and plural count nouns, i.e., bare plurals, definite plurals, bare mass singulars, and definite mass singulars. According to the Blocking Principle (Chierchia 1998), in English, German, and French, the article blocks the type shifting operation, i.e., free shifting from predicate to argument. In English and German, the existence of bare plurals and bare mass singulars blocks generic reference for definite plurals and definite mass singulars. Thus, bare plurals and bare mass singulars can have generic

reference whereas definite plurals and definite mass singulars cannot. In French, definite plurals and definite mass singulars allow the generic interpretation due to the non-existence of bare plurals and bare mass singulars. Bare plural arguments are ungrammatical in French since common nouns are predicates or property/relation denoting, which are only allowed in argument position if D is projected. If D is not projected in English and German, the D position is left empty (= null determiner). According to Chierchia (1998), in French, DPs are full DPs, and in English and German, bare plurals and bare mass singulars are NPs. Based on the Avoid Structure Principle (Chierchia 1998), NPs can shift types to kind/generic reference, and consequently, D will not be projected (in type 3 languages). Thus, shifting bare plurals to generic reference in English (instead of projecting D) forces definite plurals to be non-generic in English (and prevents the type shift for definite plurals to generic reference). Thus, Chierchia (1998) explains why the definite article in English and German does not allow generic interpretations.

The review of the literature on L1A of English revealed that children in L1 English acquire definiteness before the age of 4 years to a targetlike level. Based on this empirical evidence, native English child L2 learners are assumed to have acquired bare plurals, bare mass singulars, definite plurals, and definite mass singulars to a targetlike level in their native language English. Furthermore, the literature review on L1A of English revealed that children overaccept definite plurals with generic reference in English; the children's age in the relevant studies ranges from 4 to 10 years. This overacceptance of ungrammatical generic definite plurals has been explained with difficulties in "deciding which form can be shifted to be interpreted as kind" (Pérez-Leroux et al. 2004: 2). These difficulties can be explained by the fact that language development is partially constrained by cognitive and linguistic development. More complex properties, such as interface properties, require more computational space and carry heavier cognitive resource demands in processing, which in consequence can lead to an acquisition at a higher age when cognitive maturity is higher (e.g., Paradis, Rusk, Sorenson Duncan and Govindarajan 2017; Rothman et al. 2016). Based on this empirical evidence, native English child L2 learners are assumed not to have acquired generic reference to a targetlike level in

their native language English, i.e., whether type shifting is possible for bare plurals and/or definite plurals in order to have generic reference.

Based on the FTFA, the initial cognitive state of L2A is the final state of L1A, which will be restructured due to UG access and L2 input. Consequently, if in L1 English, the syntax of bare plurals, bare mass singulars, definite plurals, and definite mass singulars is acquired to a targetlike level, whereas, due to cognitive maturational constraints, which lead to difficulties with type shifting, the semantics of these forms are not acquired to a targetlike level in terms of interpreting bare and definite nominals as generic, in cL2A this state is transferred to the initial cognitive state of L2A due to full transfer from the L1. Therefore, in the initial state in cL2 German and cL2 French, which is assumed to be identical in both L2s due to full transfer from L1 English, bare plurals and bare mass singulars will be accepted and produced[70] with generic and non-generic reference and definite plurals and definite mass singulars will also be accepted and produced with generic and non-generic reference. In targetlike English, bare plurals and bare mass singulars are the canonical way to express generic reference and the non-canonical way to express non-generic reference, whereas definite plurals and definite mass singulars are the canonical way to express non-generic reference and are ungrammatical with generic reference due to the existence of bare nominals, which type shift to generic reference. However, due to maturational constraints, the cL2 learners up to the age of 10 are not expected to have acquired canonical and non-canonical ways to express generic and non-generic reference in L1 English and L2 German or L2 French.

The cL2 learners' post-initial interlanguage stages will be restructured with full access to UG, exposure to linguistic input in the L2, and increasing age interrelated with increasing cognitive maturation. Based on the FRH, the interlanguage stages will be restructured by reassembling features in the case of a mismatch between L1 and L2. The following features are involved in acquiring generic reference in English, German, and French: [±generic], [±definite], [±singular], [±count], [±subject], [±argument], and [±predicate].

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70 Production is included for the sake of completeness, however, production is not examined in the empirical study, and will therefore not be included in the hypotheses nor be discussed any further in this study.

In addition, if the grammatical contexts were also represented as features, i.e., the choice of the predicate and the presence or absence of a cue such as *in general*, the following features could be added: [±individual-level], [±intensional], [±cue]. However, with L1 English, only the features [±definite] and [±generic] have to be reassembled in L2 German and L2 French. In L2 German, in the case of bare plurals and bare mass singulars, no feature reassembly is necessary since English and German pattern together for these DPs. Maturational constraints are assumed due to the complexity of the learning task, which requires more computational space and consume more processing resources, and therefore, the younger L2 learners will not differentiate between canonical and non-canonical ways to express generic and non-generic reference, whereas the older L2 learners will accept and produce more bare nominals with generic reference than with non-generic reference, which is the canonical way to express generic reference in English and German. In cL2 German, in the case of definite plurals (and definite mass singulars[71]), the feature [±generic] has to be reassembled to [-generic] with increasing cognitive maturity.[72] English and (Standard) German also pattern together for definite plurals (and definite mass singulars). In L2 French, in the case of bare plurals and bare mass singulars, the feature [-definite] has to be reset to [+definite], since bare nominal arguments are ungrammatical in French. In a next step, the interpretation of definite plurals (and definite mass singulars) has to be acquired involving the feature [±generic]. However, since maturational constraints lead to [±generic] interpretations for definite plurals in English, no feature reassembly is necessary for child L2 learners.[73]

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71 Definite mass singulars are only involved in the empirical study if L2 learners reject bare mass singulars and correct them to definite mass singulars. Therefore, they will not be discussed in detail. However, the assumptions for definite mass singulars overlapt with the assumptions for definite plurals.

72 If the L2 learner acquires a variety of German that allows generic definite plurals, no feature reassembly is necessary. However, definite plurals are the non-canonical way to express generic reference in these varieties of German, which differ from Standard German in this regard.

73 The assumptions for child L2 learners differ from the assumptions for adult L2 learners. Adult L2 learners have acquired L1 English to a targetlike level, and therefore, the L2 initial state differs for child and adult L2 learners. Adult

The initial stages of L2 German and L2 French are expected to be identical; in the post-initial interlanguage stages, the cL2 French learners are expected to accept and produce more definite plurals with generic reference (and to interpret more definite plurals as generic) than the cL2 German learners, since in L2 German, bare plurals with generic reference are grammatical in contrast to L2 French.

In all interlanguage stages, for DPs with individual-level and intensional predicates, the acceptance/interpretation/production rate of [+generic] will be higher than for DPs with stage-level and extensional predicates, since English, German, and French pattern together with regard to these grammatical contexts. Furthermore, for DPs with lexical cue such as *in general*, the acceptance/interpretation/production rate of [+generic] will be higher than for DPs without cue, since a lexical cue helps identifying generic reference.

Following the Bottleneck Hypothesis, due to the complexity of the learning tasks when acquiring functional morphology in combination with the related semantics, the acquisition of generic reference is assumed to take longer in the case of mismatches between L1 and L2. The L2 learner's learning tasks are assumed to be the following: to map forms to correct interpretations and grammatical features and to identify the grammatical contexts, which will be discussed in more details when investigating the L2 learner's learning tasks.

Thus, child L2 learners are assumed to acquire generic reference at an advanced interlanguage stage due to a) cognitive maturational constraints, and b) the complexity of the learning task in the case of a mismatch between L1 and L2.

Furthermore, the different interpretations of definiteness are assumed not to be available to the L2 learner through the L2 input, and acquiring generic reference is therefore argued to be a poverty of the stimulus. Poverty of the Stimulus is defined as follows:

L2 learners of L2 German do not have to reassemble features, whereas adult L2 learners of L2 French have to reassemble [-definite] to [+definite] for bare nominals (in order to turn ungrammatical bare nominals into definite nominals) and [-generic] to [±generic] for definite plurals.

"*Poverty of the Stimulus*: Learning situations in which knowledge of the inavailability of some form or some interpretation cannot be obtained based on positive evidence in the input (just because the form does not appear in the speech signal, or the interpretation is unavailable)."

(Slabakova 2016: 423)

In an immersion setting, grammar is not taught explicitly, and therefore, generic reference is not taught to the cL2 learners in this empirical study. Since the syntactic structure of DPs with generic and non-generic reference does not differ, these DPs as such are ambiguous. The interpretation has to be obtained based on the context (e.g., lexical cues and the choice of the predicate), which, however, is ambiguous to a certain degree, e.g., *Les requins sont dangereux* – a DP followed by an individual-level predicate is more likely to have generic reference; however, in a non-generic context, it can also have non-generic reference (e.g., *A father and a child at a basin with sharks, and the father says: Look, the sharks are dangerous. Do you see their teeth?*). Thus, there is no positive non-ambiguous evidence for generic reference in the input. Furthermore, cL2 French learners have to acquire that bare nominal arguments are ungrammatical, which is not available through positive evidence in the input. According to Slabakova (2016), "[a]cquiring the fact that some construction is ungrammatical (also known as preempting) constitutes a learnability problem because the relevant information is not available in the positive input that the language acquirer is exposed to" (227).

White (2003) argues that learnability is a convincing argument for an innate language faculty such as UG, since there is a mismatch between the input and the output. The L1 child (and also the L2 child) produces utterances that do not appear as such in the input. Unconsciously, grammatical properties have been acquired that cannot have been learned through the input due to the complexity of the grammar, the infrequency in the input, and no explicit instruction. Therefore, the existence of an innate linguistic component is assumed (Baker and McCarthy 1981; Hornstein and Lightfoot 1981 as cited by White 2003), which is the argument for a "poverty of the stimulus" (POS), since L1 children (and L2 children in immersion settings) acquire grammatical areas they have hardly been exposed to and have not been instructed in. Therefore, the input (= stimulus) is not rich enough (=poverty) in order to be an explanation for language

acquisition. This phenomenon is also known as the "logical problem of language acquisition" (White 2003: 4). L2 children learn "that certain sentence types are disallowed; furthermore, they acquire knowledge that certain interpretations are permitted only in certain contexts […] even though children are not taught about ungrammaticality, explicitly or implicitly" (White 2003: 4). Even if it has been argued that generic reference appears frequently in the input (e.g., Gelman 2004; Gelman, Coley, Rosengren, Hartman, and Pappas 1998; Gelman and Raman 2003; Gelman and Tardif 1998; Pappas and Gelman 1998), in cL2A, cL2 learners have to acquire that certain structures are ungrammatical in the L2, such as bare nominal arguments in L2 French, that definite plurals are likely to have generic reference followed by individual-level predicates or preceded by intensional predicates, that lexical cues can trigger generic reference, which is not taught explicitly or implicitly. Therefore, generic reference is a POS phenomenon.

Poverty of the Stimulus, the complexity of functional morphology and its semantics (the syntax-semantics interface), and cognitive maturational constraints lead to a learnability problem when acquiring generic reference in cL2A. In the following, the cL2 learner's learning tasks when acquiring generic reference will be investigated.

Based on the FTFA, it will be assumed that the L2 learner has access to UG, that the cognitive initial state of L2A is the final state of L1A, and that the L2 grammar will be restructured by UG interacting with the L2 input. Based on the FRH, it will be assumed that formal features have to be reassembled in L2A in the case of a mismatch between L1 and L2, and based on the BH, the following learning tasks for L2 learners when acquiring functional morphology will be assumed:

1) map forms to correct interpretations (grammatical meanings)
2) map forms to possibly different grammatical features (feature addition, subtraction, and general reassembly) and
3) identify the grammatical contexts for the morpheme occurrence.

(Slabakova 2016: 395)

Slabakova (2016) summarizes these tasks and suggests (based on Lardiere 2009) that "learning lexical items with bundles of features in possibly new configurations appears to be the most important learning task" (198).

Considering the theoretical framework of the NMP, when acquiring generic reference, the native English child L2 learners' initial state of L2A

is formed by the characteristics of language type 3. However, empirical evidence in L1A of English (type 3), based on the NMP as the theoretical background, has shown that L1 children in the age range from 4 to 10 years have difficulties deciding whether bare or definite nominals have generic reference due to maturational constraints, which leads to overacceptance of definite plurals as generic. In type 3, bare arguments can type shift to generic reference, and consequently, definite plurals have non-generic reference. However, if the cognitive initial state of L2A is the final state of L1A, the difficulties in article semantics, i.e., in type shifting, will also be assumed for L2 learners in the same age range in L2 German and L2 French. Definiteness, in contrast, has been shown to be acquired by 4 years of age, and therefore, bare and definite nominal arguments are assumed to be acquired on a targetlike level in L1 English. The initial state in L2 German and L2 French is expected to be identical based on L1 English. Therefore, in L2 German and L2 French, initially, it is expected that bare nominal arguments will be accepted,[74] since in L1 English, count nouns start out as predicate denoting and can be kind-denoting in argument position in the plural and mass nouns start out as kind-denoting. Definite plurals and definite mass singulars will initially be overaccepted and overinterpreted as generic.

Assuming this initial state as the starting point, the L2 learner's learning tasks when acquiring generic reference are argued to be the following.

First, the L2 learner has to figure out whether bare nominal arguments are grammatical in the L2. In L2 German (type 3), bare nominal arguments are grammatical as in L1 English (type 3). In L2 French (type 2), bare nominal arguments are ungrammatical, since common nouns are predicates or property/relation denoting, which are only allowed in argument position if D is projected. Thus, in L2 French, the projection of D is obligatory. Following the FRH, no feature reassembly is involved in L2 German, and in L2 French, the feature [-definite] has to be reset to [+definite].

Secondly, the L2 learner has to learn which forms can be type shifted to generic reference, expressed in the following rules:

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74 Production has not been evaluated in the empirical study, since both experiments are comprehension/interpretation tasks. Therefore, production is not included in this discussion and in the hypotheses in the next section.

If bare nominal arguments are grammatical, it allows them to type shift to generic reference and therefore prevents definite plurals and definite mass singulars from having generic reference, i.e., definite plurals have non-generic reference only. If bare arguments are not grammatical, then definite plurals and definite mass singulars have generic and non-generic reference. In German, the L2 learner has to learn that grammatical bare nominal arguments lead to non-generic reference for definite plurals and definite mass singulars. Based on the initial state, the feature [±generic] has to be reset to [-generic] for definite plurals and definite mass singulars. In L2 French, the L2 learner has to learn that ungrammatical bare nominal arguments lead to generic and non-generic reference for definite plurals. Thus, the feature [+generic] has to be reset to [±generic].

Third, the L2 learner has to identify the contexts in which bare and definite nominal arguments can occur. In English, German, and French, generic reference is expressed with individual-level and intensional predicates and non-generic reference with stage-level and extensional predicates. In English and German, bare plurals and bare mass singulars followed by individual-level predicates[75] or preceded by intensional predicates are the canonical way to express generic reference and definite plurals and definite mass singulars are the canonical way to express non-generic reference. In French, definite plurals and definite mass singulars followed by individual-level predicates or preceded by intensional predicates are the canonical way to express generic reference and definite plurals and definite mass singulars followed by stage-level predicates or preceded by extensional predicats are the canonical way to express non-generic reference. In addition, cues such as 'in general' can be used in all three languages.

Thus, the contexts are the same in the three languages, and only the forms have to be used with the matching interpretations and the matching grammatical features.

These three learning tasks are in line with Slabakova's (2016) suggestion of the learning tasks. The learning tasks are structured differently,

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75 Further contexts for generic reference, which are not relevant for the empirical study in Chapter 3, will not be considered in this discussion, e.g., kind-level predicates.

since the first task focuses on bare nominal arguments, the second task on the interpretations of definite plurals, and the third on the grammatical contexts. However, the suggested learning tasks are identical: mapping forms to correct interpretations and grammatical features and identifying the grammatical contexts. The L2 French learner's learning tasks based on Slabakova's suggestion would be the following:

1. *Map forms to correct interpretations.*
   After having learnt that in L2 French (type 2), the projection of D is obligatory, which means that bare nominal arguments are ungrammatical, since common nouns are predicates or property-denoting, which are only allowed in argument position if D is projected, and the L2 learner has to map definite plurals and definite mass singulars to generic and non-generic reference.
2. *Map forms to grammatical features.*
   For bare plurals and bare mass singulars, [-definite] has to be reset to [+definite], and for definite plurals, [+generic] has to be reset to [±generic].
3. *Identify the grammatical contexts.*
   The grammatical contexts are the same and do not have to be reidentified.

The child L2 learner is expected to acquire generic reference based on these learning tasks in developmental sequences as suggested by Schwartz (2009) and evidenced by empirical data.

Based on these learning tasks, three major interlanguage stages will be assumed that will be passed by each L2 learner when acquiring generic reference. These interlanguage stages involve feature reassembly of [±definite] and [±generic]. However, these interlanguages are not to be thought of as cut-off points but rather as stages that are passed on the way to targetlikeness. Even if, in general, increasing LoE and proficiency will lead to increasing targetlikeness, L2 development is assumed to be non-linear, and therefore, fluctuation is expected.

Interlanguage 1 (the initial state in cL2A): Due to the cognitive final state of L1 English, child L2 learners initially accept and produce definite and bare nominals with generic reference in L2 German and L2 French.

Interlanguage 2 (the early post-initial interlanguage stage): With access to UG, slightly increased cognitive maturation, and exposure to L2 input, L2 German and L2 French will start to differ. In L2 German, bare and

definite nominals will be accepted, produced, and interpreted as generic, and in L2 French, bare nominals will be rejected and definite plurals will be interpreted as generic and non-generic.

Interlanguage 3 (the advanced interlanguage stage): When L2 learners have achieved adult-like cognitive maturation, and exposure to L2 input has increased, in L2 German, bare nominals will be accepted, produced, and interpreted as generic, whereas definite nominals will only be accepted, produced, and interpreted as non-generic (in Standard German). In L2 French, bare nominals will be rejected, and definite plurals will be accepted, produced, and interpreted as generic and non-generic depending on the context.

In all interlanguage stages, the acceptance and interpretation rate is expected to be higher with individual-level and intensional predicates than with stage-level and extensional predicates.

L2 learners are assumed to pass several stages in between these three major stages. Between interlanguage 1 and 2, in L2 French, bare nominals are assumed to be accepted and produced more than they are rejected (with generic and non-generic reference, due to maturational constraints), then bare nominals are assumed to be rejected more than they are accepted and produced, and finally, most or all bare nominals are assumed to be rejected leading to interlanguage stage 2 (see above).

It is assumed that not every L2 learner will achieve the targetlike level of interlanguage stage 3.

2.4 Research Questions and Hypotheses

The central question addressed in this empirical study concerns the learnability of generic reference in the child L2 developmental course. In order to investigate this question, English native child L2 learners either acquiring German or French will be divided into groups based on either length of L2 exposure or proficiency, which leads to the analysis of the L2 developmental course in the acquisition of generic reference in German and French. On the one hand, the developmental stages, represented by the LoE or proficiency groups, will be investigated, and on the other hand, the L2 developmental course in L2 German and L2 French will be contrasted. Consequently, implications for cL2A in immersion education will be drawn.

In this section, the research questions are formulated and the general hypotheses for the cL2 learner's learning tasks and the L2 developmental course in German and French are outlined. These hypotheses will be fleshed out in Chapter 3 in terms of the two experiments conducted for the empirical study, i.e., the Acceptability Judgment Task and the Truth Value Judgment Task. The hypotheses are based on (a) the theoretical approaches on L2A, namely, the Full Transfer/Full Access Model proposed by Schwartz and Sprouse (1994, 1996), the Feature Reassembly Hypothesis proposed by Lardiere (2000, 2009), and the Bottleneck Hypothesis proposed by Slabakova (2008, 2016), outlined in Section 2.2.5; (b) the theoretical approach on generic reference, namely, the Nominal Mapping Parameter proposed by Chierchia (1998), outlined in Section 1.3.1; (c) previous findings on the acquisition of generic reference, presented in Section 2.3.1; and (d) the learning tasks a native English cL2 learner is faced with when acquiring generic reference in German or French, as outlined in the preceding section.

The empirical study in Chapter 3 is based on the research questions[76] presented in (34).

(34) **Research Questions:**
   RQ1: What are the native English child L2 learner's learning tasks when acquiring generic reference in L2 German or L2 French? Is the L2 developmental course affected by L1 transfer effects and constrained by Universal Grammar (in combination with L2 experience)? Does the complexity of the learning tasks in combination with cognitive maturational constraints cause difficulties, which lead to the acquisition of generic reference in an advanced interlanguage stage?
   RQ2: Which conclusions can be drawn from the native English L2 learners' learning tasks and their L2 developmental course in the acquisition of generic reference in L2 German and L2 French for immersion education?

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76 The research questions and hypotheses are motivated by Bongartz (2007), which is an unpublished University of Cologne-research proposal on L2A of generic DPs, and by a conference presentation by Bongartz and Kolb (2009), which discusses the FTFA, and child L2 development.

RQ1 is motivated by the NMP, the FTFA, the FRH, the BH, and previous findings on the acquisition of generic reference.

The FTFA argues for full L1 transfer and full access to UG. Following the FTFA, the cognitive initial state of both L2 learner groups is expected to be identical based on L1 English. However, the subsequent interlanguages are expected to differ based on the differences with regards to generic reference in L2 German and L2 French since the L2 grammar is restructured due to UG access and L2 experience.

The NMP claims that, based on crosslinguistic variation in the occurrence of bare nominal arguments, languages are divided into three types. English and German belong to the same type (type 3), whereas English (type 3) and French (type 2) do not. In L2 French, the cL2 learner is faced with the learning task of figuring out that bare plural arguments are ungrammatical in French, which leads to [±generic] reference for definite plurals. Based on type shifting operations, the NMP claims, if bare nominal arguments are grammatical in a language, definite plurals cannot have generic reference, and, if bare nominal arguments are ungrammatical, definite plurals have generic and non-generic reference. However, due to cognitive maturational constraints, which have been confirmed by empirical evidence in L1A for 4–10-year-old children, the L2 child has difficulties with deciding whether bare and definite plurals can be shifted to [+generic]. Based on Chierchia's prediction that children pass type 1 (Chinese stage), followed by type 2 (Romance stage), and finally resulting in type 3 (Germanic stage) when acquiring L1 English, it is hypothesized that native English cL2 learners above the age of 6 (possibly until the age of 10 years) have reached type 3 (the Germanic stage) with regard to syntax but are still in type 2 (Romance) with regard to semantics. Consequently, the cL2 learner of French has to acquire that bare nominal arguments are ungrammatical, and cL2 learners of German have to acquire that definite plurals cannot have generic reference in L2 (Standard) German (and in L1 English).

The FRH assumes features to be transferred from L1 English based on the FTFA. The FRH argues that features have to be reassembled in

the case of a mismatch between L1 and L2. Thus, if L1 and L2 use the same features to express generic reference, the features will be transferred to the particular lexical item of the L2 leading to targetlikeness. If L1 and L2 differ, the features have to be reassembled, which is a complex process. Feature reassembly is guided by UG and L2 input. These assumptions are also in line with the BH, which claims that the L2 learner's tasks are mapping forms to the correct grammatical meanings or interpretations, mapping forms to possibly different grammatical features, and identifying the grammatical contexts. Furthermore, the BH claims that L2A of functional morphology is difficult for L2 learners, which is demonstrated by the bottleneck of functional morphology that has to be passed, which gets wider with increasing LoE and increasing proficiency. The level of difficulty increases with increasing complexity. The complexity of the L2 learner's learning tasks will increase in L1 and L2 mismatches, since in the case of a mismatch, L1 transfer will not lead to targetlikeness. The more forms have to be mapped to different interpretations, the more feature reassembly will be necessary, which will increase the L2 learning task. The L2 learning task increases with increasing new grammatical contexts. Thus, acquiring generic reference is expected to cause difficulties in the case of a mismatch between L1 and L2, which is expected to lead to targetlikeness, if achieved, at a more advanced interlanguage stage.

Empirical evidence from L1A of generic reference has shown that cognitive maturation and age are influential factors. Empirical evidence in L1 English (type 3), based on the NMP as the theoretical background, has shown that L1 children in the age range from 4 to 10 years "have problems deciding which form can be shifted to be interpreted as a kind" (Pérez-Leroux et al. 2004: 2), i.e., L1 children have difficulties with type shifting, and therefore, L1 children overaccepted generic interpretations for definite plurals. In type 3 languages (English and German), bare arguments can type shift to generic reference, and consequently, definite plurals have non-generic reference only, and in type 2 languages (French), definite plurals have generic and non-generic reference since bare arguments are ungrammatical.

Thus, based on the FTFA, the NMP, the FRH, the BH, and empirical evidence in L1A of English, the features [±definite] and [±generic] have to be reassembled or, in this case, 'reset'.[77]

Thus, even though the feature reassembly process only involves two features that need to be reset, the process is assumed to be complex due to difficulties with type shifting in combination with maturational constraints and due to the bottleneck of functional morphology.

RQ2 is motivated by the BH, which claims that instruction in the L2 is more efficient in functional morphology differing in L1 and L2. The BH argues that mismatches in the L1 and L2 in the area of functional morphology lead to learning difficulties in L2A, which are supposed to be likely to remain even at an advanced interlanguage stage. Therefore, focus on form lessons in efficient L2 teaching should focus on mismatch situations in functional morphology related to semantics.

Hypotheses for RQ1:
Hypothesis 1: Learning tasks

The cL2 learner's learning tasks for the acquisition of generic reference are the following (based on the Bottleneck Hypothesis):

a. Map forms to correct interpretations: Based on the Nominal Mapping Parameter, the L2 learner has to (1) figure out whether bare nominal arguments are grammatical in the L2 and (2) learn which forms can be shifted to generic reference, i.e., if bare nominals are grammatical, definite nominals cannot have generic reference; if bare nominals are ungrammatical, definite nominals have [±generic] reference.

b. Map forms to grammatical features: [±definite] and [±generic] have to be reassembled for bare and definite nominals.

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77 Since the features [±definite] and [±generic] already exist in all three languages involved, and these features have to be switched from [-definite] to [+definite], and from [+generic] to [±generic], the process involved in the acquisition of generic reference in L2 German and L2 French is rather feature resetting than feature reassembly.

    c. Identify the grammatical contexts for generic reference: Individual-level and intensional predicates are inherently generic; lexical cues can trigger generic reference.

The learning tasks depend on mismatches in L1 and L2, which leads to different learning tasks for the cL2 learner of German and French. The grammatical contexts are identical in English, German, and French. L1 transfer leads to targetlikeness in the acquisition of generic DPs if there is no mismatch between L1 and L2. This is the case for indefinite singulars and definite singulars in L2 German and L2 French since English, German, and French pattern together with regards to these structures (see Chapter 1), which are therefore not examined in the empirical study.[78]

    a. L2 German: With increasing cognitive maturation, the cL2 learner will learn that definite plurals cannot have generic reference, since bare nominals shift to generic reference, which leads to reassembling the feature [±generic] to [-generic] for definite plurals.

    b. L2 French: The cL2 learner has to learn (with increasing LoE and proficiency) that bare nominal arguments are ungrammatical, which involves reassembling [-definite] to [+definite]. With increasing cognitive maturation, the cL2 learner will learn that ungrammatical bare nominals lead to [±generic] definite nominals. No features have to be reassembled, since cognitive maturational constraints will lead to [±generic] definite nominals in the L2 initial state due to L1 transfer effects. Thus, the interpretation of definite plurals will be [±generic] throughout the L2 development, but for different reasons (first, maturational constraints and L1 transfer, then, maturation and targetlikeness in French). By the time the cL2 learner is cognitively mature and shifts bare nominals to generic reference in L1 English, the cL2 learner has learnt that bare nominals are ungrammatical in French due to increased LoE.

    c. In L2 German (and in early interlanguage stages in L2 French due to L1 transfer from English), the acceptance rate of bare nominals

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78 Due to maturational constraints, it is possible that indefinite and definite singulars will not be interpreted targetlike, i.e., adult-like. However, this cognitive maturational development will affect all three languages in the same way. With increasing cognitive maturation adult-like interpretations are predicted.

will be higher with generic than with non-generic reference (due to canonical configurations), the acceptance rate of definite plurals will be lower with generic than with non-generic reference (due to canonical configurations). The acceptance rate of bare plurals and bare mass singulars with generic reference will not differ, since bare plurals and bare mass singulars with generic reference are alike based on the DKP (Chierchia 1998).

In L2 German and L2 French, the interpretation rate of [+generic] will be higher with individual-level than with stage-level predicates.

In L2 French, the interpretation rate of [+generic] will be higher than in L2 German, since bare nominals can express [+generic] in German but not in French.

Hypothesis 2: Complexity of the learning task

Due to the complexity of L2A of functional morphology, as argued in the Bottleneck Hypothesis, generic reference will be acquired to a targetlike level (if at all) in an advanced interlanguage stage of cL2A. In addition, cognitive maturational constraints lead to difficulties with type shifting, which lead to the acquisition of generic reference in an advanced interlanguage stage in L2 German, but not in L2 French.

In L2 French, the rejection of bare nominals is expected in an earlier interlanguage stage, since the acquisition of syntactic areas is assumed to be less complex. Cognitive maturational constraints are responsible for definite plurals initially being interpreted as [±generic] due to difficulties with type shifting also related (to a certain degree) to the complexity of the learning task. However, in the acquisition of L2 French, this happens to lead to targetlikeness, but not because the L2 learner has successfully learnt all learning tasks, i.e., ungrammatical bare nominals lead to [±generic] definite plurals, but because of maturational constraints and L1 transfer effects. With increasing LoE, [±generic] for definite plurals will be confirmed by L2 input. Thus, in early interlanguage stages, L2 learners interpret definite plurals as [±generic] due to L1 transfer (and maturational constraints), and in advanced interlanguage stages, L2 learners interpret definite plurals as [±generic] due to the acquisition of type shifting and related feature reassembly, i.e., if bare nominal arguments are ungrammatical, definite plurals have generic and non-generic reference.

If difficulties remain for cognitively mature cL2 learners with increased LoE and proficiency, these can be traced back to the complexity of the learning task as argued in the BH.

Hypothesis 3: L2 developmental course

a. The initial cognitive state of L2A is identical in L2 German and L2 French due to full transfer from L1 English. CL2 learners of German and French will accept bare nominals and accept and interpret definite plurals as generic.

b. With increasing age at testing, LoE, and proficiency, the post-initial interlanguage stages will increasingly differ in L2 German and L2 French due to targetlikeness in German and French (combined with cognitive maturation, UG access, and L2 input). With increasing age at testing, LoE, and proficiency, the difference in the interpretation rate of definite plurals as [+generic] will increase between L2 German and L2 French, with a higher interpretation rate of [+generic] in L2 French.
In L2 German, increasing age at testing, LoE, and proficiency will lead to an increasing interpretation rate of definite plurals as nongeneric. In L2 French, increasing LoE and proficiency will lead to an increasing rejection rate of bare nominals.

c. In cL2A, syntax will be acquired earlier than semantics due to maturational constraints and the complexity of the acquisition of semantics related to functional morphology. Therefore, cL2 learners of French will learn that bare nominals are ungrammatical in an early interlanguage stage, and cL2 learners of German will learn that definite plurals cannot have generic reference in a late interlanguage stage. Thus, bare nominals in L2 French will be rejected at an earlier interlanguage stage than generic definite plurals in L2 German.

d. Individual L2 learners will vary with regard to the timeframe of the L2 developmental course, since L2 development is assumed to be non-linear and individual L2 learner variation is expected.

Hypothesis 4: Maturational constraints

Cognitive maturational constraints will lead to difficulties with type shifting due to complex properties requiring more computational space, carrying

heavier cognitive resource demands in processing, leading to an acquisition of the properties at an older age. Initially, definite plurals will be overaccepted and overinterpreted as generic in L2 German and L2 French due to L1 transfer. In L2 German, definite plurals will be interpreted and accepted as generic as long as cL2A is constrained by maturational effects.

Hypotheses for RQ2:
Hypothesis 1: L2 exposure

CL2 learners in immersion education will acquire generic reference with increasing age, LoE, and proficiency without instructional effort at an advanced interlanguage stage due to maturational constraints and the complexity of the learning tasks.

Hypothesis 2: Focus on form for older L2 learners

In the case of a mismatch between L1 and L2, focus on form for functional morphology will increase targetlikeness for immersion students in grade 6 and higher.

The hypotheses for research question 2 are, on the one hand, that the child L2 learner in immersion classrooms will acquire functional morphology due to a high quantity of L2 input leading to increasing proficiency in combination with cognitive maturation and, on the other hand, that focus on form will increase accuracy for older students if L1 and L2 differ with regards to functional morphology.

The L2 learner's learning tasks are expected to be complex in the area of functional morphology and its semantics in the case of a mismatch between L1 and L2. The L2 developmental course is determined by L1 transfer; thus, differing L1s will lead to differing initial states. The interlanguage will be restructured based on UG and the L2 input. Typically, immersion classrooms focus on content rather than language and do not include grammar instructions. However, if focus on form has been shown to lead to more accuracy in L2A, it is suggested that L1–L2 mismatches in functional morphology should receive instructional effort in a focus on form lesson. Individual variation with regards to learning time has to be considered. Furthermore, due to maturational constraints, focus on form should not start earlier than grade 6. In the L2 French immersion classroom, focus on generic reference is recommended based on the mismatches between L1

and L2 (assuming a homogeneous L1 English classroom). In L2 German, generic reference does not need any instructional effort since L2 learners acquire the targetlike forms with increasing cognitive maturation.

All hypotheses in summary:

1. The cL2 learner's learning tasks are to figure out whether bare nominal arguments are grammatical; if bare nominal arguments are grammatical, definite nominals cannot have generic reference; if bare nominal arguments are ungrammatical, definite nominals have generic and non-generic reference.
2. All features and grammatical contexts will initially be transferred from L1 English leading to an identical initial state in L2 German and L2 French.
3. All features will be reassembled and grammatical contexts will be identified with increasing LoE and increasing proficiency, leading to differing L2 developmental courses in L2 German and L2 French.
4. Increasing age and cognitive maturation in combination with increasing LoE and increasing proficiency will gradually (possibly in a non-linear way) lead to more targetlikeness in the L2.
5. Due to maturational constraints and the complexity of the L2 learner's learning tasks, generic reference will be acquired to a targetlike level (if at all) at an advanced interlanguage stage.
6. CL2 learners in immersion education will acquire generic reference with increasing age, LoE, and proficiency without instructional effort at an advanced interlanguage stage, but focus on form for students in grade 6 and higher will increase targetlikeness.

Chapter 3 The Empirical Study

3.1 Introduction

This chapter presents empirical data on the acquisition of generic reference in child L2 German and L2 French. In this study, bare plurals, definite plurals, and bare mass singulars with individual-level, stage-level, intensional, and extensional predicates will be examined. For the empirical study, four types of measures have been used: (1) an Acceptability Judgment Task (AJT) on the acceptance of bare and definite plurals in generic and non-generic contexts, (2) a Truth Value Judgment Task (TVJT) on the interpretation of definite plurals, (3) the Student Oral Proficiency Assessment (SOPA), and (4) a cloze test. In order to address RQ1 and RQ2, child L2 development was measured in L2 German and L2 French in the experiments (1)–(4). Experiments (1) and (2) provide evidence on the L2 learners' comprehension and interpretation of generic and non-generic DPs in L2 development and thus on the child L2 learner's learning tasks when acquiring generic reference. Based on the L2 developmental course in the acquisition of generic reference, conclusions are drawn for immersion education in order to answer RQ2. Experiments (3) and (4) serve as a more general measure of proficiency. Experiment 1, the Acceptability Judgment Task (AJT), focuses on the acceptability of bare plurals (*Sharks are dangerous*), bare mass nouns (*Milk is white*), and definite plurals (*The sharks are dangerous*) in subject and object position with generic and non-generic reference in L2 German and L2 French. Experiment 2, the Truth Value Judgment Task (TVJT), focuses on the interpretation of definite plurals in subject position followed by individual- (*The sharks are dangerous*) or stage-level predicates (*The sharks are hungry*) in L2 German and L2 French. This study focuses on these conditions since English, German, and French differ with regard to these structures in reference to syntax and semantics as discussed in Chapter 1, which leads to various learning tasks for child L2 learners as discussed in Chapter 2.

3.2 Procedure

This section introduces the procedure for both experiments and the proficiency measures. The L2 data was collected at Waddell Language Academy,[79] an elementary and middle school with several full language immersion programs, in Charlotte, NC, USA in 2009. The L2 German and L2 French learners participated in an AJT, a TVJT, and two proficiency assessments. As proficiency measures the Student Oral Proficiency Assessment (SOPA) developed by the Center for Applied Linguistics (CAL) and a cloze test were used. The two experiments and the SOPA were conducted in the form of two oral interviews (either in German or French) in a timeframe of three weeks. The first interview included the SOPA and the AJT, while the second interview, which was conducted at least one week later to exclude priming effects, included the TVJT. The cloze test was taken in writing in a classroom setting. The experiments were video- and audiotaped. The data from the SOPA was transcribed and evaluated (see Figure A.1 for the rating scale). The experiments were piloted before testing at Frankfurt International School (FIS) in Frankfurt and Grunewald Grundschule in Berlin, Germany.

Before starting the interview, the interviewer picked up the children from the classroom, introduced herself to the children in either German or French, and talked to the children about their day at school as an ice breaker. When they arrived in the testing room, she showed them her name tag, gave them an additional tag, asked them to put their names on it, and to put it on their t-shirt. The children were told that different games would be played and that it would be fun. They were also told that they would be videotaped by a camera, which should not disturb them as it is only for the interviewer in order to remember the games. After a few minutes of the interview, the children seemed to forget about the camera. The students' parents were informed about the procedure and filled out a parental consent form (see Appendix B) beforehand.[80]

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79 Formerly Smith Academy of International Languages.

80 Only the students whose parents had signed the parent consent form were included in the study.

The children were tested in pairs in order to make the children feel more comfortable. In a pilot study, the children participated individually in the TVJT. However, the children were extremely shy, and therefore, the setup was changed to pairs. Although testing individual children is important for statistics, the discussions the children had while judging the test items provided further evidence for the reasons for their choice of interpretation. The student pairings were also based on the SOPA, and the children were matched by their teacher according to personality and friendship. The student pairs always belonged to the same age group.

The control groups consist of two native German groups – L1 German adults and L1 German children – as well as a native French adult group (L1 French adults) and a native English adult group (L1 English adults). The adult control groups were included in order to control for adult-like answers in English, German, and French in the AJT and the TVJT. The native German children were included in order to control for L1A of generic reference by age-matched children and for maturational constraints in the acquisition of generic reference. The testing procedure was the same for all L2 learners and for the L1 German children and adults, i.e., the experiments were conducted in an oral interview format in the respective language. However, the L1 French and L1 English adults participated in a written format of the AJT and the TVJT. In the AJT, they read the short contexts for each story and judged the final sentence in bold print as acceptable or unacceptable. In the TVJT, they read the short stories by themselves (without pictures) and answered the question of whether the puppet's statement was true or false in combination with a short explanation.

A language background questionnaire (see Appendix B) was filled out by the interviewer for each L2 learner after the experiments in order to monitor for language input and use inside and outside the school environment. The L2 learners were asked about their language background including the first language, the knowledge of further languages including self-rated proficiency in these languages, the language(s) they speak with their parents and siblings, the parents' language background and nationality, the L2 onset, and possible stays abroad. The most relevant information was double-checked with the teachers or school management, i.e., the date of birth, the age of onset for L2 exposure, the date of enrolment in the school, and the first language.

3.3 Participants

A total of 127 subjects[81] participated in the empirical study, with 25 L2 German learners and 34 L2 French learners. As a control group, adult native speakers of German (N=47), French (N=4), and English (N=5), as well as monolingual German children (N=12) are included (see columns 1 and 2 of Table 3.1). The native German children (7;8 years) come from the Frankfurt area. The native German adults were recruited from all over Germany,[82] the native French adults grew up in the Lyon area, and the native English adults in the United States (East coast). Table 3.1 gives an overview of all participants that are part of the empirical study.

Table 3.1: Number of participants per task

Language Groups	N Total	Proficiency Assessments			Experiments		
		N SOPA	N Cloze Test	N SOPA + Cloze Test	N AJT	N TVJT	N SOPA + AJT+TVJT
L2 German	25	22	14	14	24	22	19
L2 French	34	30	18	18	33	29	25
L1 German Children	12	–	–	–	10	12	–
L1 German Adults	47	–	–	–	–	47	–
L1 French Adults	4	–	–	–	4	4	–
L1 English Adults	5	–	–	–	5	5	–
Total	127	52	32	32	76	119	44

81 A total of 132 participants were tested for the empirical study. However, 3 of the 37 participants in L2 French and 2 of the 27 participants in L2 German were excluded, since the age of onset of these 5 subjects was below 4, which by definition excludes these subjects from the child L2 learner group whose age of onset ranges from 4 to 7 years. These subjects do not appear in any of the tables since they were excluded during the evaluation process.

82 The native German adults participated in this experiment in connection with a study by Barton, Kolb, and Kupisch (2015), and grew up in five different areas in Germany: Hamburg, Berlin, Cologne, the Rhine-Main area, and Freiburg.

Most subjects participated in the AJT and the TJVT. However, there are a few deviations, and more L2 learners participated in the AJT than in the TVJT.[83] With regards to proficiency assessments, only the subjects participating in both experiments took the SOPA, and only children that were in grade 3 or higher took the cloze test in addition, since literacy skills were a requirement for the cloze test. Due to the slight deviations, each part of the empirical study, i.e., each experiment or proficiency assessment, includes tables with characteristics of study participants. 22 L2 German learners and 30 L2 French learners participated in the SOPA (see column 3). 14 of these SOPA participants also participated in the cloze test in L2 German, and 18 in L2 French (see columns 4 and 5). 24 L2 German learners, 33 L2 French learners, 10 L1 German children, 4 L1 French adults, and 5 L1 English adults participated in the AJT (see column 6). Total 22 L2 German learners, 29 L2 French learners, 12 L1 German children, 47 L1 German adults, 4 L1 French adults, and 5 L1 English adults participated in the TVJT (see column 7). A total of 19 L2 German and 25 L2 French learners participated in the SOPA and both experiments, the AJT and the TVJT (see column 9). Total 3 subjects in L2 French and 3 subjects in L2 German participated in the AJT but neither in the TVJT nor in the proficiency assessments.

The L2 learners are enrolled in a full language immersion program in the United States and were in grade k, 1, 3, or 5 at the time at testing. All of the L2 learners were born and raised in the United States, are native speakers of English, and have been enrolled in the immersion program since either kindergarten or first grade. Immersion education is a content-based approach, and the participants do not have explicit grammar instruction. Thus, the target language is used as a tool in order to communicate. Since all participants are enrolled in the same school (either in the French or the German immersion program), the two language groups have been instructed with the same approach and are therefore ideal comparison groups. The children attend the school for approximately 35 hours per week and are exposed to the L2 for 80 % of their school day, which constitutes 28 hours

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83 In L2 German and L2 French, three subjects per language group that participated in the AJT but not in the TVJT did not take the SOPA. In L2 French, in addition, one subject that participated in the TVJT but not in the AJT did not take the SOPA either.

per week during the academic school year. Thus, when analyzing LoE, these hours per week allow a more detailed view, i.e., a participant that has been exposed to the L2 for 0;8 years and has been exposed for 8 months, with approximately 112 hours per month, which adds up to 896 hours of L2 exposure. However, the hours of L2 exposure outside the school environment have not been accounted for.

Table 3.2 summarizes the characteristics of the study participants.

Table 3.2: Characteristics of study participants

Language Groups	N	Sex (in %)		Age of Onset (years; months)		Age at Testing (years; months)		Length of L2 Exposure (years; months)	
		Male	Female	Mean (SD)	Range	Mean (SD)	Range	Mean (SD)	Range
L2 German	25	36.0	64.0	5;7 (0;5)	4;10–6;6	8;8 (1;11)	5;11–11;5	3;1 (2;0)	0;8–6;0
L2 French	34	44.1	55.9	5;6 (0;5)	4;10–6;6	8;6 (2;1)	5;7–12;2	3;0 (2;0)	0;8–6;6
L1 German Children	12	50	50	0	–	7;8 (0;4)	7;1–8;1	–	–
L1 German Adults	47	29.8	70.2	0	–	37;2 (13;11)	19;0–62;0	–	–
L1 French Adults	4	50	50	0	–	32;3 (6;6)	28;0–42;0	–	–
L1 English Adults	5	0	100	0	–	34;9 (13;9)	26;0–59;0	–	–

The L2 German learner group consists of 36 % male and 64 % female subjects (see columns 3 and 4), whose ages at testing range from 5;11 to 11;5 years (see columns 7 and 8). The L2 French learner group consists of 44.1 % male and 55.9 % female subjects, whose ages range from 5;7 to 12;2 years. Age of onset is a constant variable ranging from 4;10 to 6;6 years for all L2 learners (see columns 5 and 6). The L2 learners have been exposed to either German or French from 0;8 to 6;6 years (see columns 9 and 10).

The control groups consist of 12 L1 German children, half of whom are male, half female, and whose ages at testing range from 7;1 to 8;1 years. The 47 L1 German adults consist of 29.8 % male and 70.2 % female

subjects, whose ages range from 19 to 62 years. The L1 French adult group is formed by two male and two female subjects, whose ages range from 28 to 42 years. The L1 English adults are all female and their ages range from 26 to 59 years.

In order to investigate the L2 developmental course, the language groups were each analyzed as a continuum based on length of L2 exposure (LoE) and then divided into groups based on LoE, which were labeled 'Low, Mid, and High'. The LoE was identified based on the language background questionnaire, which was double-checked by teachers or school management. The characteristics of study participants grouped according to LoE are presented for each experiment.

Tables 3.3 and 3.4 provide information on the participants' language background. Based on the language background questionnaire, 68 % of the L2 German learners and 55.9 % of the L2 French learners did not acquire any further languages (see column 5). At the time of testing, 32 % of the L2 German learners responded that they acquire an additional language[84]: Romance (12 %), Germanic (16 %), or other languages (4 %) (see columns 6, 7, and 8), and 44.1 % of the L2 French learners: Romance (29.4 %), Germanic (2.9 %), or other languages (11.8 %). All L2 learners responded that their L2 proficiency is higher than their L3 proficiency.

Table 3.3: Overview of the L2 learners' language background

Language Groups	N	L1	L2	No L3 (in %)	L3 Romance (in %)	L3 Germanic (in %)	L3 other (in %)
L2 German	25	English	German	68	12	16	4
L2 French	34	English	French	55.9	29.4	2.9	11.8

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84 The variable "L3" is based on the L2 learners' self-judgments. Since all L2 learners are enrolled in an elementary school with several language immersion programs, the knowledge of further languages is highly valued. Therefore, some children might also have responded that they speak an additional language, even if they only know a few words in this language. Most self-rated proficiencies for the L3 were "Beginner."

Table 3.4: Overview of the L1 speakers' language background

Language Groups	N	L1	L2/3
L1 German Adults	47	German	[a]
L1 German Children	12	German	–
L1 French Adults	4	French	L2 English, L3 Spanish (N=2) L2 English, L3 German (N=2)
L1 English Adults	5	English	French (N=2) German (N=1) L2 German, L3 Turkish (N=1)

[a] Barton, Kolb and Kupisch (2015) divided the same 47 adult native speakers into three L2 proficiency groups for an Acceptability Judgment Task and found that advanced and near-native speakers of L2 English accept fewer generic definite plurals with individual-level predicates in their L1 German than participants with low L2 proficiency (in any L2). However, this significant difference might not only depend on L2 proficiency but also on age and education, since the 'low L2 proficiency' group is the oldest group (M = 46.9 years old) and the least educated (no high school diploma). For further details, see Barton, Kolb and Kupisch (2015).

Table 3.4 provides an overview of the language background of the control groups. None of the native speakers acquired any further languages before puberty, and according to self-reports, their native language is the language, in which all L1 participants are most proficient.

3.4. Predictions for the Experiments

Based on the hypotheses presented in Section 2.4, the predictions will be spelled out in more detail in the next sections for the AJT (in Section 3.4.1) and for the TVJT (in Section 3.4.2). Likewise, these predictions are based on the FTFA, the NMP, the FRH, the BH, previous findings on the acquisition of generic reference in Germanic and Romance languages, and on the learning tasks developed in Section 2.3.2.

3.4.1 Predictions for the Acceptability Judgment Task (AJT)

The predictions will be structured in accordance with the hypotheses in Section 2.4. Therefore, the titles for each hypothesis will be listed, followed by the predictions for the AJT.

Hypotheses for RQ1:
Hypothesis 1: Learning tasks
In L2 German:

1. With increasing age at testing (and cognitive maturation), the rejection rate[85] of ungrammatical definite plurals with generic reference will increase, i.e., the L2 German Low and Mid groups will allow more definite plurals with generic reference than the High group, since in the High group, more cL2 learners have reassembled [±generic] to [-generic].

In L2 French:

2. With increasing LoE and proficiency, the rejection rate of bare plurals and bare mass singulars will increase, i.e., the L2 French Low group will reject fewer bare nominals than the L2 French Mid, and the L2 French High group will show the highest rejection rate, since in the Mid and High group, more cL2 learners have reassembled [-definite] to [+definite].

3. The acceptance of definite plurals with generic reference will increase when the ungrammaticality of bare nominals has been acquired, i.e., when the rejection rate of bare plurals increases, since, consequently, generic reference can only be expressed with definite plurals.

In L2 German and in L2 French:

4. For bare plurals, the acceptance rate will be as high as for bare mass singulars, with generic reference based on the DKP (Chierchia 1998) (for L2 French this prediction refers to the interlanguage stages in which bare nominals are still accepted as correct due to L1 transfer).

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85 When evaluating the results in Section 3.6, the rejection rate will be called acceptance rate since the graphs either represent the mean percentage of percent correct or the mean percentage of accepted definite plurals and bare nominals. Thus, in the case of ungrammatical structures such as generic definite plurals in L2 German or bare nominals in L2 French, the graphs either represent the mean percentage of target answers, which are in this case correctly rejected ungrammatical items, or the mean percentage of accepted definite plurals and bare nominals.

5. More bare nominals will be rejected, with non-generic reference (and corrected to definite nominals) in L2 French and L2 German (due to canonical configurations in English and German) (for L2 French, this prediction refers to the interlanguage stages in which bare nominals are still accepted as correct due to L1 transfer).

6. The acceptance rate of definite plurals will be higher with non-generic than with generic reference (due to canonical configurations in German and English) (for L2 French this prediction refers to the early interlanguage stages due to L1 transfer).

7. The acceptance rate of bare and definite nominals will not differ in subject and object position (based on findings in Chapter 1).

Hypothesis 2: Complexity of the learning task

1. Due to the complexity of the learning task, generic reference will be acquired to a targetlike level (if at all) in an advanced interlanguage stage.

2. Even in advanced interlanguage stages, the acquisition of generic reference will cause difficulties. In L2 French, intermediate and advanced L2 learners (in groups Mid and High) will increasingly reject bare plurals and bare mass singulars with generic and non-generic reference. All L2 learners (all groups) will accept definite plurals with generic and non-generic reference. In L2 German, difficulties are expected due to maturational constraints leading to difficulties with type shifting which are also related to a certain degree to the complexity of the learning task. Even L2 learners in advanced interlanguage stages will overaccept definite plurals with generic reference (High group).

Hypothesis 3: L2 developmental course

1. The initial cognitive state of L2A is identical in L2 German and L2 French due to full transfer from L1 English. CL2 learners of German and French in the Low groups will accept bare plurals and bare mass singulars and definite plurals with generic reference.

This prediction refers to the Low groups, since due to low LoE, these are closest to the L2 initial state. However, even the Low groups do not represent the L2 initial state, since the cL2 learners in this group have been exposed from 0;8 to 1;8 years to the L2. It is assumed that the performance of the Low groups will be most comparable to the L2 initial state.

2. With increasing age at testing, LoE, and proficiency, the post-initial interlanguage stages will increasingly differ in L2 German and L2 French due to targetlikeness in German and French (combined with cognitive maturation, UG access and L2 input).

3. In L2 French, increasing LoE and proficiency will lead to an increasing rejection rate of bare plurals and bare mass singulars.

4. In L2 French, the rejection rate of bare nominals will increase in the early interlanguage stages (Low and Mid groups), whereas in L2 German, the rejection rate of generic definite plurals will increase in the late interlanguage stages (in the High group).

5. Individual L2 learners will vary with regard to the timeframe of the L2 developmental course.

Hypothesis 4: Maturational constraints

1. Due to cognitive maturational constraints, in early and intermediate interlanguage stages, definite plurals will be overaccepted as generic, i.e., definite plurals will not be rejected with generic reference, which is targetlike in French.

2. In advanced interlanguage stages, the L2 learners are cognitively more mature (mean age at testing in L2 German High: 11;1 years; L2 French High: 10;11 years). In L2 German, definite plurals will be rejected with generic reference. In L2 French, definite plurals will be accepted with generic and non-generic reference, which is targetlike in French, due to increased LoE and proficiency.

Hypotheses for RQ2:
Hypothesis 1: L2 exposure

1. Since L2 learners acquire generic reference with increasing age at testing, LoE, and proficiency, focus on form is neither necessary nor beneficial in the early years of immersion education.

2. In L2 German, bare nominals will be accepted with generic and non-generic reference due to L1 transfer, which leads to targetlikeness in German in all groups. Definite plurals will be accepted with generic and non-generic reference (Low, Mid groups) due to maturational constraints and rejected with generic reference in advanced interlanguage stages due to cognitive maturation (High group).

3. In L2 French, bare nominals will be accepted due to L1 transfer (Low group) and will be rejected with increasing LoE and proficiency (Mid and High groups). Definite plurals will be accepted with generic and non-generic reference due to L1 transfer and maturational constraints (Low and Mid groups), and will still be accepted with generic and non-generic reference with increasing LoE, proficiency, and maturation (High group).

Hypothesis 2: Focus on form for older L2 learners

1. Advanced L2 learners will still show some difficulties with generic reference (High group). Focus on Form lessons will increase targetlikeness for immersion students in grade 6 and higher.

3.4.2 Predictions for the Truth Value Judgment Task (TVJT)

The predictions will be structured in accordance with the hypotheses in Section 2.4. Therefore, the titles for each hypothesis will be listed followed by the predictions for the TVJT.

Hypotheses for RQ1:
Hypothesis 1: Learning tasks
    In L2 German:
1. With increasing age at testing (and cognitive maturation), the interpretation rate of [+generic] for definite plurals will decrease, i.e., the L2 German Low and Mid groups will show a higher interpretation rate of [+generic] for definite plurals than the High group, since in the High group, more cL2 learners have reassembled [±generic] to [-generic].
    In L2 French:
2. In all groups (Low, Mid, High), definite plurals will be interpreted as generic and non-generic, first due to maturational constraints and

L1 transfer, then due to increased LoE and proficiency in the L2. The interpretation of definite plurals with individual-level predicates as generic will increase with increasing LoE and proficiency, since L2 French will show a higher interpretation rate than L2 German or L1 English, since bare nominals can have generic reference in German and English but not in French.

In L2 German and in L2 French:

3. The interpretation rate of [+generic] will be higher for definite plurals with individual-level than with stage-level predicates, since the grammatical context determines the interpretation, and the canonical way to interpret individual-level predicates has been argued to be [+generic]. The predicate choice is assumed to trigger different rates of interpretation.

4. In L2 French the interpretation rate of [+generic] for definite plurals will be higher than in L2 German, since bare nominals can express [+generic] in German but not in French.

Hypothesis 2: Complexity of the learning task

1. Due to the complexity of the learning task, generic reference will be acquired to a targetlike level in an advanced interlanguage stage.

2. The acquisition of generic reference will cause difficulties in advanced interlanguage stages. L2 German learners will overinterpret definite plurals as [+generic], in particular with individual-level predicates (in the High group), and L2 French learners will not interpret 100 % definite plurals with individual-level predicates as [+generic].

Hypothesis 3: L2 developmental course

1. The initial cognitive state of L2A is identical in L2 German and L2 French due to full transfer from L1 English. CL2 German and cL2 French learners will initially (in the Low groups) interpret definite plurals as [+generic] and [-generic]. It is assumed that the performance of the Low groups will be most comparable to the L2 initial state.

2. With increasing age at testing, LoE, and proficiency, the post-initial interlanguage stages will increasingly differ in L2 German and L2

French due to targetlikeness in German and French (combined with cognitive maturation, UG access and L2 input).

3. With increasing age at testing, LoE, and proficiency, the difference in the interpretation rate of definite plurals as [+generic] will increase between L2 German and L2 French, with a higher interpretation rate of [+generic] in L2 French.

4. In L2 German, increasing age at testing, LoE, and proficiency will lead to a decreasing interpretation rate of definite plurals as [+generic].

5. In L2 French, with increasing age and maturation, in combination with increasing LoE and proficiency, the interpretation rate of definite plurals as generic will increase (in the Mid and High groups).

6. Individual L2 learners will vary with regard to the timeframe of the L2 developmental course.

Hypothesis 4: Maturational constraints

1. Due to cognitive maturational constraints, in early and intermediate interlanguage stages, definite plurals will be overinterpreted as generic, i.e., definite plurals will be interpreted as [+generic] with individual-level and stage-level predicates. The interpretation of definite plurals with individual-level predicates as [+generic] is targetlike in French but not in German.

2. In advanced interlanguage stages, the L2 learners are cognitively more mature (mean age at testing in L2 German High: 11;1 years; L2 French High: 10;11 years). In L2 German, definite plurals with individual-level and stage-level predicates will increasingly be interpreted as [-generic]. In L2 French, definite plurals with individual-level predicates will be interpreted as [+generic] and definite plurals with stage-level predicates will be interpreted as [-generic].

Hypotheses for RQ2:
Hypothesis 1: L2 exposure

1. Since L2 learners acquire generic reference with increasing age at testing, LoE, and proficiency, focus on form is neither necessary nor beneficial in the early years of immersion education.

2. In L2 German, in the early interlanguage stages, definite plurals will be interpreted as [±generic] (Low and Mid groups) due to maturational constraints and L1 transfer and in the advanced interlanguage stages as [-generic] due to cognitive maturation (High group).

3. In L2 French, definite plurals will be interpreted as [±generic] due to L1 transfer and maturational constraints (Low and Mid groups) and will still be interpreted as [±generic] with increasing LoE, proficiency, and maturation (High group).

Hypothesis 2: Focus on form for older L2 learners

1. Advanced L2 learners will still show some difficulties with generic reference (High group). Focus on form lessons will increase targetlikeness for immersion students in grade 6 and higher.

3.5 Second Language Proficiency

Proficiency in the L2 was measured by two assessment tools: (a) the Student Oral Proficiency Assessment (SOPA), and (b) a cloze test. The SOPA is used as the major proficiency measure, and the cloze test as an additional measure for students in grades 3 and higher. There are two reasons for this weighting. First of all, the SOPA was developed for assessing immersion students and provides a more complete picture of the participant by measuring oral fluency, grammar, vocabulary, and listening comprehension. Furthermore, the SOPA was developed in order to determine the highest proficiency level a student can achieve. The interview format creates a friendly atmosphere for the child participant. Secondly, more children participated in the SOPA than in the cloze test, since the SOPA does not require literacy skills. Consequently, comparability between the younger children who took the SOPA and the older children who took the SOPA and the cloze test had to be accounted for. Therefore, the SOPA was weighted heavier (times three) than the cloze test (times one), and the cloze test ratings were adjusted to the SOPA rating scale by dividing the scores into 9 levels. Thus, the participants' proficiency scores are either solely based on the SOPA result (for children in grades k and 1) or on both the SOPA and the cloze test results (for children in grades 3 and 5), but never solely on the cloze test results. Thus, for the 18 subjects in L2 French and the 14 subjects

in L2 German who participated in the cloze test, the final proficiency score results from the cloze test and the SOPA scores.

The final proficiency results were used in order to divide the L2 learners into two proficiency levels per language group for the investigation of L2 developmental stages.

3.5.1 Student Oral Proficiency Assessment (SOPA)

3.5.1.1 Methodology, Materials, and Procedure

The SOPA[86] was developed for immersion settings in elementary schools. The Center for Applied Linguistics (CAL) "has a long history of developing effective language assessments for children" (Center for Applied Linguistics 2022). The SOPA's interactive interview format is an appropriate way to determine L2 proficiency for children in elementary school.

> "The SOPA […] [is an] innovative language proficiency assessment instrument designed to allow students to demonstrate their highest level of performance in speaking (further broken down into oral fluency, grammar, vocabulary) and listening.
> These interactive listening and speaking assessments […] include hands-on activities and are conducted entirely in the target language. […] The focus of the assessment is to determine what students can do with the target language."
>
> (Center for Applied Linguistics 2022)

In contrast to various proficiency measures, the SOPA was developed for immersion education. The SOPA is a can-do-format, which focuses on what the student has achieved in the L2 rather than on the student's errors. The SOPA interview is set up in student pairs, and consists of five tasks and a wind-down. The interviewer alternates between the students in order to achieve a well-balanced interview. The five tasks increase in difficulty.

Based on the "Administrator's Manual for CAL Foreign Language Assessments, Grades K-8" by Thompson, Boyson and Rhodes (2005), the structure and purpose of each task are the following:

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86 Thanks to Christiane M. Bongartz for suggesting the Student Oral Proficiency Assessment based on her experience with this assessment tool.

Task 1: Identifying and naming

The first task is used as a warm-up and focuses on listening comprehension, which is less demanding than language production. The participants are asked to identify fruits and colors by pointing to them (e.g., "Can you point to a green fruit?", "Can you show me an apple?"). The level of difficulty increases based on the students' performance, i.e., if the participants respond easily to these simple questions and commands, they will be asked higher-level questions and commands (e.g., "Put the apple under the chair"). After the students have successfully participated in the listening comprehension commands, oral fluency will be assessed by asking questions about colors, names of the fruit, number of each type, and their favorite fruit.

Task 2: Answering informal questions

In the second task, the participants are asked informal questions on familiar topic areas such as "How old are you?", "Do you have a pet at home?", "Do you have brothers or sisters?" Some of the questions elicit sentence-level responses in order to give more advanced students the chance to respond at the sentence level, e.g., "What is your favorite after-school activity? Can you explain why it is your favorite activity?"

Task 3: Describing a science sequence

The third task is the beginning of a more challenging part of the interview. The description could be a science sequence or a class project on a different topic. An example is the life cycle of a plant, which has to be described with a series of pictures, which was used for the proficiency assessments in this empirical study. First, a father and a girl plant a small tree, then the girl waters the small plant, the plant grows in the sunshine, and finally develops into a fully-grown tree. Having introduced the task, the first question asked may be "What is happening in the first picture?" If the student does not respond, the question could be reformulated to "What are the father and the girl doing?" If this question is too advanced, the interviewer can ask to identify objects, people, or colors, and can provide options, e.g., "Is it big or small?" The goal is always to guide the participants toward the maximum they can produce and comprehend in the L2 in order to "determine the highest proficiency levels" (Thompson et al. 2005: 1) of the participants at the point of testing.

Task 4: Story retelling – narrating in past tense
The fourth task is the retelling of the story "Goldilocks and the Three Bears," which is generally known by children who grow up in the United States This task is developed for students who can sustain sentence- or paragraph-level speech. Four puppets are used, which are the main characters of the story (Goldilocks, Mama Bear, Papa Bear, and Baby Bear), as well as a picture book of the story (with the text covered) so that the children can act out the story and use the pictures as a reminder of the story. The puppets are given to the participants, and the participants are asked whether they recognize the characters, which they usually do. Then, the picture book is opened and the children are asked to retell the familiar story. The pages of the book are turned as the participants go along with the story. Each student describes one page and hands the book to the other student for the next page. The students are encouraged to use past tense by a question formulated in past tense, e.g., "What happened in the story?" The participants are given time and space for producing as much as possible on their own. However, if they cannot achieve to tell the story on their own, they will be guided by questions the interviewer asks by pointing to the particular item in the picture, e.g., "Who are they?", "What are they doing?", "Whose chair is this?"

Task 5: Speaking to persuade
In the final task, the students use persuasive language. This task is designed for participants at the Jr. Advanced-Mid level, who can use paragraph-level speech and narrate in past tense. School rules are presented to the students, e.g., "School uniforms must be worn in school." The task is to "tell the interviewer what they would say to persuade the principal to adopt or not adopt the rule as policy in the school" (Thompson et al. 2005: 21). If the task turns out to be too difficult, the students can explain why the rule is good or bad for their school. The aim is to help the students achieve their highest level by ensuring that they feel comfortable with their performance.

Wind-down
At the end of the interview, the students are asked a few simple questions, followed by the interviewer thanking the students, complimenting their performance, and giving them a small reward.

The SOPA is evaluated on the basis of the SOPA rating scale (see Appendix A), which allows an objective rating according to specific criteria in reference to oral fluency, grammar, vocabulary, and listening comprehension. Each of these variables is rated from 1 to 9 (1=Jr. Novice-Low, 2=Jr. Novice-Mid, 3=Jr. Novice-High, 4=Jr. Intermediate-Low, 5=Jr. Intermediate-Mid, 6=Jr. Intermediate-High, 7=Jr. Advanced-Low, 8=Jr. Advanced-Mid, 9=Jr. Advanced-High) and finally summarized to an overall score, which is the mean of the four scores of these variables (Thompson et al. 2005).

In the empirical study, the story retelling task was used for two purposes. On the one hand, it was included in the SOPA for the proficiency assessment, and on the other hand, it was used as evidence on the production of definiteness with non-generic reference. For the evaluation of the AJT and the TVJT and for the interpretation of the results, it is a requirement to ensure that definiteness with non-generic reference is acquired to a targetlike level, i.e., [±definite] with non-generic reference is used to adult-like level in the L2. It is hypothesized that the L2 learners will not have difficulties with the production of indefinite singulars, definite singulars, and definite plurals with non-generic reference, since all three languages pattern together for these structures. Empirical evidence has shown for several Germanic and Romance languages that L1 children acquire definiteness earlier than 4 years of age (e.g., Chierchia et al. 2001). The production of indefinites is hardly expected in this task, since all characters are known (and presented on the pictures) and therefore should be referred to by definite singulars and plurals. The use of indefinite singulars is only expected for referring to objects for the first time, e.g., "There is a chair." As expected, the findings show that all L2 learners had acquired the use of definiteness with non-generic reference. Since gender errors are not relevant for the analysis of generic reference, these were counted as correct. Thus, the story retelling task as evidence for the acquisition of definiteness was used as the basis for the AJT and the TJVT. Since no unexpected difficulties occurred and definiteness with non-generic reference was acquired to a targetlike level by all participants, the story retelling task and its results will not be discussed in more detail.

3.5.1.2 Participants

Fifty-two subjects participated in the SOPA, as shown in Table 3.5.

Table 3.5: SOPA – characteristics of study participants

Language Groups	N	Sex (in %)		Age of Onset (years; months)		Age at Testing (years; months)		Length of L2 Exposure (years; months)	
		Male	Female	Mean (SD)	Range	Mean (SD)	Range	Mean (SD)	Range
L2 German	22	36.4	63.6	5;7 (0;5)	4;10–6;6	8;7 (1;11)	5;11–11;5	3;1 (2;0)	0;8–6;0
L2 French	30	40	60	5;6 (0;5)	4;10–6;6	8;6 (2;0)	5;7–12;2	3;0 (2;0)	0;8–6;6

In L2 German, 36.4 % of the 22 subjects are male and 63.6 % female (see columns 3 and 4) with ages at testing ranging from 5;11 to 11;5 years (see columns 7 and 8). In L2 French, 40 % of the 30 subjects are male and 60 % female with ages at testing ranging from 5;7 to 12;2 years. The participants' ages of onset range from 4;10 to 6;6 years (see columns 5 and 6) and the length of exposure to the L2 from 8 months to 6;6 years (see columns 9 and 10).

3.5.1.3 Results in L2 German and L2 French

The results for the SOPA are presented in Table 3.6 (see Tables A.1 and A.2 in the Appendix for the individual results).

Table 3.6: SOPA – proficiency results

Language Groups	N	SOPA Result	
		Mean (SD)	Range
L2 German	22	4.22 (0.96)	3.00–6.00
L2 French	30	4.39 (1.16)	2.00–6.00

In L2 German, the SOPA proficiency scores range from 3.00 (Jr. Novice-High) to 6.00 (Jr. Intermediate-High) (see column 4). The mean score is 4.22 (Jr. Intermediate-Low) with a standard deviation of 0.96 (see column 3). In L2 French, the SOPA proficiency scores range from 2.00 (Jr. Novice-Mid) to

6.00 (Jr. Intermediate-High). The mean score is 4.39 (Jr. Intermediate-Low) with a standard deviation of 1.16.

3.5.2 Cloze Test

3.5.2.1 Methodology, Materials, and Procedure

The cloze test is the second proficiency assessment tool, which was chosen based on Brown (1983). The story chosen for the cloze test is the children's story "The very hungry caterpillar," which is "Die kleine Raupe Nimmersatt" in German and "La chenille qui fait des trous" in French. This story was chosen since it is translated in several languages, which allows for an appropriate comparison between L2 French and L2 German. Furthermore, this story is generally known by children who grow up in the United States.

According to Brown (2002), in most studies, the frequency of deletions is every 5th, 7th, or 9th word. For the cloze test in this empirical study, the chosen frequency of deletions is every 9th word. A total of 30 words had to be filled in.

In the cloze test, the L2 immersion classrooms in grade 3 and 5 participated in L2 German and L2 French. Only the study participants' cloze tests were evaluated. The SOPA interviewer distributed the test sheet to each student. The students received the following directions in English: "1. Read the passage quickly to understand the general meaning of the story. 2. Write only one word in each blank space next to the item number. 3. Check your answers." One example in English was provided in order to ensure that the participants understood the task. The students had as much time as they needed to fill out the cloze test; the maximum time needed was 45 minutes.

The total score that could be achieved in the cloze test was 60 points. There were 30 slots to be filled in: each correct word was scored 2 points. If the word was correct but the spelling was not, 1 point was given; if an alternative lexical item was filled in that matched based on meaning and grammar, it was also given 2 points. If the correct lexical item was chosen but a grammatical error was included (e.g., subject verb agreement, noun adjective agreement, gender etc.), 1 point was given.

The cloze test rating scale was adapted to the SOPA rating scale, as shown in Table 3.7.

Table 3.7: Cloze test – rating scale

Rating Scale Level	Level Based on the SOPA Rating Scale	Cloze Test Score
1	JR. NOVICE-LOW	0–6
2	JR. NOVICE-MID	7–13
3	JR. NOVICE-HIGH	14–20
4	JR. INTERMEDIATE-LOW	21–27
5	JR. INTERMEDIATE-MID	28–34
6	JR. INTERMEDIATE-HIGH	35–41
7	JR. ADVANCED-LOW	42–48
8	JR. ADVANCED-MID	49–55
9	JR. ADVANCED-HIGH	56–60

After every 7 points, the next level of the rating scale was achieved, except for the highest level 'Advanced-High', which included 5 points ranging from 56 to 60 points.

3.5.2.2 Participants

As shown in Table 3.8, in the cloze test, 14 subjects participated in L2 German and 18 subjects in L2 French.

Table 3.8: Cloze test – characteristics of study participants

Language Groups	N	Sex (in %)		Age of Onset (years; months)		Age at Testing (years; months)		Length of L2 Exposure (years; months)	
		Male	Female	Mean (SD)	Range	Mean (SD)	Range	Mean (SD)	Range
L2 German	14	42.9	57.1	5;6 (0;5)	5;0–6;6	10;2 (1;0)	9;1–11;5	4;8 (1;2)	2;8–6;0
L2 French	18	44.4	55.6	5;7 (0;6)	4;10–6;6	10;1 (1;0)	8;11–12;2	4;6 (1;3)	2;8–6;6

In L2 German, 42.9 % of the 14 subjects are male and 57.1 % female (see columns 3 and 4), with ages at testing ranging from 9;1 to 11;5 years (see columns 7 and 8). In L2 French, 44.4 % of the 30 subjects are male and 55.6 % female, with ages at testing ranging from 8;11 to 12;2 years.

The participants' ages of onset range from 4;10 to 6;6 years (see columns 5 and 6) and the length of exposure to the L2 from 2;8 to 6;6 years (see columns 9 and 10).

3.5.2.3 Results in L2 German and L2 French

Table 3.9 presents the results of the cloze test in L2 German and L2 French (see Tables A.3 and A.4 in the Appendix for the individual results).

Table 3.9: Cloze test – proficiency results

Language Groups	N	Cloze Test Score Range	Cloze Test Results (based on the rating scale)	
			Mean (SD)	Range
L2 German	14	2–54	3.93 (2.43)	1.00–8.00
L2 French	18	17–50	5.61 (1.29)	3.00–8.00

In L2 German, the cloze test scores range from 2 to 54 points (see column 3), which was evaluated based on the rating scale in Table 3.7. The cloze test proficiency results range from 1.00 (Jr. Novice-Low) to 8.00 (Jr. Advanced-Mid) (see column 5). The mean score is 3.93 (Jr. Intermediate-Low), with a standard deviation of 2.43 (see column 4). In L2 French, the cloze test scores range from 17 to 50 points. The cloze test proficiency results range from 3.00 (Jr. Novice-High) to 8.00 (Jr. Advanced-Mid). The mean score is 5.61 (Jr. Intermediate-High) with a standard deviation of 1.29.

3.5.3 Proficiency Overall: L2 German and L2 French

The overall proficiency was calculated as follows: The SOPA scores were weighted heavier (times three) than the cloze test scores (times one). The mean (SOPA times three, cloze test times one) formed the final proficiency score for each participant. Table 3.10 provides an overview of all proficiency results by presenting the cloze test results (see columns 3 and 4 and presented in Table 3.9), the SOPA results (see columns 6 and 7, and presented in Table 3.6), and the final proficiency results (see columns 9 and 10) (see Tables A.5 and A.6 in the Appendix for the individual results).

Table 3.10: Proficiency results (SOPA + Cloze test)

Language Groups	N	Cloze Test Result		N	SOPA Result		N	Proficiency Result	
		Mean (SD)	Range		Mean (SD)	Range		Mean (SD)	Range
L2 German	14	3.93 (2.43)	1.00–8.00	22	4.22 (0.96)	3.00–6.00	22	4.09 (1.02)	3.00–6.31
L2 French	18	5.61 (1.29)	3.00–8.00	30	4.39 (1.16)	2.00–6.00	30	4.46 (1.24)	2.00–6.13

In L2 German, the final proficiency results range from 3,00 (Jr. Novice-High) to 6,31 (Jr. Intermediate-High), with a mean proficiency of 4,09 (Jr. Intermediate-Low) and a standard deviation of 1,02 (see columns 9 and 10). In L2 French, the final results range from 2,00 (Jr. Novice-Mid) to 6,13 (Jr. Intermediate-High), with a mean proficiency of 4,46 (Jr. Intermediate-Low) and a standard deviation of 1,24. Thus, in L2 German and L2 French, the mean proficiency is at the Intermediate-Low level.

3.6 Acceptance and Interpretation of Generic Determiner Phrases

3.6.1 Experiment 1: Acceptability Judgment Task

The Acceptability Judgment Task is a comprehension task, designed for this research project in order to investigate the acquisition of generic reference by child L2 learners and focuses on bare plurals, bare mass singulars, and definite plurals in L2 German and L2 French. Section 3.6.1.1 deals with the methodology, the materials, and the testing procedure of the AJT. In Section 3.6.1.2, the participants of the AJT will be presented. Section 3.6.1.3 presents the findings for L2 German and L2 French.

3.6.1.1 Methodology, Materials, and Procedure

A total of thirty test items are presented to the participant who is asked to judge whether the sentence is acceptable in either German or French or whether it sounds silly, and in the latter case, the L2 child is asked to correct the puppet. The test items are balanced for match and mismatch

conditions.[87] A total of 10 items with bare plurals, 5 items with bare mass singulars, 5 items with definite plurals, and 10 filler items are included. The test items are put in the context of a short story preceding each test item (see (32) and (33) for two examples). All short stories were developed in English and adapted to German and French in order to have three comparable test sets for the L2 learner groups and the control groups. The short stories and test items were proofread by native speakers of each language.

(32) Bare plurals with generic reference:
  "A dog barks but a cat doesn't. I have never seen or heard a cat bark. This doesn't exist. Bear what do you think about this story?"
  Statement by the bear:
  "In general, cats don't bark"
  En général, *chats n'aboient pas. (French)
  Katzen bellen normalerweise nicht. (German)

(33) Bare plurals with non-generic reference:
  "Think of a fisherman's boat. The fishermen are watching some fish that they want to catch. All of a sudden, they notice some sharks around them. Bear what do you think about this story?"
  Statement by the bear:
  "Sharks are close to the boat."
  *Requins sont à côté du bateu. (French)
  Haie sind in der Nähe des Bootes. (German)

The test items have the following distribution:
  – 3 bare plurals in subject position with generic reference (with cue)
  – 3 bare plurals in subject position with non-generic reference
  – 2 bare plurals in object position with generic reference (with cue)
  – 2 bare plurals in object position with non-generic reference
  – 2 bare mass singulars in subject position with generic reference
  – 1 bare mass singulars in subject position with non-generic reference

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87 Since L2 German and L2 French differ with regard to target and nontarget items in this task, balancing the items for match and mismatch conditions for both languages is a challenge. In L2 German, 17 test items are target items and 13 non-target. In L2 German, 11 test items are target items and 19 non-target. The filler items were used in order to keep the match and mismatch conditions more balanced. In L2 German, all bare plurals and bare mass singulars in this task are target; therefore, the filler items had to be changed to non-target items. In L2 French, all bare plurals and bare mass singulars in this task are non-target; therefore, 6 filler items had to be changed to target items.

- 1 bare mass singular in object position with generic reference (with cue)
- 1 bare mass singular in object position with non-generic reference
- 2 definite plurals in subject position with generic reference
- 1 definite plural in subject position with non-generic reference
- 1 definite plural in object position with generic reference (with cue)
- 1 definite plural in object position with non-generic reference

Thus, the items can be contrasted with regards to [±definite], [±generic], [±count], [±singular], [±subject], [±cue]. These conditions consist of the following item number: 15 items with bare nominal arguments (bare plurals/ bare mass singulars) and 5 with definite plurals, 11 items with generic and 9 with non-generic reference, 15 items with count nouns and 5 with mass nouns, 15 items with plurals and 5 with singulars, 12 items in subject position and 8 in object position, 6 items with bare nominal arguments (bare plurals/bare mass singulars) with cue (e.g., *in general*) and 9 without cue, and 1 item with definite plurals with cue and 4 without cue.

A puppet (bear) is used as an L2 German or L2 French speaker who needs to be corrected. An audio recorder is used to utter the test items recorded by native speakers of the language. An answer sheet and stickers will summarize the puppet's score.

At the beginning of the oral interview (either in German or French), the friendly puppet (teddy bear) is introduced to the L2 learners. The children can pick a name for the puppet. They are told that the puppet speaks some German or French but is not fluent in German or French. They are asked to help him improve his German or French by correcting the bear. As a motivation, the L2 learner and the interviewer are interested in the puppet's score. Therefore, the child puts a sticker on an answer sheet (see Appendix B) that either represents a correct performance of the puppet (acceptable statement) using a green sticker or a bad performance (silly statement) using a red sticker. One example preceded the first test item in order to demonstrate the task and to ensure that the children understood the procedure.

As mentioned in Section 3.2, the L1 German children also participated in the oral interview format whereas the L1 French and L1 English control groups participated in the written version of the AJT. The short contexts were read by the participants, and the test item in bold print had to be judged as acceptable or unacceptable with regard to the short context.

In German (and English), the following test items are grammatical: 15 test items on bare plurals (e.g., *Haie sind gefährlich)* and bare mass singulars (e.g., *Milch ist weiß*) and 2 test items on definite plurals with non-generic reference (e.g., *Die Haie sind hungrig*). The ungrammatical items are 3 test items on definite plurals with generic reference (e.g., **Die Haie sind gefährlich*) and 10 filler items with various grammatical errors (e.g., **Ich spiele gerne **zu** dir* instead of *Ich spiele gerne **mit** dir*). The 5 bare plurals (e.g., *Haie sind in der Nähe des Bootes*) and 2 bare mass singulars (e.g., *Zucker steht auf dem Tisch*) with non-generic reference were grammatical, but are the non-canonical way to express non-generic reference.

In French, the following are grammatical items: 5 test items on definite plurals (e.g., *Les requins sont dangereux*) and 6 filler items (e.g., *Le soleil brille*). The ungrammatical items are 15 test items on bare plurals (e.g., **Requins sont dangereux*) and bare mass singulars (e.g., **Lait est blanc*) and 4 filler items (e.g., **J'aime jouer **à** toi* instead of *J'aime jouer **avec** toi*).

The AJT was coded and evaluated as follows. If the participants judged a grammatical item (e.g., German: *Haie sind gefährlich*; French: *Les requins sont dangereux*) as acceptable, it was counted as correct. If the participants judged an ungrammatical item (e.g., German: *Die Haie sind gefährlich* in a generic context, French: **Requins sont dangereux*) as acceptable, it was counted as false. If a grammatical item was judged as unacceptable and the corrections did not refer to the DP (e.g., German: *Haie sind in der Nähe des Bootes* changed to *Haie sind um das Boot herum*), it was still counted as correct. If an ungrammatical item was judged as unacceptable and the appropriate correction was provided (e.g., French: **Requins sont dangereux* changed to *Les requins sont dangereux*), it was counted as correct. If an ungrammatical item (e.g., French: **Requins sont dangereux*) was judged as unacceptable and no correction or explanation was provided because 'it simply sounds silly', it was still counted as correct.[88] If an ungrammatical item was judged as unacceptable and the corrections did not refer to the DP (e.g., French: **Requins sont dangereux* changed to **Requins ne sont pas dangereux*), it was counted as false.

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88 In most cases, children corrected the bear in order to help the bear improve his German or French so that this case remained an exception.

3.6.1.2 Participants

A total of 76 L1 and L2 speakers (see column 2) participated in the AJT, as shown in Table 3.11.

Table 3.11: AJT – characteristics of study participants

Language Groups	N	Age of Onset (years; months)		Age at Testing (years; months)		Length of L2 Exposure (years; months)	
		Mean (SD)	Range	Mean (SD)	Range	Mean (SD)	Range
L2 German	24	5;7 (0;5)	5;0–6;6	8;9 (1;11)	5;11–11;5	3;2 (2;0)	0;8–6;0
L2 French	33	5;6 (0;5)	4;10–6;6	8;6 (2;1)	5;7–12;2	3;0 (2;0)	0;8–6;6
L1 German Children	10	0	–	7;8 (0;4)	7;1–8;1	–	–
L1 French Adults	4	0	–	32;3 (6;6)	28;0–42;0	–	–
L1 English Adults	5	0	–	34;9 (13;9)	26;0–59;0	–	–

The L2 learner groups consist of 24 participants in L2 German, from 5;11 to 11;5 years of age, and 33 participants in L2 French from 5;7 to 12;2 years of age (see columns 5 and 6). Age of onset is a stable variable ranging from 4;10 to 6;6 years for all L2 learners (see columns 3 and 4). Length of L2 exposure ranges from 8 months to 6;6 years (see columns 7 and 8). The control groups consist of 10 L1 German children from 7;1 to 8;1 years of age, 47 L1 German adults from 19 to 62 years of age, 4 L1 French adults from 28 to 42 years of age, and 5 L1 English adults from 26 to 59 years of age.

In order to investigate the L2 developmental course of L1 English speakers acquiring L2 German and L2 French, the developmental course in both L2s was compared. The following variables were taken into account: group (L2 German versus L2 French), length of L2 exposure (LoE), proficiency, age at testing, acquisition of additional languages (L3 Germanic versus L3 Romance) and gender. Age of onset was a constant variable for all

L2 learners. The L2 developmental course was investigated as a continuum based on LoE. Since a significant interaction of group and LoE was found, the data was broken down by groups based on LoE. LoE, proficiency, and age at testing highly correlate in this study so that the groups could have been formed based on each of these variables. To illustrate effects of LoE, the L2 groups were each split into a Low, Mid, and High group, since the division is in major accordance with the grade levels the L2 learners were enrolled in, which were grades k/1, 3, and 5 at the time at testing. In L2 German and L2 French, the Low groups' LoE ranges from 0;8 to 1;8 years, the Mid groups' LoE from 2;8 to 4;1, and the High groups' LoE from 4;8 to 6;6 years. Thus, from Low to Mid, there is a 12 months gap and a 6 months gap from Mid to High. The Low groups (LoE ranging from 0;8 to 1;8 years) are closest to the L2 initial state and therefore allow an analysis of an early interlanguage stage.

In Table 3.12, the LoE groups are presented: L2 German Low (N=10), Mid (N=7), and High (N=7), and L2 French Low (N=14), Mid (N=9), and High (N=10) (see columns 1 and 2).

Table 3.12: AJT – characteristics of study participants grouped according to LoE

Groups (Based on LoE)	N	Age at Testing (years; months)		Length of L2 Exposure (years; months)		Proficiency Scores	
		Mean (SD)	Range	Mean (SD)	Range	Mean (SD)	Range
L2 German Low	10	6;9 (0;4)	5;11–7;0	1;1 (0;6)	0;8–1;8	3.39 (0.35)	3.00–4.00
L2 German Mid	7	9;3 (0;3)	9;1–9;9	3;7 (0;5)	2;8–4;1	3.81 (0.96)	3.06–5.69
L2 German High	7	11;1 (0;3)	10;10–11;5	5;9 (0;2)	5;8–6;0	5.20 (0.63)	4.44–6.31
L2 French Low	14	6;4 (0;5)	5;6–7;0	0;11 (0;6)	0;8–1;8	3.05 (0.46)	2.00–3.75
L2 French Mid	9	9;2 (0;3)	8;11–9;8	3;5 (0;5)	2;8–3;8	4.76 (0.49)	3.94–5.50
L2 French High	10	10;11 (0;6)	10;4–12;2	5;6 (0;8)	4;8–6;6	5.74 (0.35)	5.19–6.13

With increasing LoE (see columns 5 and 6), age at testing also increases (see columns 3 and 4); the mean age at testing is 6;9 years for the L2 German Low, 9;3 years for the L2 German Mid, and 11;1 years for the L2 German High, and 6;4 years for the L2 French Low, 9;2 years for the L2

French Mid, and 10;11 years for the L2 French High groups. Thus, maturational constraints have to be considered when interpreting the results. With increasing age at testing and LoE, proficiency also increases (see columns 7 and 8). The mean LoE is 1;1 years for the L2 German Low group with a mean proficiency of 3.39, 3;7 years for the L2 German Mid group with a mean proficiency of 3.81, and 5;9 years for the L2 German High group with a mean proficiency of 5.20. In L2 French, the mean LoE is 0;11 years for the L2 French Low group with a mean proficiency of 3.05, 3;5 years for the L2 French Mid group with a mean proficiency of 4.76, and 5;6 years for the L2 French High group with a mean proficiency of 5.74. Thus, with regard to age at testing, LoE, and proficiency, the Low, Mid, and High groups in both languages are similar and therefore form ideal comparison groups.

The L2 German Mid, L2 German High, L2 French Mid, and L2 French High groups are identical in the AJT and the TVJT. There are only slight deviations in the Low groups.

Thus, the younger students fall into the Low LoE groups and the older students into the High LoE groups. Age at testing, LoE, and proficiency strongly correlate with each other in this study, and it is nearly impossible to disentangle these variables.

The native German children fall between the L2 Low and L2 Mid groups in reference to age at testing.

3.6.1.3 Results

The participants' judgments as acceptable or unacceptable were evaluated both for acceptance and for accuracy. No subjects had to be excluded due to a yes-bias.

In L2 German, presenting the mean percentage of the acceptability judgments of bare plurals, bare mass singulars, and definite plurals in percent correct implies that bare plurals and bare mass singulars have correctly been accepted in [±generic] contexts and that definite plurals have correctly been accepted with non-generic reference and correctly been rejected with generic reference.

In L2 French, presenting the mean percentage of the acceptance of bare plurals, bare mass singulars and definite plurals in percent correct implies that bare plurals and bare mass singulars have correctly been rejected in [±generic] contexts and that definite plurals have correctly been accepted in [±generic] contexts.

In this section, the conditions of the test items will be organized in various contrasts such as [±definite], [±generic], [±count], [±singular], [±subject], and [±cue], in order to investigate the acceptance of bare and definite nominals in different grammatical contexts. In order to increase the item number per condition for statistical analyses, some of these conditions were combined. Statistical analyses are only conducted for conditions with item numbers of 3 and higher, since the evaluation of conditions with item numbers below 3 is statistically not relevant.

For contrasting the developmental course in L2 German versus L2 French, the results are first presented based on acceptance of the bare nominal and the definite plural conditions, which allows for a more direct comparison of the two L2 learner groups with the same L1. When focusing on the sub-conditions, i.e., when analyzing bare plurals versus bare mass singulars, bare nominals and definite plurals with generic versus non-generic reference and in subject versus object position, the results are presented based on accuracy.

To address RQ1 on the cL2 learner's learning tasks when acquiring generic reference and RQ2 on the L2 developmental course and its implications for immersion education, L2 German and L2 French learners' acceptance of bare nominals and definite plurals in various grammatical contexts and various interlanguage stages will be analyzed.

For the statistical analysis, a linear-mixed effect regression model with Group and LoE as fixed effects was used. Further variables that were included in the analysis were proficiency, age at testing, age of onset, acquisition of additional languages (L3), and gender. The model returned main effects of Group for the bare nominal condition ($p < .001$, beta: -0.812) and the definite plural condition ($p < .001$, beta: 0.532), reflecting the lower acceptance rate of bare nominals and the higher acceptance rate of definite plurals of the L2 French group. Besides these main effects of Group,

also for several sub-conditions, which will be discussed below, and a significant interaction of Group and LoE for the bare nominal condition (p < .001, beta: -0.690), the model returned no other effects or interactions approaching significance. This finding can be explained by the correlation between LoE, age at testing, and proficiency. A strong correlation[89] between LoE and proficiency ($r = .825$, $p < .001$) and between LoE and age at testing ($r = .979$, $p < .001$) has been found, which are both highly significant. Age of onset was a constant variable for all L2 learners. Acquisition of an additional language (Germanic or Romance) was not a predictor either, which means that the L2 learners' acceptance of bare and definite nominals was not influenced by the knowledge of an additional language.

A comparison of the L2 German learners and L2 French learners reveals that the L2 initial state is similar and that later stages differ increasingly throughout the L2 developmental course.

First, the overall acceptance of bare nominals (bare plurals/bare mass singulars) and definite plurals in L2 German and L2 French will be presented. These two conditions, which contrast [±definite], include the maximum of all test items (N=20). The various further conditions contrasting [±generic], [±count], [±subject] and [±cue] will present the same items reorganized based on these contrasts, which results in smaller item numbers leading to the mean percentages per condition, which is relevant for the statistical analyses and for the interpretation of the results.

Figure 3.1 presents the acceptance rate (mean percentage) of bare plurals/ bare mass singulars (combined to one condition) with generic and non-generic reference (German: e.g., *Haie sind gefährlich*, *Haie sind in der Nähe des Bootes, Milch ist weiß, Zucker steht auf dem Tisch*; French: e.g., **Requins sont dangereux*, **Requins sont à côté du bateau, *Lait est blanc, *Sucre est sur la table*) in subject and object position for the three LoE groups (Low, Mid, and High) in L2 German and L2 French.

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89 The correlations in the statistical analysis of this empirical study are according to Pearson.
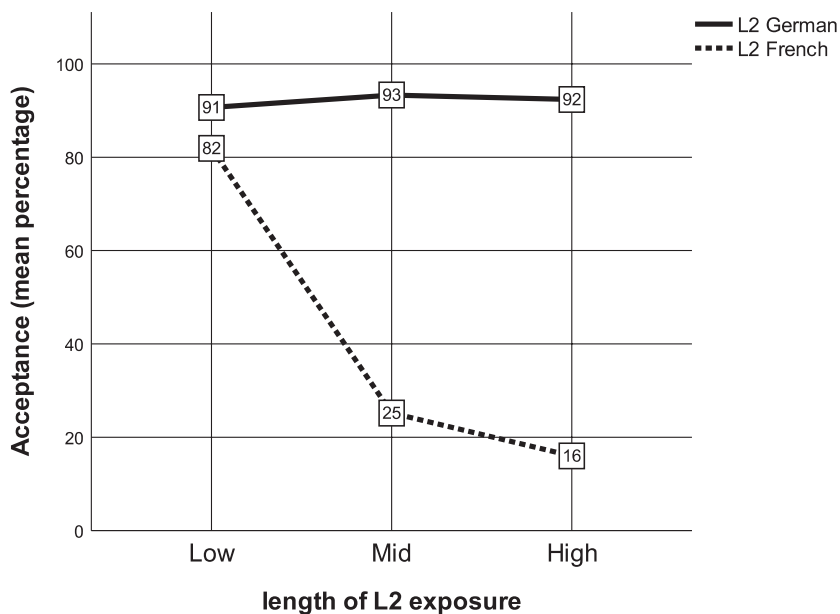
Figure 3.1: AJT – L2 German versus L2 French – acceptance of bare plurals/bare mass singulars

In L2 German, all groups follow the same pattern with an acceptance rate of 91 % and higher for bare plurals/bare mass singulars (L2 German Low: 91 %, L2 German Mid: 93 %, L2 German High: 92 %). There is no significant effect of LoE for the L2 German group (p = .624, beta: 0.047). In L2 French, the acceptance rate decreases with increasing LoE, leading to more targetlikeness. The Low group accepts 82 % of bare plurals/bare mass singulars, while the Mid group accepts only 25 % and the High group 16 %. The interaction between language group and LoE reveals that there is a significant effect (p < .001, beta: -0.690), i.e., with increasing LoE, the L2 French group differs significantly from the L2 German group. Thus, the L2 initial state is similar while later stages differ increasingly and lead to more targetlikeness in the L2s.

Figure 3.2 presents the individual results of the acceptance of bare nominals in L2 German and L2 French.
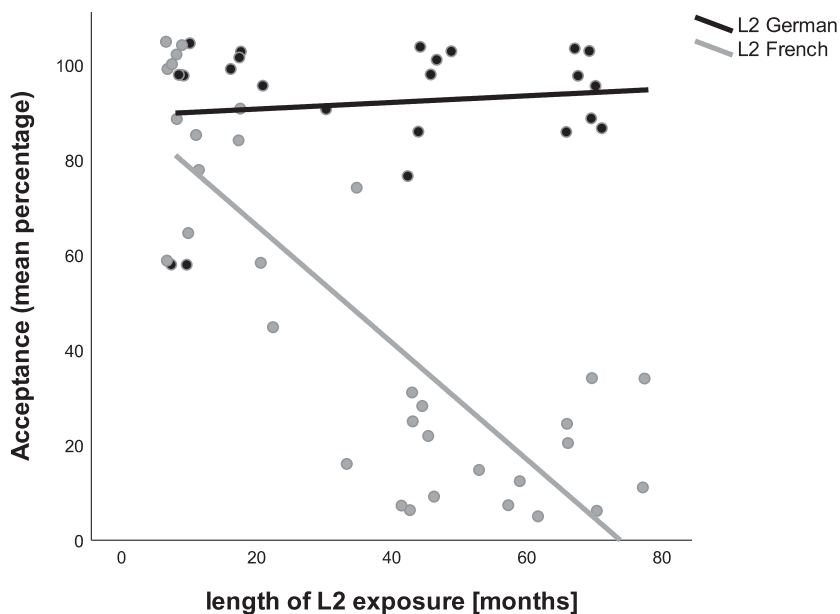
Figure 3.2: AJT – L2 German versus L2 French – individual results – acceptance of bare plurals/bare mass singulars

In L2 German, the individual results show that most L2 learners correctly accept bare nominals 80 % and higher and that there is little individual variation. Some of the bare nominals that were (falsely) rejected in L2 German were corrected to definite plurals (e.g., *Zucker steht auf dem Tisch* changed to *Der Zucker steht auf dem Tisch*), which is the canonical way to express non-generic reference.

In L2 French, overall, the individual results show a high L2 learner variation. However, with increasing LoE, the acceptance rate of bare plurals/bare mass singulars decreases, i.e., the longer the L2 learners have been exposed to L2 French, the less ungrammatical bare nominals are accepted. Thus, if we analyze the results with regard to the LoE groups, there is less variation within the groups. The 14 participants who belong to the L2 French Low group reject 0–53 %; the 9 participants in the L2 French Mid group reject 27–93 %, with the majority of the participants (8/9) rejecting 67–90 %; and the 10 participants in the L2 French High group reject 67–93 %. Thus, even

if the variation within these groups is lower, every individual learner passes the interlanguage stages at a different pace. Therefore, as demonstrated, LoE, proficiency, and age at testing are influential factors but individual L2 learner variation with regard to the time frame for every interlanguage stage is possible, i.e., two L2 learners that have both been exposed to the L2 for 2;8 years, have reached an Intermediate-Mid level, and are 9 years old might not be in the identical interlanguage stage with regards to the acceptance of ungrammatical bare nominals (or the acceptance/interpretation of definite plurals). By examining one participant (P45) in the L2 French Mid group as an example who accepted more bare nominals than the other participants, a comparison between P45 and P46 (who are the only two partcipants in the group exposed to the L2 for 2;8 years; the other participants have been exposed for 3;8 years since they started in k) reveals an identical age at testing (P45: 9;2 years, P46: 9,0 years) but a differing proficiency score (P45: 4,19; P46 5,5). In this case, proficieny might be the influential factor with regards to the acceptance of bare nominals. However, the only participant with a lower proficiency score in the same group (P41) judged 87 % correct: LoE – 3;8 years, proficiency – 3,94, age at testing: 8;11. The LoE and proficiency value of the other participants in the group (with age at testing as a constant variable) all accept bare nominals 10–33 %. In sum, LoE and proficiency (and possibly age at testing) are overall reliable predictors of the interlanguage stages with regard to the acceptance of bare nominals, but individual variation in terms of time is possible (i.e., L2 learner 1 and 2 with identical LoE, age, and proficiency might reach interlanguage n at a different point in time).

Figure 3.3 presents the acceptance rate (mean percentage) of definite plurals (German: *Die Haie sind gefährlich*, *Die Haie sind in der Nähe des Bootes;* French: *Les requins sont dangereux*, *Les requins sont à côté du bateau*) with generic and non-generic reference in subject and object position for the three LoE groups (Low, Mid, and High) in L2 German and L2 French.
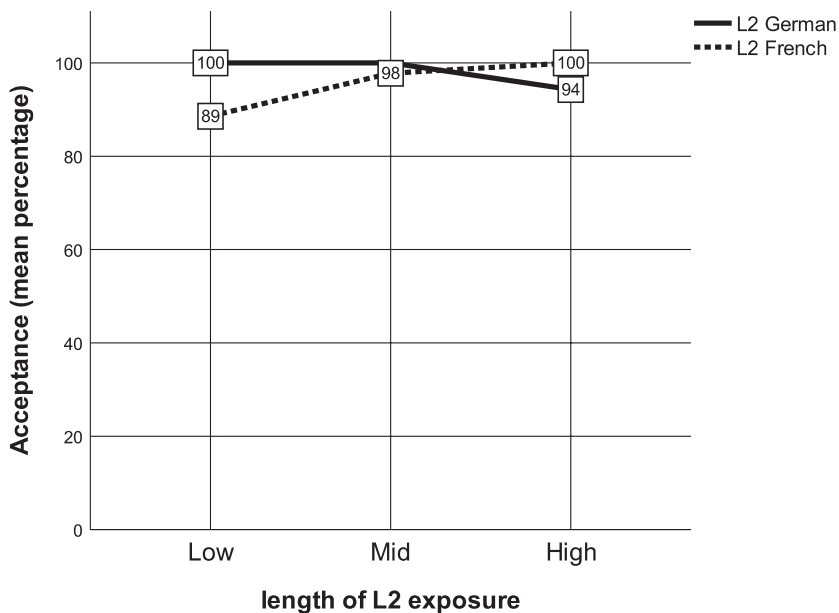
Figure 3.3: AJT – L2 German versus L2 French – acceptance of definite plurals

In L2 German, all groups follow the same pattern with an acceptance rate of 94 % and higher for definite plurals (L2 German Low: 100 %, L2 German Mid: 100 %, L2 German High: 94 %). There is no significant effect of LoE for the L2 German group (p = .370, beta: 0.156). A similar pattern can be found for the L2 French learner groups (L2 French Low: 89 %, L2 French Mid: 98 %, L2 French High: 100 %). The interaction between language group and LoE reveals that there is no significant effect (p = .236, beta: 0.214), i.e., with increasing LoE, the L2 French group does not differ significantly from the L2 German group.

Figure 3.4 presents the individual results of the acceptance of definite plurals in L2 German and L2 French.
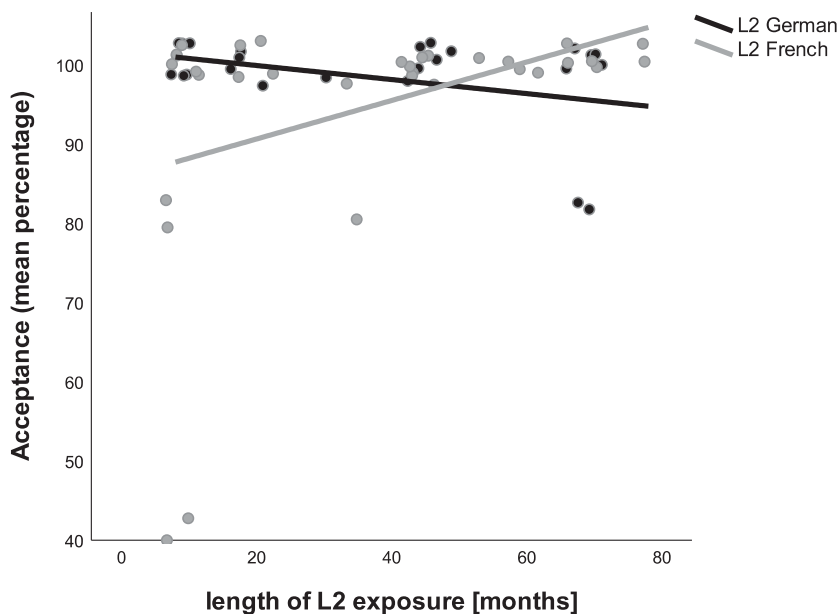
Figure 3.4: AJT – L2 German versus L2 French – individual results – acceptance of definite plurals

Figure 3.4 clearly shows that the majority of the L2 German and L2 French learners accept definite plurals in generic and non-generic contexts. Thus, in L2 German and L2 French, the individual results show little learner variation.

In L2 German, all L2 learners correctly accepted the definite plurals with non-generic reference, and most L2 learners (22/24) falsely accepted the definite plurals with generic-reference. Only 2 participants rejected each one test item on definite plurals with generic reference.

In L2 French, most L2 learners (28/33) correctly accepted the definite plurals. Only 2 participants in the L2 French Low group performed below 50 %.

Figure 3.5 presents the L1 control groups' acceptance rate (mean percentage) of bare plurals, bare mass singulars and definite plurals in L1 German, L1 English and L1 French.
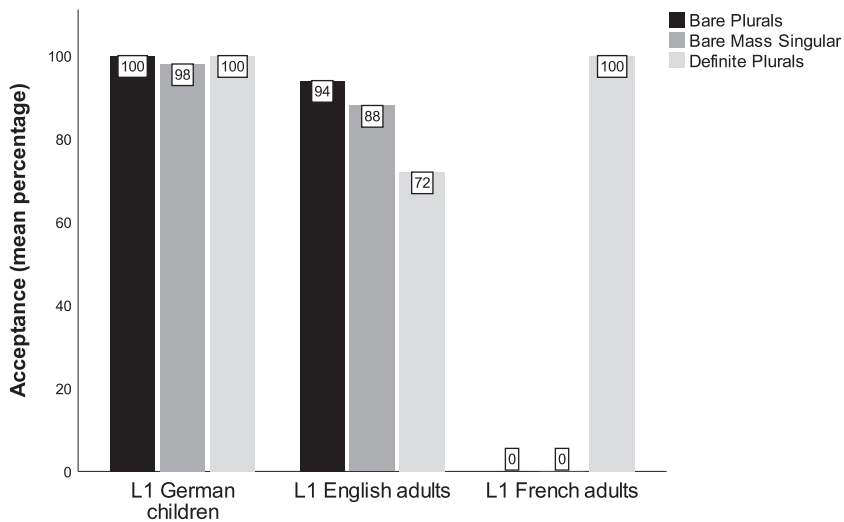
Figure 3.5: AJT – L1 control groups – acceptance by group and condition

The L1 German children accept 100 % of the bare plurals, 98 % of the bare mass singulars and 100 % of the definite plurals. The L1 English adult group accepts 94 % of the bare plurals, 88 % of the bare mass singulars in English, and 72 % of the definite plurals. The L1 French control group does not accept any bare nominals (0 %) and accepts all definite plurals (100 %). Thus, the L2 German child group follows the same pattern as the L1 German child group by accepting bare nominals above 91 % and by accepting definite plurals above 94 %. The L2 French group follows the same pattern as the L1 French group by accepting definite plurals above 89 %, and the L2 French Mid and High groups are most similar to the L1 French group by accepting bare nominals below 25 %. The L1 English adult group has a high acceptance rate for the bare nominal condition like all L2 German groups and like the L1 French Low group. The L1 English adult group has a lower acceptance rate for definite plurals than the L2 groups since definite plurals in object position were mostly rejected, which was expected with generic reference but not with non-generic reference.

Figure 3.6 and 3.7 present the mean percentage (percent correct) of the acceptance of bare plurals, bare mass singulars, and definite plurals with

generic and non-generic reference in subject and object position. Figure 3.6 presents the L2 German LoE groups and Figure 3.7 the L2 French LoE groups.
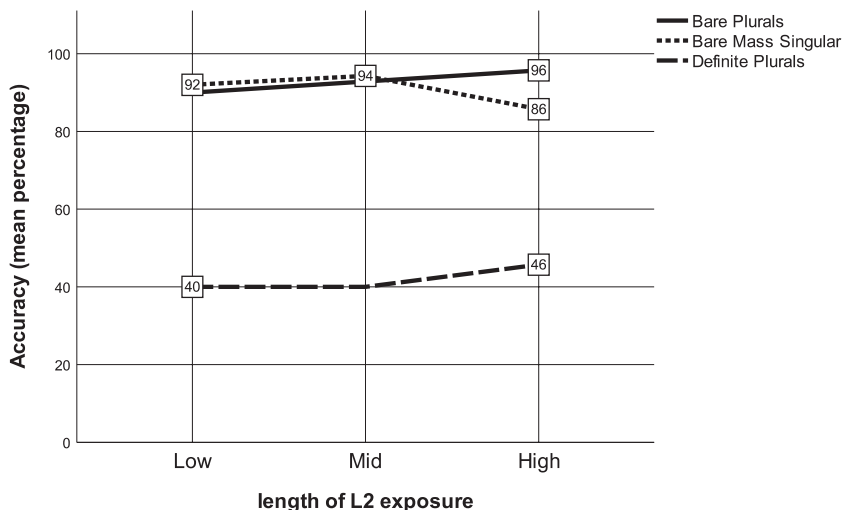

Figure 3.6: AJT – L2 German – accuracy by group and condition

The accuracy rate for the definite plural condition for all three groups is around 40 % (Low: 40 %, Mid: 40 %, High: 46 %) and for bare plurals and bare mass singulars 86 % or higher for all groups. With increasing LoE, the acceptance rate of bare plurals increases slightly, whereas the acceptance rate of bare mass singulars decreases (bare plurals: Low 92 %, Mid 94 %, High 96 %; bare mass singulars: Low 92 %, Mid 94 %, High 86 %).

Comparing the acceptance rate of bare plurals and bare mass singulars with generic versus non-generic reference (not included in Figure 3.6) reveals that more bare plurals and bare mass singulars have been accepted with generic reference. For the bare plural condition, the Low group shows the highest variation (generic: 96 %, non-generic: 84 %), and for the bare mass singular condition, the High group shows the highest variation (generic: 95 %, non-generic: 71 %). Contrasting the acceptance rate of bare plurals versus bare mass singulars reveals minor differences with generic reference and opposing trends with non-generic reference.
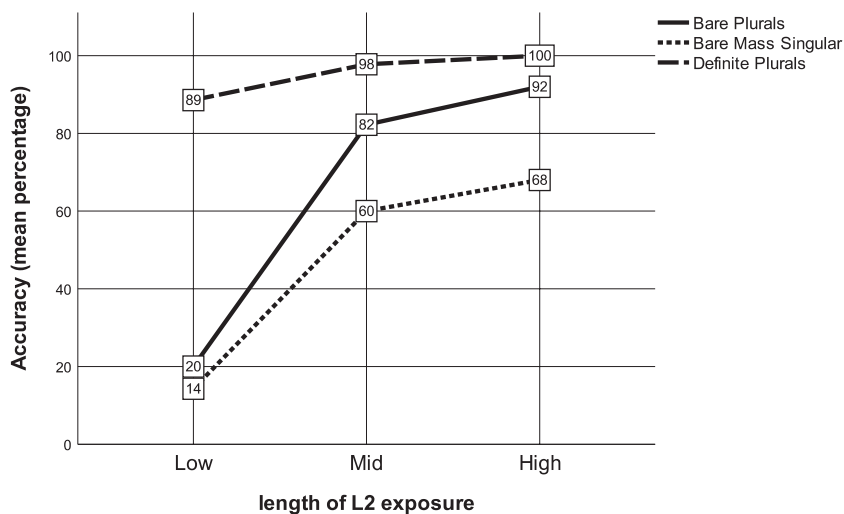
Figure 3.7: AJT – L2 French – accuracy by group and condition

The mean accuracy rate of definite plurals is 89 % for the Low group, 98 % for the Mid group and 100 % for the High group. The difference in the L2 learners' accuracy rate of bare plurals and bare mass singulars increases with increasing LoE (bare plurals: Low 20 %, Mid 82 %, High 92 %, bare mass singulars: Low 14 %, Mid 60 %, High 68 %).

There is no significant effect of LoE for the L2 German group for bare plurals (p = .395, beta: 0.095), bare mass singulars (p = .641, beta: -0.049), and definite plurals (p = .370, beta: 0.074). The interaction between language group and LoE reveals that there is a significant effect for bare plurals (p < .001, beta: 0.653) and bare mass singulars (p < .001, beta: 0.584) but not for definite plurals (p = .236, beta: 0.101), i.e., with increasing LoE, the L2 French group differs significantly from the L2 German group for the bare plural and the bare mass singular conditions.

In Figures 3.8 and 3.9, [±definite] and [±generic] are contrasted. Figure 3.8 presents accuracy for bare plurals/bare mass singulars (combined to one condition) and definite plurals with generic and non-generic reference in L2 German and Figure 3.9 in L2 French.
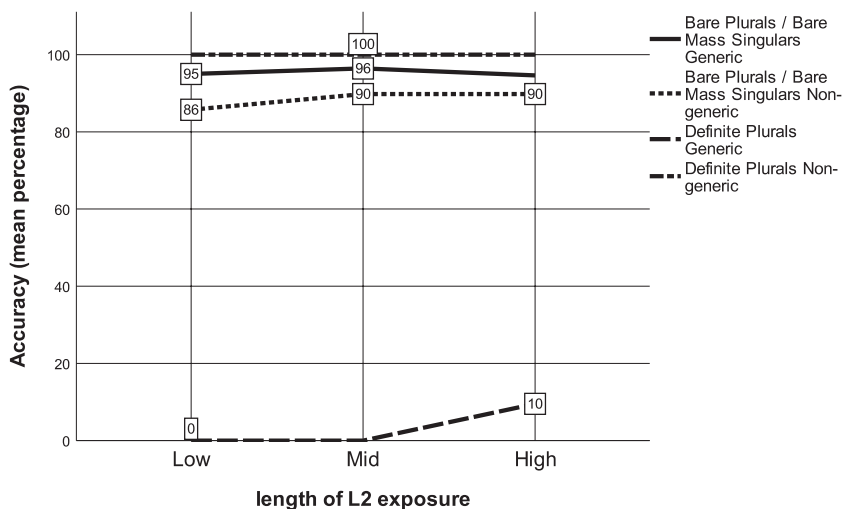
Figure 3.8: AJT – L2 German – accuracy by group and condition with generic and non-generic reference

Bare plurals/bare mass singulars with generic reference are correctly accepted by all groups (Low: 95 %, Mid: 96 %, High: 95 %). Definite plurals with generic reference are not rejected by the Low and Mid groups (0 %) and only by 10 % by the High group.

Bare plurals/bare mass singulars with non-generic reference show the following acceptance rates (percent correct): Low: 86 %, Mid: 90 %, High: 90 %. In the case of a rejection, most of the time, the participants corrected the bare nominal to a definite nominal (e.g., *Haie sind in der Nähe des Bootes* changed to *Die Haie sind in der Nähe des Bootes*), which is the canonical way to express non-generic reference. Definite plurals with non-generic reference were accepted 100 % correct by all L2 learners.

The acceptance rate of bare plurals/bare mass singulars with generic reference versus non-generic reference differs slightly. Bare plurals/bare mass singulars were accepted more often with generic reference than with non-generic reference by all L2 learner groups (and by the L1 English adults). The Low group shows the highest variation (generic: 95 %, non-generic: 86 %). Presumably, more bare nominals are accepted with generic reference since bare plurals/bare mass singulars are the canonical way to

express generic reference and the non-canonical way to express non-generic reference.
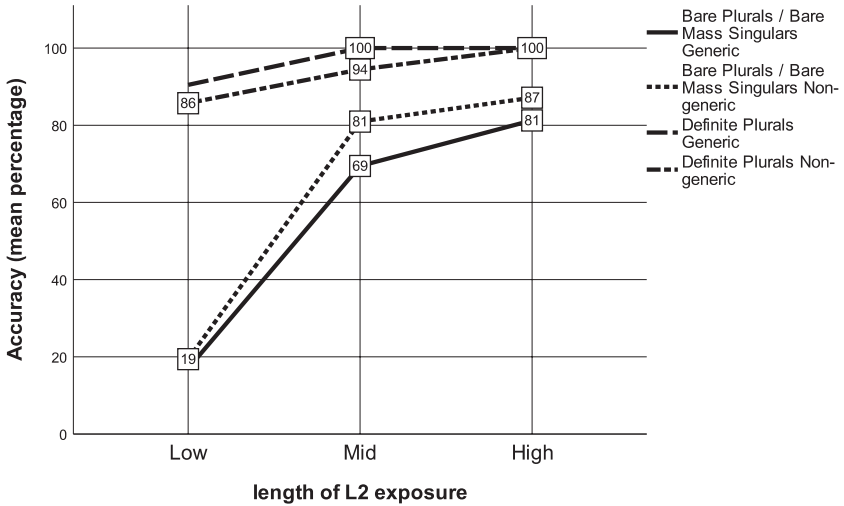
Figure 3.9: AJT – L2 French – accuracy by group and condition with generic and non-generic reference

The mean percentage of the acceptance of bare plurals/bare mass singulars with generic reference (*Requins sont dangereux*, *Lait est blanc*) is 17 % for the Low group, 69 % for the Mid group, 81 % for the High group. The mean percentage of the acceptance of definite plurals is 90 % for the Low group, and 100 % for the other two L2 groups.

The mean percentage of the acceptance of bare plurals/bare mass singulars with non-generic reference (*Requins sont à côté du bateau, *Sucre est sur la table*) is 19 % for the Low group, 81 % for the Mid group, 87 % for the High group. The mean percentage of the acceptance of definite plurals is 86 % for the Low group, 94 % for the Mid group, and 100 % for the High group.

The acceptance rate of bare plurals/bare mass singulars with generic reference versus non-generic reference differs slightly. More bare nominals were correctly rejected with non-generic reference; bare nominals with non-generic reference are the non-canonical way to express non-generic reference in L1 English. The L1 English adults corrected bare nominals to definite nominals in these cases with an accuracy rate of 83 %.

The acceptance rate of definite plurals with generic versus non-generic reference differs slightly. More definite plurals are accepted with generic reference.

There is no significant effect of LoE for the L2 German group for bare nominals with generic reference ($p = .851$, beta: 0.018) and with non-generic reference ($p = .499$, beta: 0.083), and for definite plurals with generic reference ($p = .200$, beta: 0.074) and with non-generic reference ($p = 1.000$, beta: 0.000). The interaction between language group and LoE reveals that there is a significant effect for bare nominals with generic reference ($p < .001$, beta: 0.626) and with non-generic reference ($p < .001$, beta: 0.643), and for definite plurals with non-generic reference ($p = .038$, beta: 0.411) but not with generic reference ($p = .734$, beta: 0.020), i.e., with increasing LoE, the L2 French group differs significantly from the L2 German group for the bare nominals with generic and non-generic reference and for definite plurals with non-generic reference.

In Figures 3.10 and 3.11, [±definite] and [±subject] are contrasted. Figure 3.10 presents accuracy for bare plurals/bare mass singulars (combined to one condition) and definite plurals in subject and object position in L2 German and Figure 3.11 in L2 French.
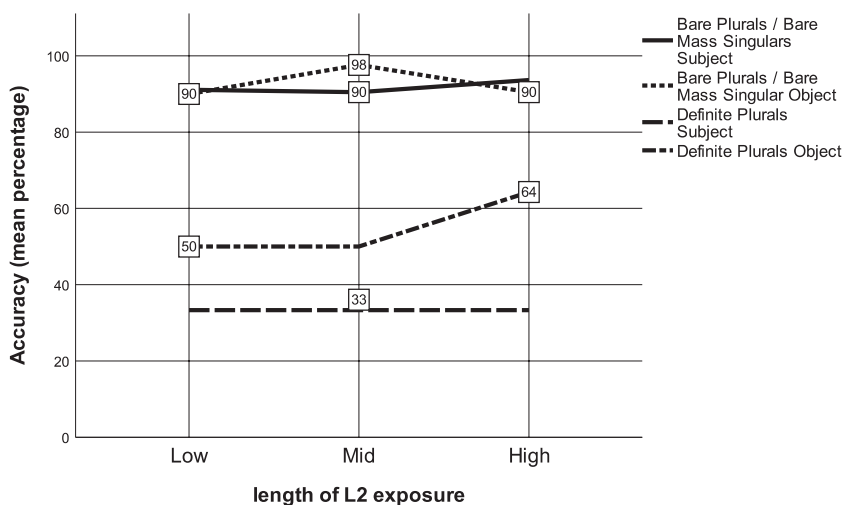

Figure 3.10: AJT – L2 German – accuracy by group and condition in subject and object positions

In L2 German, the accuracy rate of bare nominals ranges from 90 to 92 % in subject position, and 90–98 % in object position. The accuracy rate of definite plurals ranges from 50 to 64 % in subject position and is 33 % in object position.
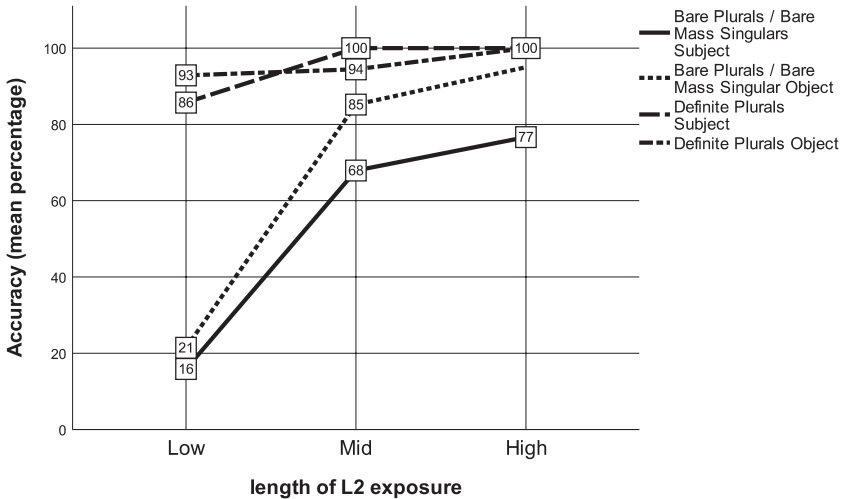
Figure 3.11: AJT – L2 French – accuracy by group and condition in subject and object positions

In L2 French, the accuracy rate of bare nominals is higher in object position than in subject position, in particular with increasing LoE. The accuracy rate of definite plurals ranges from 86 to 100 % in subject position and from 93 to 100 % in object position.

Comparing subject and object position in generic contexts reveals that the acceptance rate of bare plurals and bare mass singulars with generic reference is higher in object than in subject position; this difference increases with increasing LoE. The acceptance rate of definite plurals does not differ in subject and object position.

There is no significant effect of LoE for the L2 German group for bare nominals in subject (p = .649, beta: 0.051) and object position (p = .671, beta: 0.045), and for definite plurals in subject (p = 1.000, beta: 0.000) and object position (p = 0.069, beta: 0.213). The interaction between language group and LoE reveals that there is a significant effect for bare nominals in

subject ($p < .001$, beta: 0.573) and object position ($p < .001$, beta: 0.729), and for definite plurals in subject position ($p = .038$, beta: 0.172) but not in object position ($p = .695$, beta: -0.047), i.e., with increasing LoE, the L2 French group differs significantly from the L2 German group for the bare nominals in subject and object position and for definite plurals in subject position.

In L2 German, comparing bare plurals in subject and object position with generic and non-generic reference (not included in Figure 3.10) reveals that the acceptance rate shows minor differences in the various conditions. Most bare plurals have been accepted with generic reference in subject position, and least with non-generic reference in subject position. The L2 learners' mean percentage is 90–100 % with generic reference in subject position, 86–100 % with generic reference in object position, 86–96 % with non-generic reference in subject position, and 80–100 % with non-generic reference in object position.

Comparing bare mass singulars in subject and object position with generic and non-generic reference reveals that the acceptance rate shows minor differences in the various conditions. The L2 learners' mean percentage is 90–100 % with generic reference in subject position, 86–100 % with generic reference in object position, 57–86 % with non-generic reference in subject position, and 86–100 % with non-generic reference in object position.

Comparing definite plurals in subject and object position with generic and non-generic reference reveals that the acceptance rate varies with generic and non-generic reference. Most definite plurals have been accepted with non-generic reference in subject position, and least with generic reference in subject position. The L2 learners' mean percentage is 0 % with generic reference in subject position, 0–29 % with generic reference in object position, 100 % with non-generic reference in subject position, and 100 % with non-generic reference in object position.

Thus, for bare plurals, bare mass singulars and definite plurals with generic reference only minor differences in the acceptance rates were found for [±subject] and [±count]. However, major differences in the acceptance rates have been found for [±definite] with generic reference, i.e., the mean percentage for bare plurals and bare mass singulars with generic reference

ranges from 86 to 100 % and in contrast 0–29 % for definite plurals with generic reference.

The accuracy rate with [±cue] for bare nominals did barely differ.[90] The acceptance rate of bare plurals/bare mass singulars with cue (such as *in general*) is slightly higher for all groups than without cue, however, the difference is minor (with cue: L2 German Low: 97 % L2 German Mid: 95 % L2 German High: 93 %, without cue: L2 German Low: 87 % L2 German Mid: 92 % L2 German High: 92 %).

In L2 French, comparing bare plurals in subject and object position with generic and non-generic reference (not included in Figure 3.11) reveals that the acceptance rate increases with increasing LoE in subject and object position with generic and non-generic reference. Slightly more bare plurals were accepted with generic reference than with non-generic reference in object position. In subject position, the acceptance rate with generic and non-generic reference does not differ. In object position the acceptance rate is higher than in subject position.

Comparing bare mass singulars in subject and object position with generic and non-generic reference reveals that the acceptance rate increases with increasing LoE in subject and object position with generic and non-generic reference. With generic reference the acceptance rate is higher in object position than in subject position. With non-generic reference, the overall acceptance rate in subject position and object position is identical, however, the L2 French Low group shows a higher acceptance rate in object position and the L2 French Mid group a higher acceptance rate in subject position.

Comparing definite plurals in subject and object position with generic and non-generic reference reveals that the acceptance rate ranges from 71 to 100 % in all conditions. The highest acceptance rate has been found with generic reference in subject position (93–100 %).

Thus, for bare plurals and bare mass singulars with increasing LoE, the acceptance rate increases in all conditions and the mean percentage for definite plurals in all conditions ranges from 71 to 100 %.

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90 Due to the low item number in the definite plural condition, the discussion on [±cue] is reduced to bare nominals.

The acceptance rate of bare plurals/bare mass singulars with cue (such as *in general*) is higher for all groups than without cue. The L2 French High group shows the highest difference for [±cue] (with cue: 97 %, without cue 76 %).

Finally, the results for the filler items will be presented, which may serve as an additional proficiency measure. However, the differences for the filler items in L2 German and L2 French have to be accounted for. In L2 German, 10 filler items were ungrammatical and therefore had to be judged as unacceptable, i.e., had to be rejected and corrected accordingly, whereas in L2 French, 4 filler items were ungrammatical, which had to be judged as unacceptable, and 6 were target, which had to be accepted for a targetlike performance. Thus, if the participants showed a yes-bias in the filler items, in L2 German 0 % would be judged correctly, whereas in L2 French it would be 60 %.

In Figure 3.12, the accuracy rate of the individual results for the filler items in L2 German and L2 French is presented.
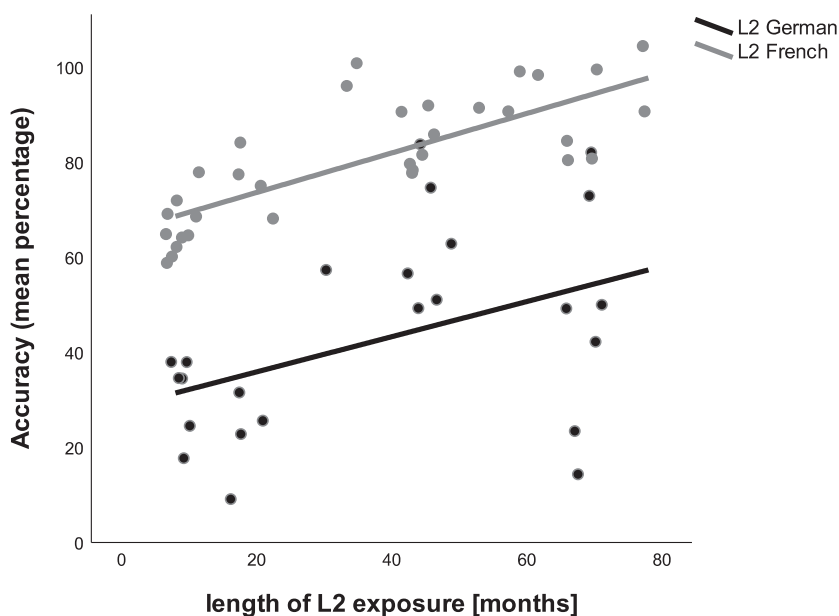
Figure 3.12: AJT – L2 German versus L2 French – individual results: filler items

In L2 German, all participants in the L2 German Low group perform 40 % correct or lower, i.e., only 10–40 % of the nontarget filler items were correctly rejected. The 7 participants in the Mid group all perform 50 % correct or higher. In the High group, 4 participants perform 50 % correct or higher and 3 participants 40 % correct or lower. In L2 French, the judgments by the participants in the L2 French Low group are 60–80 % correct, and 80–100 % by the participants in the Mid and High groups.

Figure 3.13 presents the accuracy rate for filler items in L2 German and L2 French.
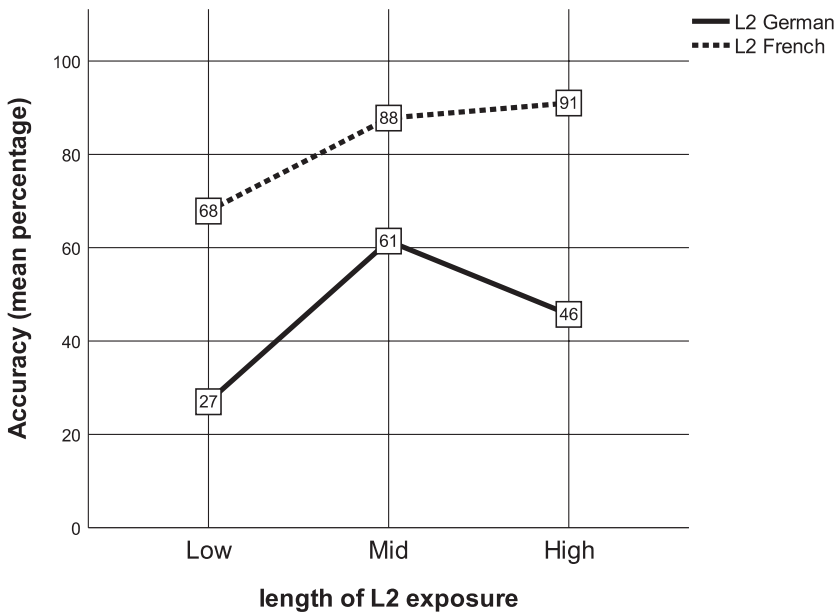
Figure 3.13: AJT – L2 German versus L2 French – accuracy by group: filler items

The L2 German Mid group shows the highest mean percentage of correct judgments (61 %), followed by the L2 German High group (46 %), and the L2 German Low group (27 %). In L2 German, there is a significant correlation between the L2 learners' amount of correctly judged filler items and age at testing and LoE (with age at testing: $r = .472$, $p = .020$, with LoE: $r = .426$, $p = .038$). Thus, with increased age at testing and LoE, accuracy also increases for the filler items. No correlation has been found

between proficiency and the L2 learners' amount of correctly judged filler items ($r = .019$, $p = .936$).

The L2 French Low group judged 68 % of the filler items correctly, the L2 French Mid group 88 %, and the L2 French High group 91 %. In L2 French, there is a strong correlation between the L2 learners' amount of correctly judged filler items and age at testing, LoE, and proficiency (age at testing: $r = .790$, $p < .001$, LoE: $r = .742$, $p < .001$, proficiency: $r = .752$, $p < .001$). Thus, with increasing proficiency, LoE, and age at testing, the amount of percent correct also increases for the filler items.

The performance of the L1 German children (in German), L1 French adults (in French), and the L1 English adults (in English) is at ceiling as expected.

Both in L2 German and L2 French, accuracy strongly correlates with LoE and age at testing, in L2 French also with proficiency. A z-test revealed that the correlation between LoE and the mean percentage (percent correct) of the acceptance rate differs in L2 German and L2 French for the filler items, which is significant (L2 German: $r = .426$, L2 French: $r = .742$ $p = .039$). Furthermore, a z-test revealed that the correlation between proficiency and the mean percentage (percent correct) of the acceptance rate differs in L2 German and L2 French for the filler items, which is also significant (L2 German: $r = .019$, L2 French: $r = .745$ $p < .001$). However, this finding can be explained by the imbalance of target and non-target filler items in the German and French AJTs as discussed above. The 10 non-target filler items in the AJT in German all had to be rejected for a high accuracy rate, whereas only 4 non-target filler items had to be rejected in the French version, while 6 target items had to be accepted for a high accuracy rate.

3.6.1.4 Discussion

A comparison of the L2 German learners and L2 French learners reveals that the L2 initial state is similar due to L1 transfer and differs increasingly throughout the L2 developmental course for the acquisition of bare nominals due to restructuring of the L2 grammar by accessing UG and by receiving L2 input.

The data presented in the last section show that the initial cognitive state of cL2A is identical in German and French due to L1 transfer effects, whereas the subsequent developmental course differs, since the L2 grammar

is restructured by accessing UG and by receiving L2 input, which confirms the FTFA.

With regard to the cL2 learner's learning tasks, the following predictions of Hypothesis 1 are confirmed:

In L2 French, bare plurals and bare mass singulars were increasingly rejected with increasing LoE and proficiency as predicted. The cL2 learners in the Low group have not acquired that bare nominal arguments are ungrammatical in contrast to the cL2 learners in the subsequent interlanguage stages, who reassembled [-definite] to [+definite]. The acceptance rate of definite plurals with generic reference increased from 90 % to 100 % when the ungrammaticality of bare nominals has been acquired in the Mid and High groups, since generic reference can only be expressed with definite plurals.

In L2 German, no definite plurals with generic reference were rejected by the Low and the Mid group, and even the High group only rejected 10 % of the generic definite plurals. Thus, the prediction that the rejection rate of definite plurals increases with increasing LoE is confirmed, however, to a lower degree than expected. Comparing these results with the L1 English native control group reveals that even the native English adults only rejected 27 % of the generic definite plurals, which might be a task effect. First of all, the item number of generic definite plurals is very low (N=3), as well as the participant number in the L1 English group (N=5). Furthermore, the generic contexts might not have been unambiguously generic or not as strong as expected, since L1 English native speakers are expected not to allow definite plurals with generic reference. Therefore, this result needs to be confirmed by further empirical evidence.

The acceptance rate for bare plurals versus bare mass singulars did not differ significantly in L2 German in all L2 learner groups as predicted. However, in L2 French, the L2 French High group differs significantly from the L2 Low group with regard to the acceptance rate of bare plurals versus bare mass singulars. The L2 French High group rejects 98 % of bare plurals correctly but only 53 % of bare mass singulars, which was not predicted. All three groups show a higher rejection rate of bare plurals. The L1 French adults, L1 German children, and L1 English adults all performed at ceiling (100 %) for bare plurals and bare mass singulars, which confirms the DKP, which assumes bare plurals and bare mass singulars with generic

reference to be alike. More bare nominals were rejected with non-generic reference (and corrected to definite nominals) in L2 French and L2 German as predicted, which can be explained by the fact that bare nominals with non-generic reference are the non-canonical way to express non-generic reference in L1 English. This is confirmed by the L1 English adults who also rejected bare mass singulars in non-generic contexts (e.g., *Sugar is on the table*) and corrected them to definite mass singulars (e.g., *The sugar is on the table*). As predicted, more definite plurals were accepted with non-generic than with generic reference, since definite plurals are the canonical way to express non-generic reference in English and German. However, most definite plurals in both contexts were accepted. As predicted, there was no significant difference in the acceptance rate with regard to subject versus object position.

With regard to the L2 developmental course, the following predictions of Hypothesis 2 are confirmed:

The initial cognitive state of cL2A is represented by the Low groups even though the L2 French Low group has been exposed to the L2 for 0;11 years and the L2 German Low group for 1;1 years. As predicted by the Full Transfer/Full Access Model, the difference between these groups is not significant due to L1 transfer effects. L2 German and L2 French learners initially accept bare plurals and bare mass singulars and definite plurals with generic and non-generic reference due to L1 transfer, even though bare nominal arguments are ungrammatical in French and generic definite plurals are ungrammatical in German. With increasing age, LoE, and proficiency, the developmental course in L2 German and L2 French differs due to L2 input and access to UG leading to targetlikeness in German and French as well as maturation. In L2 French, increasing LoE and proficiency led to an increasing rejection rate of bare plurals and bare mass singulars. As predicted, definiteness is acquired earlier than its semantics, including generic reference. The cL2 data provided evidence for this prediction since in L2 French, the rejection rate of bare nominals increased in the early interlanguage stages, i.e., from the Mid group onwards, whereas in L2 German, generic definite plurals were only rejected to a low degree by the L2 German High group, i.e., in the late interlanguage stages. With regard to the acceptance of bare and definite nominals in various grammatical contexts, the individual L2 learners of German performed more

homogeneously than the L2 learners of French, in particular in reference to bare nominals. In L2 French, LoE was a reliable predictor with regard to the acceptance rate of bare nominals, i.e., with increasing LoE the rejection rate of bare nominals increased. However, individual L2 learners did not reject bare nominals (e.g., P45) even though they belonged to the L2 French Mid group, which overall showed a rejection trend. Therefore, individual variation with regard to the timeframe has to be considered.

Analyzing the developmental stages of the L2 French learners for bare plurals, they first reject (L2 French Low) as many bare plurals with generic reference as with non-generic reference (generic: 20 %, non-generic 20 %), in the next step (L2 French Mid), more bare plurals with non-generic reference are rejected (generic: 78 %, non-generic: 87 %), and then (L2 French High) more bare plurals with generic reference (generic: 98 %, non-generic: 86 %). This suggests that L2 learners go through the following developmental stages in the acquisition of bare plurals: (1) rejecting few bare plurals with [±generic], (2) rejecting more bare plurals with [-generic], (3) rejecting all bare plurals with [+generic] and most with [-generic], (4) rejecting all bare plurals with [±generic]. These stages can be explained by L1 transfer. First, most bare plurals are accepted since in L1 English, bare plurals are grammatical. Then, most bare plurals with non-generic reference are rejected which is the non-canonical way to express non-generic reference in L1 English, then all bare plurals with generic reference are rejected since bare plurals are the canonical way to express generic reference in English, and finally bare plurals in both contexts are acquired.

With regard to maturational constraints, the following predictions for Hypothesis 3 are confirmed:

As predicted, generic definite plurals are overaccepted by the majority of L2 learners. On the one hand, this might confirm maturational constraints up to a certain age as well as the complexity of the learning task when acquiring generic reference which requires more computational space and consumes more processing resources, and on the other hand, this might be traced back to a task effect, since (a) it is easier to accept all definite plurals than to reject some definite plurals, even though an overall yes-bias was not found; (b) comparing the level of ungrammaticality of generic definite plurals in L2 German with other ungrammatical items, such as *Ich spiele gerne zu dir* instead of *Ich spiele gerne mit dir*, a non-target interpretation

might have been more acceptable than a non-target grammatical form; (c) the number of test items for this condition was low (generic definite plurals: N=3); and (d) possibly the generic context was not strong enough, since L1 English adults only rejected 27 % of generic definite plurals, which seems rather low. Thus, overacceptance of definite plurals with generic reference might be traced back to cognitive maturation as well as to factors such as the complexity of the L2 learner's learning task and task effects.

With regard to the complexity of the learning task, the following predictions for Hypothesis 4 are confirmed:

The acquisition of generic reference causes difficulties even in advanced interlanguage stages. In particular, generic definite plurals were overaccepted in L2 German, which, however, might also be related to task effects or possibly cognitive maturation. As predicted, in L2 French, bare nominals were increasingly rejected in the Mid and High groups and did not cause any difficulties in advanced interlanguage stages.

With regard to L2 teaching, the following predictions for RQ2 are confirmed:

Since difficulties with the acquisition of generic reference remain even in the more advanced interlanguage stages, since generic definite plurals are overaccepted in L2 German, focus on form for older and cognitively mature L2 learners is predicted to increase targetlikeness, as suggested by the Bottleneck Hypothesis. However, it is assumed that cL2 learners will also acquire generic reference solely by being exposed to the L2, which has also been confirmed for individual L2 learners who reject some generic definite plurals. Therefore, focus on form is not a requirement for the acquisition of generic reference in immersion education.

A strong correlation between LoE, proficiency, and age at testing has been found. Therefore, it is nearly impossible to disentangle these three factors in this empirical study.

With regard to statistics, non-significant results do not necessarily mean that there is no difference or no correlation but rather that on the basis of the data in the present study, with low item numbers and small participant groups, no significant difference could be revealed. In the AJT, the item numbers are high for 'bare plurals' (N=10), 'bare mass singulars' (N=5), and 'definite plurals' (N=5). However, the item numbers were too low for statistical analyses with regard to the various contrasts per condition, e.g.,

definite plurals with generic versus non-generic reference, bare plurals with generic reference in subject versus object position. Consequently, the results for these conditions present tendencies, which have to be reconfirmed by further empirical evidence.

3.6.2 Experiment 2: Truth Value Judgment Task

The Truth Value Judgment Task is an interpretation task designed for this empirical study in order to investigate the interpretation of definite plurals followed by either individual-level or stage-level predicates in L2 German and L2 French. Section 3.6.2.1 deals with the methodology, the materials, and the testing procedure of the TVJT. In Section 3.6.2.2, the participants of the TVJT will be presented. Section 3.6.2.3 presents the findings. Finally, the results will be discussed in Section 3.6.2.4.

3.6.2.1 Methodology, Materials, and Procedure

The dynamic Truth Value Judgment Task (TVJT) includes 12 short stories, which are each followed by one test item.[91] Examples of the test items are presented in (32). The test items consist of 5 definite plurals followed by an individual-level predicate (32a), 4 definite plurals followed by a stage-level predicate (32b), and 3 filler items (32c).

> (34) a. Definite plural with individual-level predicate
>   The sharks are dangerous.
>   b. Definite plural with stage-level predicate
>   The sharks are hungry.
>   c. Filler
>   The oranges are not orange.

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91 This Truth Value Judgment Task was also presented and discussed in Kolb (2014), which is a study on the investigation of crosslinguistic influence and L2 exposure effects. In Kolb (2014), the interpretation of definite plurals with individual- and stage-level predicates in cL2 German and cL2 French was examined. Thus, Kolb (2014) presents a small excerpt of this study. However, Kolb (2014) analyzes only the interpretation of definite plurals focusing on the correlation of CLI and LoE; the L2 learner's learning tasks, the consequences of the complexity of these tasks for cL2A, the implications for L2 teaching, and further factors influencing the L2 developmental course are not discussed.

In the context of a preceding short story, the 12 test items had to be judged as true or false. An example of a short story is presented in (35). The story was read aloud by the interviewer. Each story was accompanied by 4 pictures so that the children could follow the story more easily.[92] In example (35), the first picture showed a typical picture of Sea World, the second picture presented John, the main character of the story, the third picture showed a tank with sharks, and the fourth picture showed sharks in the ocean. The stories and pictures were all developed in the same systematic manner. Due to plausible deniability, each predicate appeared four times in the story. In half of the stories, an individual-level predicate was mentioned first, and in half of the stories, a stage-level predicate was mentioned first in order to exclude priming effects. The pictures were also presented in a systematic way. The first two pictures always presented the context and the characters involved in the story. The last two pictures presented the two possible outcomes of the story. In the case of example (35), based on the story, the tank with sharks relates to sharks that are hungry and not dangerous and sharks in the ocean relate to sharks that are not hungry and dangerous. The three filler items were false with regard to the preceding story, so that a yes-bias could be controlled for. All short stories and test items were developed in English and adapted for French and German in order to have three identical test sets for the L2 learner groups and the control groups. The short stories and test items were proofread by native speakers of each language (Kolb 2014: 7–8).

(35) Example of a short story[93]:
     One day, Mary and Marc go to Sea World. They look at different animals and arrive at a tank with sharks. Mary is very scared of sharks because she knows that sharks in general are dangerous. When they arrive at the tank, they get to know John. John has been taking care of the two sharks for the last two years. John welcomes Mary and Marc, and explains some things to them about the sharks.

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92 "Testing generic reference with an experiment including pictures is always problematic, since pictures refer to specific objects. However, the pictures were not the focus of this task and the purpose was to keep the children's attention on the task. The pictures did not seem to influence the children's judgments" (Kolb 2014: 8).

93 This example was also presented in Kolb (2014: 8).

John: "Listen kids. These two sharks are hungry right now. Do you want to watch me when I feed them?"

Marc and Mary: "Yes, that would be great. Are sharks always hungry? And is it true that they are dangerous?"

John: "Well, sharks out in the ocean are not always hungry because they can eat whenever they want. These two sharks here tend to be hungry quite often since we only feed them twice a day. And, sharks in general are dangerous but these two sharks right here are not dangerous. I have been playing with them for the last two years and they never hurt me."

So, the children had a lot of fun, they watched the sharks swim, saw how they were fed and enjoyed their day at Sea World. Hey puppet, can you tell us something about this story?

Puppet: "Yeah, it was a fun story. Hmm, let's see, this was a story about John in Sea World, and he met Mary and Marc and they all had fun with the sharks. What else happened, let's see… John explained:

a) The sharks are dangerous.

b) The sharks are hungry."

At the beginning of the oral interview (either in German or French), a puppet was introduced to the L2 learners. It was explained that the puppet makes a statement summing up each story after having listened to the stories. The puppet needs the participants' help, because he does not always follow the stories carefully. As a motivator, the children were asked to judge the puppet's statements as true or false on an answer sheet with twelve empty circles, one for each test item. The interviewer read out the story, which was followed by the puppet's statement. Before answering, each child independently chose a green or red sticker. Subsequently, the children explained their judgments. The red stickers were used for false statements and the green stickers for true ones. The goal was to check on the puppet's score at the end of the experiment. The first test item was preceded by one example in order to ensure that the task was understood (Kolb 2014: 8–9).

As mentioned in Section 3.2, the L1 German children and adults also participated in the oral interview format, whereas the L1 French and L1 English control groups participated in the written version of the TVJT, which did not include pictures. The stories were read by the participants and the test item in bold print had to be judged as true or false in the context of the story.

Table 3.13: TVJT – evaluation and distribution of [±generic] interpretations for definite plurals in French, German, and English (Kolb 2014)

	French	German	English
Individual-level *The sharks are dangerous.* definite plurals with individual-level predicates	**true = [+generic]** false = [-generic]	true = [+generic] (ungrammatical in Standard German) **false = [-generic]**	true = [+generic] (ungrammatical) **false = [-generic]**
Stage-level *The sharks are hungry.* definite plurals with stage-level predicates	**true = [-generic]** false = [+generic]	**true = [-generic]** false = [+generic] (ungrammatical in Standard German)	**true = [-generic]** false = [+generic] (ungrammatical)

The TVJT was evaluated as demonstrated in Table 3.17. Definite plurals followed by an individual-level predicate as in *The sharks are dangerous* that were judged as 'true' by L2 German or L2 French learners were counted as a [+generic] interpretation since according to the story, "sharks in general (=sharks in the ocean) are dangerous, and those judged to be 'false' were counted as [-generic], since the specific sharks in the story (= the two sharks in Sea World) were not dangerous" (Kolb 2014: 9). Definite plurals followed by a stage-level predicate as in *The sharks are hungry* that were judged as 'true' by L2 German and L2 French learners were counted as a [-generic] interpretation, "since the two specific sharks in the story (= the ones at Sea World) were hungry. Those judged to be 'false' were counted as [+generic], as sharks in general (= the ones in the ocean) are not hungry because they can eat whenever they want" (Kolb 2014: 9).

The L2 learners' judgments of the test items involve the following three factors: (a) correctness based on the content of the story, (b) grammaticality in L2 German or L2 French (and in L1 English), and (c) possible interpretations of individual- and stage-level predicates. (a) With regard to the content of the story, both answers 'true' and 'false' are possible for all nine test items.[94] The stories were developed systematically so that both judgments are plausible; (b) In French, both judgments are

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94 This is not the case for the filler items, which were false with regard to the preceding short stories, in order to control for a response bias.

grammatical with individual- and stage-level predicates since definite plurals can have [±generic] reference. In Standard German (and English), for individual-level predicates, the target answer is 'false' (= [-generic]),[95] and for stage-level predicates the target answer is 'true' (= [-generic])[96] as [+generic] interpretations are ungrammatical. However, as illustrated in Chapter 1, some varieties of German tolerate generic definite plurals; and (c) as discussed in Chapter 1, individual-level predicates rather express [+generic] reference and stage-level predicates [-generic] reference. Therefore, the expected response for definite plurals with individual-level predicates is 'false' in Standard German and English and 'true' in French (see columns 2 and 3 in Table 3.13 in bold print), with stage-level predicates 'true' in German, English, and French (see columns 1–3 in Table 3.13 in bold print) (Kolb 2014: 9–10).

3.6.2.2 *Participants*

A total of 119 subjects (see column 2) participated in the TVJT, as shown in Table 3.14. The L2 learner groups consist of 22 participants in L2 German, from 6;3 to 11;5 years of age, and 29 participants in L2 French from 5;10 to 12;2 years of age (see columns 5 and 6). Age of onset is a stable variable ranging from 4;10 to 6;6 years for all L2 learners (see columns 3 and 4). Length of L2 exposure ranges from 8 months to 6;6 years (see columns 7 and 8). The control groups consist of 12 L1 German children from 7;1 to 8;1 years of age, 47 L1 German adults from 19 to 62 years of age, 4 L1 French adults from 28 to 42 years of age, and 5 L1 English adults from 26 to 59 years of age.

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95 Based on the story, 'false' refers to the two specific sharks in Sea World not being dangerous.
96 Based on the story, 'true' refers to the two specific sharks in Sea World being hungry.

Table 3.14: TVJT – characteristics of study participants

Language Groups	N	Age of Onset (years; months)		Age at Testing (years; months)		Length of L2 Exposure (years; months)	
		Mean (SD)	Range	Mean (SD)	Range	Mean (SD)	Range
L2 German	22	5;7 (0;5)	4;10–6;6	8;11 (1;10)	6;3–11;5	3;4 (2;0)	0;8–6;0
L2 French	29	5;7 (0;5)	4;10–6;6	8;10 (1;11)	5;10–12;2	3;4 (1;11)	0;8–6;6
L1 German Children	12	0	–	7;8 (0;4)	7;1–8;1	–	–
L1 German Adults	47	0	–	37;2 (13;11)	19;0–62;0	–	–
L1 French Adults	4	0	–	32;3 (6;6)	28;0–42;0	–	–
L1 English Adults	5	0	–	34;9 (13;9)	26;0–59;0	–	–

In order to examine the L2 developmental course, the language groups were divided based on LoE. The L1 German children that are 7;8 years old fall between the Low and Mid groups.

In Table 3.15, the participants are grouped based on LoE: L2 German Low (N=8), Mid (N=7), and High (N=7), and L2 French Low (N=10), Mid (N=9), and High (N=10) (see columns 1 and 2). The mean LoE of the L2 German Low and L2 French Low groups is 1;1 year, the L2 German Mid group 3;7 years, the L2 French Mid group 3;5 years, the L2 German High group 5;9 years, and the L2 French High group 5;6 years (see columns 7 and 8). With increasing LoE, age at testing also increases (see columns 5 and 6): The L2 German Low group was 6;8 years, the L2 French Low group 6;6 years, the L2 German Mid group 9;8 years, the L2 French Mid group 9;2 years, the L2 German High group 11;1 years, and the L2 French High group was 10;11 years old when the experiment was conducted. Thus, overall, the Low, Mid, and High groups in both languages are very similar, which form ideal comparison groups (Kolb 2014: 6).

The groups L2 German Mid, L2 German High, L2 French Mid, and L2 French High are identical in the AJT and in the TVJT.

Table 3.15: TVJT – characteristics of study participants grouped according to LoE (Kolb 2014: 6)

Groups (based on LoE)	N	Age of Onset (years; months)		Age at Testing (years; months)		Length of L2 Exposureß (years; months)		Proficiency Scores	
		Mean (SD)	Range	Mean (SD)	Range	Mean (SD)	Range	Mean (SD)	Range
L2 German Low	8	5;5 (0;5)	4;10–6;1	6;8 (0;4)	6;3–7;0	1;1 (0;6)	0;8–1;8	3.38 (0.33)	3.00–4.00
L2 German Mid	7	5;8 (0;6)	5;0–6;6	9;3 (0;3)	9;1–9;9	3;7 (0;5)	2;8–4;1	3.81 (0.96)	3.06–5.69
L2 German High	7	5;5 (0;3)	5;0–5;9	11;1 (0;3)	10;10–11;5	5;9 (0;2)	5;8–6;0	5.20 (0.63)	4.44–6.31
L2 French Low	10	5;6 (0;4)	4;11–5;10	6;6 (0;6)	5;10–7;5	1;1 (0;6)	0;8–1;8	3.00 (0.50)	2.00–3.75
L2 French Mid	9	5;9 (0;6)	5;3–6;6	9;2 (0;3)	8;11–9;8	3;5 (0;5)	2;8–3;8	4.76 (0.49)	3.94–5.50
L2 French High	10	5;6 (0;6)	4;10–6;4	10;11 (0;6)	10;4–12;2	5;6 (0;8)	4;8–6;6	5.74 (0.35)	5.19–6.13

3.6.2.3 Results

Subjects showing a yes-bias, which includes failing on the three filler items, since these had to be judged as false with reference to the short story, were excluded (2 in the L2 French Low group,[97] none in L2 German).

In German and French, the participants' judgments as 'true' or 'false' were examined as the percentage of [±generic] interpretations of definite plurals. In the following, definite plurals followed by individual-level predicates will be referred to as 'individual-level' and definite plurals followed by stage-level predicates as 'stage-level'. As demonstrated in Table 3.13 (Section 3.6.2.1), the target answers differ for definite plurals with individual- and stage-level predicates, i.e., in the context of the short stories, 'true' refers to generic reference with individual-level predicates and to non-generic reference with stage-level predicates. Therefore, these scenarios require separate analyses.

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97 These two participants were excluded during the evaluation process and do not appear in any of the tables.

For the statistical analysis, a linear-mixed effect regression model with Group and LoE as fixed effects was used. Further variables that were included in the analysis were proficiency, age at testing, age of onset, acquisition of additional languages (L3) and gender. The model did not return any main effects of Group for the individual-level condition (p = .184, beta: 0.195) and the stage-level condition (p = .159, beta: 0.197). The model returned no other effects or interactions approaching significance. This finding can be explained by the correlation between LoE, age at testing, and proficiency. A strong correlation between LoE and proficiency ($r = .821$, $p < .001$) and between LoE and age at testing ($r = .976$, $p < .001$) has been found, which are both highly significant. Age of onset was a constant variable for all L2 learners. Acquisition of an additional language (Germanic or Romance) was not a predictor either, which means that the L2 learners' acceptance of bare and definite nominals was not influenced by the knowledge of an additional language.

A comparison of the L2 German and L2 French learners reveals that the L2 French learners allow more generic interpretations than the L2 German learners. The mean of [+generic] interpretations in L2 German is 35,98 % and 48,71 % in L2 French for both conditions.

Figure 3.14 presents the mean percentage of generic interpretations for individual-level in German (*Die Haie sind gefährlich*) and French (*Les requins sont dangereux*) for the three L2 German and L2 French LoE groups (Low, Mid, and High).
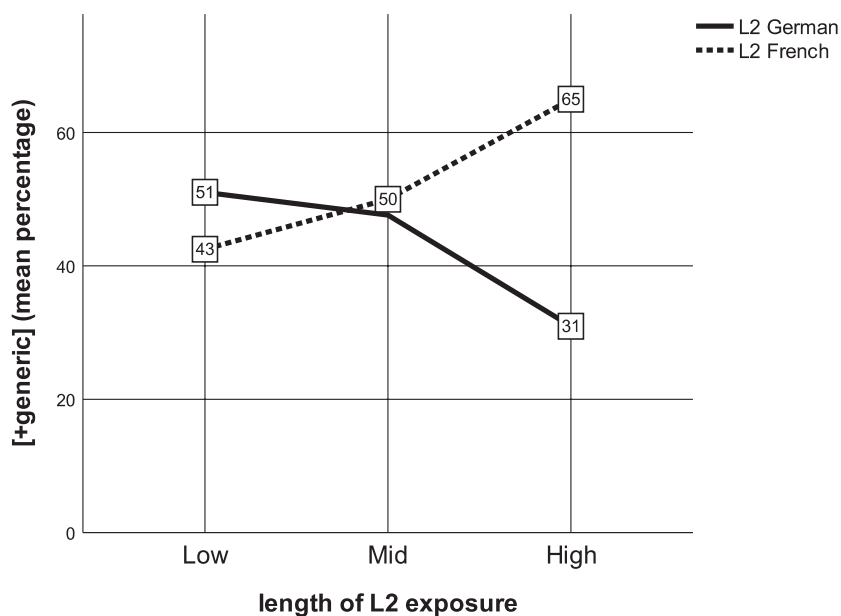
Figure 3.14: TVJT – mean percentage of definite plurals with individual-level predicates interpreted as [+generic] in L2 German and L2 French

In L2 German, the Low group shows the highest average percentage of definite plurals as [+generic] (51 %), followed by the Mid (48 %) and the High group (31 %). There is no significant effect of LoE for the L2 German group (*p* = .325, beta: -0.208).

In L2 French, this trend is reversed as the High group shows the highest average percentage of definite plurals as [+generic] (65 %), followed by the Mid (50 %) and Low group (43 %).

The interaction between language group and LoE reveals that there is no significant effect (*p* = .082, beta: 0.377), i.e., even if with increasing LoE the L2 German and L2 French groups show opposing trends, the groups do not differ significantly. However, the L2 initial state is rather similar while later stages differ increasingly and lead to more targetlikeness in the L2s.

The individual results show that all L2 German (22/22) and L2 French children (29/29) have a preference for either [+generic] or [-generic]. The participants' responses can be divided into three response patterns: [+generic]

(mean percentage of generic interpretations >50 %), [-generic] (mean percentage of generic interpretations <50 %), or mixed (mean percentage of generic interpretations =50 %). In Figure 3.15, the individual results are presented for individual-level in German (*Die Haie sind gefährlich*) and French (*Les requins sont dangereux*), organized by LoE.
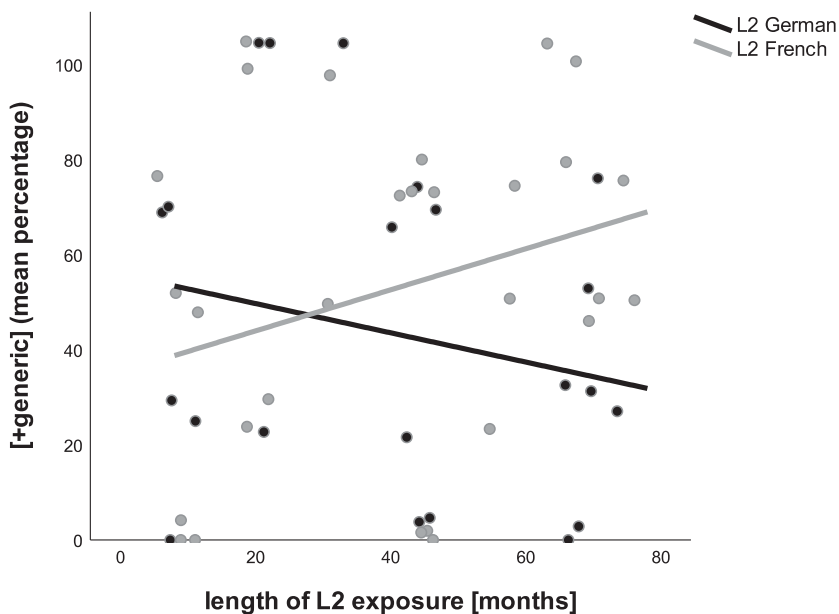

Figure 3.15: TVJT – individual results – mean percentage of definite plurals with individual-level predicates interpreted as [+generic] in L2 German and L2 French

In L2 German, 45 % (10/22) of the L2 German learners show a [+generic] preference for individual-level and 55 % (12/22) a [-generic] preference. 22.7 % (5/22) even show a strong preference by interpreting 80–100 % of the definite plurals as [-generic]. Furthermore, 18 % (4/22) explicitly judged definite plurals with individual-level predicates as [±generic], even if this was not part of the task nor suggested by the interviewer.[98] These

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98 These [±generic] interpretations were counted as [+generic] in the mean percentages per group, since a [±generic] interpretation implies that definite plurals can have [+generic] interpretations.

four participants argued that based on the preceding short story 'true' and 'false' is correct and therefore decided to put a green and a red sticker on the answer sheet. With increasing LoE, the amount of L2 German learners interpreting definite plurals as [+generic] decreases.

The L2 German results show variation among L2 learners with the same LoE: A [+generic] response pattern has been shown by 50 % (4/8) of the children in the Low group, 57 % (3/7) in the Mid group, and 29 % (2/7) in the High group. Thus, the Low group does not show a preference for [+generic] or [-generic], the Mid group shows a [+generic] preference, the High group shows a [-generic] preference pattern.

In L2 French, 69 % (20/29) of the L2 French learners show a [+generic] preference for individual-level, and 31 % (9/29) a [-generic] preference. About 44.8 % (13/29) even show a strong preference by interpreting 80–100 % of the definite plurals as [+generic]. Furthermore, 44.8 % (13/29) of all L2 French learners explicitly judged definite plurals with individual-level predicates as [±generic], even if this was not part of the task nor suggested by the interviewer. These 13 participants all argued that based on the preceding short story, 'true' and 'false' are correct and therefore decided to put a green and a red sticker on the answer sheet. With increasing LoE, the amount of L2 French learners interpreting definite plurals as [+generic] increases.

The L2 French results show variation among L2 learners with the same LoE: A [+generic] response pattern has been shown by 50 % (5/10) of the children in the Low group, 67 % (6/9) in the Mid group, and 90 % (9/10) in the High group. Thus, the Low group does not show a preference for [+generic] or [-generic], the Mid and the High groups show a [+generic] preference.

Figure 3.16 presents the mean percentage of generic interpretations for stage-level in German (*Die Haie sind hungrig*) and French (*Les requins ont faim*) for the three L2 German and L2 French LoE groups (Low, Mid, and High).
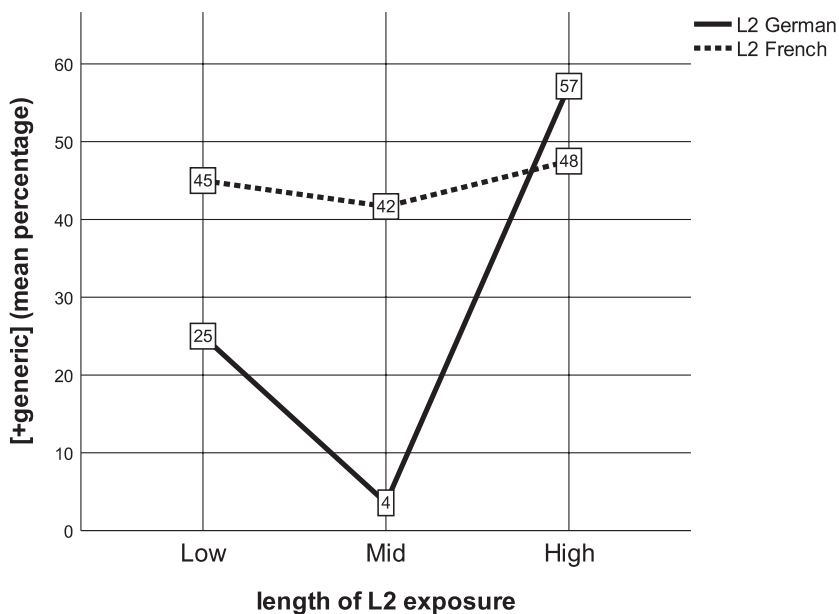
Figure 3.16: TVJT – mean percentage of definite plurals with stage-level predicates interpreted as [+generic] in L2 German and L2 French

In L2 German, the mean percentage of [+generic] interpretations is 25 % for the Low, 4 % for the Mid, and 57 % for the High group. There is a significant effect of LoE for the L2 German group (*p* = .029, beta: 0.449), i.e., with increasing LoE, the amount of [+generic] interpretations increases.

In L2 French, the mean percentage of [+generic] interpretations is 45 % for the Low, 42 % for the Mid, and 48 % for the High group.

The interaction between language group and LoE reveals that there is no significant effect (*p* = .055, beta: -0.399), i.e., with increasing LoE, the L2 French and L2 German groups do not differ significantly.

In Figure 3.17, the individual results are presented for stage-level in German (*Die Haie sind hungrig*) and French (*Les requins ont faim*), organized by LoE. These results reveal that most L2 German (21/22) and L2 French (20/29) children have a preference for either [+generic] or [-generic].
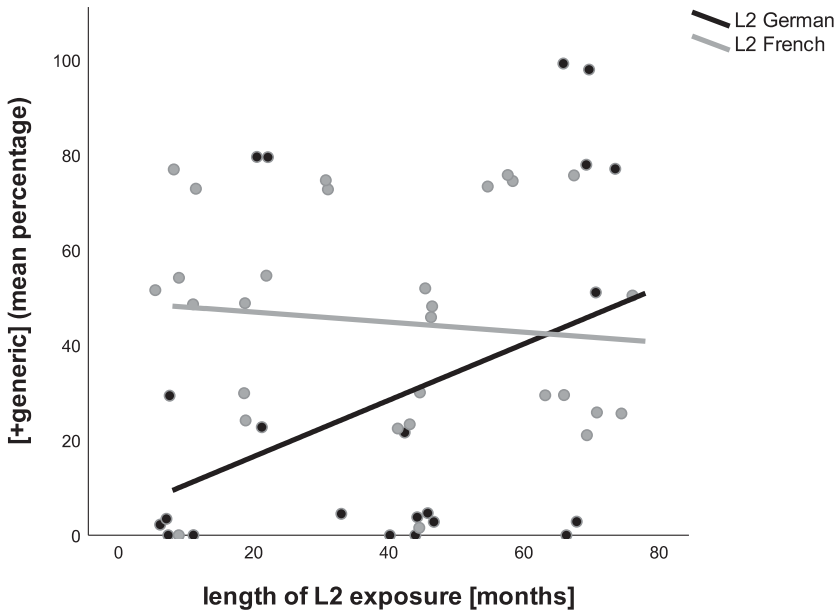
Figure 3.17: TVJT – individual results – mean percentage of definite plurals with stage-level predicates interpreted as [+generic] in L2 German and L2 French

In L2 German, 27 % (6/22) of the L2 German learners show a [+generic] preference for stage-level, and 68 % (15/22) show a strong [-generic] preference by interpreting 80–100 % of the definite plurals as [-generic]. Five of these subjects show a strong [-generic] preference in both conditions, i.e., with individual- and stage-level predicates. Furthermore, 18 % (4/22) of the L2 German learners explicitly judged definite plurals with stage-level predicates as [±generic]. These four subjects allowed [±generic] for definite plurals with individual-level and stage-level predicates. With increasing LoE, the amount of L2 German learners interpreting definite plurals as [+generic] increases.

The L2 German results show variation among L2 learners with the same LoE: A [+generic] response pattern has been shown by 25 % (2/8) of the children in the Low group, by 0 % (0/7) in the Mid group, and by 57 % (4/7) in the High group. Thus, the Low and the Mid groups have a [-generic] preference, and the High group has a [+generic] preference.

In L2 French, 28 % (8/29) of the L2 French learners show a [+generic] preference for stage-level, 41 % (12/29) a [-generic] preference, and 31 % (9/29) do not show a preference. Furthermore, 38 % (11/29) show a strong

preference for [-generic] for definite plurals with stage-level predicates by interpreting 80–100 % as [-generic]. Eight of these 11 subjects perform targetlike in both conditions by showing a strong [+generic] preference with individual-level and a strong [-generic] preference with stage-level predicates. In addition, 31 % (9/29) of all L2 French learners explicitly judged definite plurals with stage-level predicates as [±generic]. These nine subjects also judged definite plurals with individual-level predicates as [±generic], even to a higher degree. Four subjects who allowed [±generic] with individual-level predicates did not allow [±generic] interpretations with stage-level predicates. With increasing LoE, the amount of L2 French learners interpreting definite plurals as [+generic] decreases.

The L2 French results show variation among L2 learners with the same LoE: A [+generic] response pattern has been shown by 20 % (2/10) of the children in the Low group, by 22 % (2/9) in the Mid group, and by 57 % (4/10) in the High group. Thus, the Low and the Mid groups have a [-generic] preference and the High group has a [+generic] preference.

Figure 3.18 presents the mean percentage of generic interpretations for individual- and stage-level for the control groups: L1 German adults, L1 German children, L1 English adults, L1 French adults.
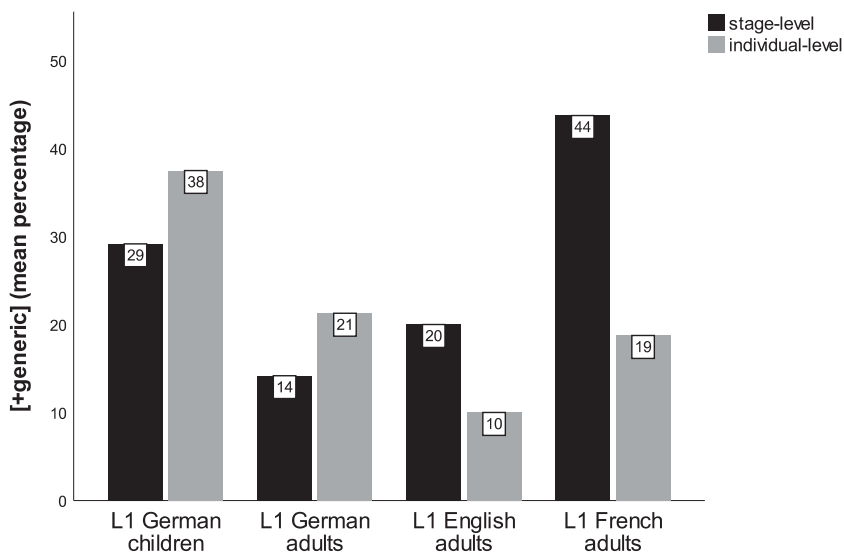

Figure 3.18: TVJT – L1 control groups – mean percentage of definite plurals with individual-level and stage-level predicates interpreted as [+generic]

With individual-level, the native English adults show the lowest average percentage of definite plurals as [+generic] (10 %), followed by the L1 French adults (19 %), the L1 German adults (21 %), and the L1 German children (38 %). Thus, the adult control groups show a [-generic] response pattern and the L1 German children's performance falls in between the L2 German Mid and High groups.

With stage-level, the L1 French adults allow 44 % [+generic] interpretations, followed by the L1 German children (29 %), the L1 English adults (20 %), and the L1 German adults (14 %).

In L2 German, in the individual-level condition, the L2 learners' amount of [+generic] interpretations correlate negatively with age at testing ($r = -.266$, $p = .232$), i.e., with increasing age, the amount of [+generic] interpretations decreases, which is, however, not significant. Furthermore, a negative correlation, which is not significant, between the L2 learners' amount of [+generic] interpretations and LoE ($r = -.215$, $p = .336$) has been found, and no correlation with proficiency ($r = -.042$, $p = .854$).

In the stage-level condition, there is a positive correlation between the L2 learners' amount of [+generic] interpretations with proficiency, LoE, and age at testing (with proficiency: $r = .434$, $p = .044$; with LoE: $r = .385$, $p = .077$; with age at testing: $r = .305$, $p = .167$). The correlation with proficiency was significant. Thus, with increasing proficiency the amount of [+generic] interpretation increases in the stage-level condition.

The individual-and stage-level conditions compared show differences in the interpretation of definite plurals, which has been confirmed by the correlations. A positive correlation between age at testing (and LoE and proficiency) and [+generic] interpretations has been found for stage-level and a negative correlation for individual-level. Thus, the older the L2 learners are, the more they interpret definite plurals followed by stage-level predicates as [+generic], and the less they interpret definite plurals followed by individual-level predicates as [+generic]. Thus, in the individual-level and the stage-level conditions, an opposing trend for [+generic] interpretations has been found.

Furthermore, a t-test for all L2 German learners reveals no significant effect even if the mean difference between the two conditions is 15.152; more generic interpretations occurred with individual-level than with stage-level predicates ($T = 1.573$, $p = .131$).

In sum, overall more generic interpretations occurred in the individual-level than in the stage-level condition. With increasing age, LoE, and proficiency, the L2 learners' generic interpretations increase in the stage-level and decrease in the individual-level condition, which is an opposing trend for both conditions.

In L2 French, in the individual-level condition, there is a positive correlation, which is not significant, between the L2 learners' amount of [+generic] interpretations with LoE and age at testing (with LoE $r = .288$, $p = .129$; with age at testing: $r = .274$, $p = .150$). Thus, with increasing age and exposure to the L2, the amount of [+generic] interpretation increases in the individual-level condition. No correlation has been found for proficiency ($r = .106$, $p = .591$).

In the stage-level condition, there is no correlation between the L2 learners' amount of [+generic] interpretations with proficiency, LoE, and age at testing (correlation according to Pearson with proficiency: $r = .001$, $p = .997$; with LoE: $r = -.105$, $p = .588$; with age at testing: $r = .046$, $p = .813$). However, the correlation with LoE is negative.

The individual-and stage-level conditions compared show differences in the interpretation of definite plurals, which has been confirmed by the correlations. A positive correlation between age at testing (and LoE) and [+generic] interpretations has been found for individual-level and no correlation for stage-level. Thus, the older the L2 learners are the more did they interpret definite plurals followed by individual-level predicates as [+generic], and no such correlation has been found for definite plurals with stage-level predicates.

Furthermore, a t-test for all L2 French learners reveals no significant effect even if the mean difference between the two conditions is 12.097; more generic interpretations occurred with individual-level than with stage-level predicates ($T = 1.558$, $p = .130$).

In sum, overall more generic interpretations occurred in the individual-level than in the stage-level condition. With increasing age and LoE, the L2 learners' generic interpretations increase in the individual-level condition. Age, LoE, and proficiency do not correlate with the amount of generic interpretations in the stage-level condition.

In summary, the L2 French learners show a higher interpretation rate of definite plurals as [+generic] than the L2 German learners. Both L2 German

and L2 French learners have a higher acceptance rate for definite plurals with individual-level than stage-level predicates. With increasing LoE the differences between L2 German and L2 French in the L2 developmental course increase even though this effect is not significant.

3.6.2.4 Discussion

The data presented in the last section show that cL2 learners in L2 German and L2 French even in more advanced interlanguage stages have difficulties with the targetlike interpretation of definite plurals. These difficulties were predicted by the Bottleneck Hypothesis due to the complexity of the L2 learner's learning tasks when acquiring the semantics of functional morphology, which brings us back to the predicitions made in Section 3.4.

With regard to the cL2 learner's learning tasks, the following predictions of Hypothesis 1 are only partially confirmed based on tendencies (rather than significant effects):

The interpretation rate of [+generic] is higher for definite plurals with individual-level than stage-level predicates in L2 German and L2 French; however, this difference is not significant. Thus, only a tendency was found that the choice of the predicate triggers the interpretation. Individual-level predicates trigger generic and stage-level non-generic interpretations. In L2 French, the interpretation rate of [+generic] is higher than in L2 German; however, again the difference is not significant. Bare nominals can have generic reference in German in contrast to French, and therefore, L2 French allows more generic interpretations for definite plurals than L2 German, as argued by Pérez-Leroux et al. (2004). In L2 German, with increasing age at testing, the interpretation rate of [+generic] for definite plurals with individual-level predicates decreases, potentially due to cognitive maturation; however, this is only a tendency since this correlation is not significant. Likewise, LoE correlates negatively with the interpretation of [+generic] for definite plurals with individual-level predicates; this is correlation is not significant either. Thus, with individual-level predicates, the Low group interprets more definite plurals as generic (51 %) than the Mid (48 %) and the High (31 %) groups. However, for definite plurals with stage-level predicates, a positive correlation between the L2 learners' interpretation rate of [+generic] and age at testing was found, which was not predicted.

The positive correlation with proficiency and the interpretation rate of [+generic] was significant, which was also not predicted. In L2 French, with increasing LoE, the interpretation rate of [+generic] for definite plurals with individual-level predicates increases due to targetlikeness in L2 French. A positive correlation with the interpretation rate of [+generic] and LoE (and age at testing) was found, which again is only a tendency as this correlation was not significant. For the interpretation rate of [+generic] for definite plurals with stage-level predicates no correlation has been found with LoE, proficiency, or age at testing.

With regard to the L2 developmental course, the following predictions of Hypothesis 2 are only partially confirmed:

The interlanguage stage closest to the initial cognitive state of cL2A is represented by the Low groups. As predicted by the Full Transfer/Full Access Model, the difference between these groups is not significant due to L1 transfer effects. L2 German and L2 French learners interpret definite plurals as [+generic] and as [-generic]. In the individual-level condition, the mean percentage of [+generic] interpretations in L2 German is 51 % and in L2 French 43 %; in the stage-level condition, the mean percentage of [+generic] in L2 German is 25 % and in L2 French 45 %. Thus, the language groups are not identical, but the Low group has already been exposed to the L2 for 1;1 year, which might explain the differences. The cL2 developmental course in German and French differs with increasing LoE. The difference of the correlation between LoE and the interpretation rate of [+generic] for definite plurals with individual-level and stage-level predicates is significant in L2 German and L2 French. In the individual-level condition, the L2 French learners' interpretation rate of [+generic] increases whereas the L2 German learners' rate of [+generic] decreases due to access to UG, L2 input, and cognitive maturation. CL2 French learners show a higher interpretation rate of [+generic] for definite plurals than cL2 German learners (mean percentage for L2 French: 48,71 %, and for L2 German: 35,98 %), however this difference is not significant. In L2 German, with increasing LoE and age at testing, the amount of [+generic] interpretation decreases with individual-level predicates. However, with stage-level predicates an opposing trend, which was not predicted, has been found. In L2 French, with increasing LoE and age at testing, the amount of [+generic] interpretations

for definite plurals increases with individual-level predicates. With stage-level predicates, this correlation has not been found.

With regard to maturational constraints, the following predictions for Hypothesis 3 are partially confirmed:

Definite plurals are overinterpreted as generic with individual-level predicates by the L2 German Low (51 %) and L2 German Mid (48 %) groups and with stage-level predicates by the L2 German Low group (25 %). In L2 French, the Low group also overinterpreted definite plurals with individual-level predicates (43 %) and with stage-level predicates (45 %). These overinterpretations can be explained by maturational constraints, which are also confirmed by the performance of the L1 German children (individual-level predicates: 38 %, stage-level predicates 29 %), who overinterpret definite plurals as generic, and who fall in between the Low and Mid group with regard to age. In contrast, the L1 German adults allow less generic interpretations (individual-level predicates: 21 %, stage-level predicates: 14 %), which is more than the L1 English adults (individual-level predicates: 10 %, stage-level predicates: 20 %). The differences between the native English and German adults can be explained by different varieties in German, which allow generic definite plurals, as discussed in Barton et al. (2015).[99]

Definite plurals are still overinterpreted as generic with individual-level predicates (31 %) and stage-level predicates (57 %) by the L2 German High group, which was not predicted in the context of maturational constraints, since the L2 children are assumed to be cognitively mature by this time, which, however, will have to be confirmed by future research. The L2 French High group shows increasingly more [+generic] interpretations with individual-level predicates (65 %) as predicted. However, [+generic] interpretations also still occur with stage-level predicates (48 %), which was not predicted and can possibly not only be explained by maturational constraints.

The performance of the L1 French control group is different than expected, since the interpretation rate with individual-level predicates is 19 %

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99 The L1 German adult control group in this study come from different areas in Germany, since they also participated in a study by Barton et al. (2015), analyzing the acceptance rate of definite plurals with generic reference in different varieties of German.

and with stage-level predicates 44 %. Possibly this performance can be explained by the varying testing formats. The L1 French control group participated in the written version of the TVJT, and future research should use the same testing format for all participants.

With regard to the complexity of the learning task, the following predictions for Hypothesis 4 are only partially confirmed:

The acquisition of generic reference causes difficulties even in advanced interlanguage stages. L2 German learners in the High group overinterpret definite plurals as [+generic], however rather in the stage-level condition (57 %) than in the individual-level condition (31 %). The L2 French learners in the High group show still difficulties with the target interpretations, even if in the individual-level condition the High group performs most targetlike (65 %) in contrast to the stage-level condition (48 %).

With regard to L2 teaching, the following predictions for RQ2 are discussed:

Since difficulties with the acquisition of generic reference remain even in the more advanced interlanguage stages, focus on form for older and cognitively mature L2 learners is predicted to increase targetlikeness as suggested by the Bottleneck Hypothesis. However, it is assumed that cL2 learners will also acquire generic reference to a targetlike level with further L2 exposure, as evidenced for individual L2 learners, i.e., 5/22 in L2 German and 8/29 in L2 French. Therefore, focus on form is not a requirement for the acquisition of generic reference in immersion education.

In summary, it has not been predicted that in L2 German, with stage-level predicates the interpretation rate of definite plurals as generic increases with increasing age at testing and increasing proficiency. This trend can be explained by difficulties with the acquisition of generic reference due to the complexity of the L2 learner's learning tasks as predicted by the Bottleneck Hypothesis and as predicted for interface issues. Possibly, in addition, maturational constraints can explain these difficulties; however, the older L2 learners are 11;1 years old, and it remains to be investigated in future research whether maturational constraints are still predicted at this age.

A strong correlation between LoE, proficiency, and age at testing has been found. Therefore, it is nearly impossible to disentangle these three factors in this empirical study. The correlation between the interpretation of definite plurals as [+generic] and LoE was stronger than the correlation

with proficiency. Thus, LoE was a stronger predictor than proficiency in this study. However, due to the strong correlation between LoE and proficiency, future research needs to investigate both variables.

With regard to statistics, a limitation of this study is certainly the relatively small participant groups. Future research with a higher number of participants per group is necessary.

The individual results reveal that in L2 French 44.8 % (13/29) of the individual L2 learners interpret definite plurals with individual-level predicates 80 % and higher as [+generic], and 37.9 % (11/29) interpret definite plurals with stage-level predicates 80 % and higher as [-generic], which is targetlike. Among these subjects, 8 L2 learners performed targetlike in L2 French by interpreting definite plurals, with individual-level predicates above 80 % as [+generic] and stage-level predicates above 80 % as [-generic]. In L2 German, 22.7 % (5/22) of the individual L2 learners show a strong [-generic] preference with individual-level predicates by interpreting 80–100 % of the definite plurals as [-generic], and 68.1 % (15/22) show a strong [-generic] preference with stage-level predicates by interpreting 80–100 % of the definite plurals as [-generic]. It is assumed that these 8 subjects in L2 French (8/29 = 27.6 %) and these 5 subjects in L2 German (5/22 = 22.7 %) that perform targetlike in both conditions have acquired generic reference to a targetlike level by having learnt the cL2 learner's learning tasks, i.e., mapping forms to correct interpretations (mapping definite plurals to generic and non-generic reference in L2 French and to non-generic reference in L2 German), mapping forms to the appropriate grammatical features (mapping definite plurals to [±generic] in L2 French and to [-generic] in L2 German, which involves feature reassembly from [±generic] to [-generic] in L2 German), and identifying the grammatical contexts (individual-level predicates for [+generic] in L2 French and [-generic] in L2 German, stage-level predicates for [-generic] in L2 French and L2 German). In addition, these subjects are assumed to be cognitively mature and to have acquired the appropriate type shifting operations. The 8 subjects in L2 French fall in the Low (N=2), Mid (N=3), and High (N=3) groups, and so do the 5 subjects in L2 German: Low (N=1), Mid (N=2), and High (N=2). Thus, targetlike performance with regard to generic reference only depends on LoE to a certain degree. In summary, 22.7–27.6 % of all L2 learners have acquired generic reference to a targetlike level with LoE

not being the only influential factor since the length of L2 exposure for the subjects involved varies.

3.6.3 Summary

Child L2 learners acquire functional morphology, i.e., definiteness, at an earlier interlanguage stage than its semantics, i.e., generic reference. The L2 developmental course in L2 German and L2 French is initially alike and differs significantly with increasing LoE, proficiency, and age at testing for the acceptance/rejection of bare nominals but not for the interpretation of definite plurals. These findings relate to both experiments, which are complementary to each other and include the same participants.

The major findings of the Acceptability Judgment Task were that in L2 French, ungrammatical bare plurals and bare mass singulars were rejected to a high degree from an intermediate interlanguage stage on, i.e., in the Mid and High groups, and that in L2 German, ungrammatical generic definite plurals were accepted by all L2 learner groups, and only rejected to a low degree by the most advanced group, i.e., the High group, which confirms that difficulties with the semantics of functional morphology remain even in advanced interlanguage stages. CL2 French and cL2 German learners differ in the acceptance of bare plurals and bare mass singulars, with an increasing difference with increasing LoE, but not in the acceptance of definite plurals.

The major findings of the Truth Value Judgment Task were that L2 learners of German and French even in advanced interlanguage stages had difficulties with the targetlike interpretation of definite plurals with individual- and stage-level predicates and that L2 learners of German and French interpreted definite plurals as [+generic] to a higher degree with individual-level predicates than with stage-level predicates. The interpretation rate of definite plurals as [+generic] is higher in cL2 French than in cL2 German, and with increasing LoE cL2, learners of German and cL2 learners of French differ increasingly with regard to the interpretation rate of [+generic] with individual- and stage-level predicates.

In summary, in the acquisition of generic reference, cL2 learners have been shown to be influenced by initial L1 transfer effects, length of L2 exposure, proficiency, age, maturational constraints, and the complexity of the learning task.

Chapter 4 Discussion

4.1 Introduction

This chapter discusses the findings in the light of the Nominal Mapping Parameter, Dayal's (2004) universal scale of definiteness, the Full Transfer/ Full Access Model, the Feature Reassembly Hypothesis, the Bottleneck Hypothesis, and previous research on the acquisition of generic reference. Following the Bottleneck Hypothesis, implications for second language teaching will be drawn with a focus on immersion education. Furthermore, the limitations of the present study will be discussed, including an outlook for future research. A summary of the discussion will conclude the chapter.

4.2 Discussion of Main Findings

The aim of the current study was to investigate the learnability of generic reference in cL2A; more specifically, it focused on the learning tasks throughout the L2 developmental course for native English cL2 learners acquiring generic reference in German and French in an immersion education context. To this end, the acceptability/rejectability of bare nominals and definite plurals with generic and non-generic reference in L2 German and L2 French was examined in an Acceptability Judgment Task, and the interpretation of definite plurals followed by individual- and stage-level predicates were examined in a Truth Value Judgment Task. L2 learners at various interlanguage stages, i.e., varying lengths of exposure and proficiency levels, were included in this study in order to investigate L2 development.

The main finding was that the acquisition of generic reference poses a challenge in cL2A even at advanced interlanguage stages by definite plurals being overaccepted and overinterpreted as generic. Generic reference was not acquired to a target-like level by the majority of L2 learners irrespective of L2 proficiency. While functional morphology was acquired by the majority at an intermediate interlanguage stage (as seen in the AJT), there was a high degree of inter-individual variation at all stages for the interpretation of definite plurals with generic and non-generic reference (evident in the TVJT). For L2 German, this finding suggests that L2 learners go through a Romance stage in the acquisition of generic reference in which

they interpret definite plurals as [+generic] before progressing to a Germanic stage, irrespective of potential facilitation from L1 English. Variables such as the complexity of the learning tasks, cognitive maturity, and the learning context may rather account for the challenges in acquiring generic reference in cL2A than facilitation or non-facilitation based on L1 transfer.

While the initial stages in L2 German and L2 French were similar, as length of exposure, proficiency, and age at testing increased, the developmental paths increasingly diverged for the acquisition of functional morphology, though not for the acquisition of its semantics. In the Acceptability Judgment Task, bare nominals were initially accepted in both L2 German and L2 French but then correctly rejected in L2 French from an intermediate interlanguage stage onward. Definite plurals with generic reference, however, were accepted by both L2 German and L2 French learners at all interlanguage stages, despite their unacceptability in (Standard) German. The Truth Value Judgment Task showed a high degree of inter-individual variation in the interpretation of definite plurals with individual- and stage-level predicates at all interlanguage stages with both L2s. Despite the fact that with increasing LoE the L2 German and L2 French learners do not differ significantly, opposite trends emerge in these groups: as LoE increases, in the individual-level condition the number of generic interpretations increases for L2 French but decreases for L2 German, whereas in the stage-level condition, there is an increase in generic interpretations for L2 German but a decrease in L2 French.

Each component of RQ1 (repeated below for convenience) is discussed in-depth in accordance with the order of the hypotheses established in Section 2.4.

RQ1: What are the native English child L2 learner's learning tasks when acquiring generic reference in L2 German or L2 French, is the L2 developmental course affected by L1 transfer effects and constrained by Universal Grammar (in combination with L2 experience), and does the complexity of the learning tasks in combination with cognitive maturational constraints cause difficulties, which lead to the acquisition of generic reference in an advanced interlanguage stage?

4.2.1 The Child L2 Learner's Learning Tasks

According to the Bottleneck Hypothesis, the cL2 learner's learning tasks are (a) mapping forms to correct interpretations; (b) mapping forms to features; and (c) identifying the grammatical contexts. Thus, in the context of this study, L2 learners who achieve target-likeness have mapped bare and definite nominals to the correct interpretations, reassembled the features accordingly, and identified the grammatical contexts for generic reference.

Based on the Nominal Mapping Parameter, when mapping forms to correct interpretations, the L2 learner has to discern whether bare nominal arguments are grammatical in the L2 and which forms can be shifted to generic reference, i.e., if bare nominals are grammatical, then definite nominals cannot have generic reference, and if bare nominals are ungrammatical, definite nominals have [±generic] reference. When mapping forms to grammatical features, [±definite] and [±generic] have to be reassembled for bare and definite nominals. The grammatical contexts for generic reference are identical in all three languages involved, i.e., individual-level and intensional predicates are inherently generic and lexical cues can trigger generic reference.

The majority of cL2 German learners incorrectly accepted definite plurals with generic reference in the AJT, illustrating that they did not learn that definite plurals cannot have generic reference (since bare nominals shifted to generic reference) and thus did not reassemble the feature [±generic] to [-generic] for definite plurals. Since the two L2 learners who did correctly reject one instance of a definite plural with generic reference were among the older learners, there is potentially a marginal tendency for the rejection rate of definite plurals with generic reference to increase with age at testing.

With increasing LoE and proficiency, cL2 French learners rejected ungrammatical bare nominals in the AJT, which requires the reassembly of [-definite] to [+definite]. Furthermore, the acceptance of definite plurals with generic reference increased slightly at intermediate and advanced interlanguage stages once the ungrammaticality of bare nominals had been acquired, as generic reference could then only be expressed with definite plurals.

The acceptance rate of bare nominals was slightly higher with generic than non-generic reference in L2 German (but not at early stages of L2

French) which was expected due to canonical configurations in English and German. However, these differences are marginal. The acceptance rate of definite plurals was the same at early and intermediate stages and slightly lower with generic than with non-generic reference. These results cannot fully confirm the differences anticipated based on canonical configurations as only weak tendencies were found in L2 German (and did not emerge at early stages of L2 French). In line with the Derived Kind Predication (DKP), the acceptance rate of bare plurals and bare mass singulars with generic reference patterns alike. The acceptance rate of bare and definite nominals did not differ in subject and object position.

With respect to the TVJT, even at advanced interlanguage stages (and with increasing cognitive maturity) there was a high degree of individual variation. The interpretation rate of [+generic] in L2 German and L2 French was higher with individual-level than with stage-level predicates, and in L2 French the interpretation rate of [+generic] with definite plurals was higher than in L2 German, since bare nominals can express [+generic] in German but not in French.

Though the Nominal Mapping Parameter predicts that L2 German learners who discern that bare nominal arguments are grammatical in German learn as a consequence that definite nominals cannot have generic reference, the data only partially supports this prediction. The AJT showed that most L2 German learners at all stages accurately accept bare nominals. Based on this performance, according to the NMP the majority should interpret definite plurals as non-generic, though the data showed that 45 % interpreted individual-level items as [+generic] and 27 % interpreted stage-level items as [+generic]. As for L2 French, the majority of the learners at intermediate and advanced stages who figured out that bare nominal arguments are ungrammatical in French consequently learned that definite nominals can have generic and non-generic reference. In the individual-level condition, 69 % of L2 French learners showed a [+generic] interpretation (increasing with increased LoE), while 72 % of learners interpreted items in the stage-level condition as [-generic].

Further to the findings from this study that are only partially in line with the Nominal Mapping Parameter, languages such as German (and Brazilian Portuguese as argued by Schmitt and Munn 1999, 2002) in fact pose a challenge to the NMP. Some varieties of German allow definite nominals with

generic reference in addition to bare nominal arguments, as briefly discussed in Chapter 1 (see e.g., Brugger 1993; Oosterhof 2004; Barton et al. 2015). Since this distribution does not fit into the four categories suggested by the NMP, this cannot be explained by the NMP's typology. Thus, it seems pertinent to explore other theoretical semantic accounts such as Dayal's (2004) universal scale of definiteness, a point which I will return to in Section 4.2.5.

4.2.2 Complexity of the Learning Tasks

The Bottleneck Hypothesis also informs the discussion of the complexity of the acquisitional learning tasks. As argued by the BH, the acquisition of definiteness precedes that of generic reference, since the acquisition of functional morphology in combination with the related semantics is more complex and therefore more difficult to acquire in the case of mismatches between the L1 and L2. The child L2 data shows, for the L2 French learners, a high rejection rate of bare nominals in intermediate and advanced stages of acquisition as well as an increasing interpretation rate of [+generic] for definite plurals with individual-level predicates in advanced interlanguage stages (from Low: 43 % to Mid: 50 % to High 65 %), while the L2 German learners had a decreasing interpretation rate of [+generic] for definite plurals with individual-level predicates in advanced stages (from Low: 51 % to Mid: 50 % to High: 31 %). Only L2 French learners at an early interlanguage stage show a high acceptance rate of ungrammatical bare nominals, thus illustrating that definiteness in L2 French is acquired in an early/intermediate interlanguage stage. In contrast, the targetlike interpretation of definite plurals is acquired (if at all) at a later interlanguage stage in both L2 French and L2 German. Taking a closer look at the most advanced interlanguage stages in the present study reveals that interpretation difficulties occur even at this stage: The L2 German High group only interpreted 57 % of definite plurals with stage-level predicates as [+generic] and the targetlike interpretation rate of L2 French High group was even lower (48 %) in the same condition. Recall that the L2 learners in the High groups had achieved an Intermediate-Low to Intermediate-High level of proficiency based on the SOPA rating scale. The cL2 data therefore provides evidence that most cL2 learners at an Intermediate-Low to High level have not reached a target-like level in the acquisition of generic reference, suggesting that in cL2A generic

reference is generally acquired at an advanced interlanguage stage with an Advanced proficiency level (if at all). Taken together, these findings rather confirm the effect of complexity in the learning task as predicted by the BH.

Let us now take a look at the control groups in order to compare the L2 learner data to those of the native speakers. The native control groups showed a [-generic] preference for definite plurals in the TVJT, interpreting 63–90 % as [-generic] in the individual-level condition (L1 German children: 63 %, L1 German adults: 79 %, L1 English adults: 90 %, L1 French adults: 81 %) and 56–90 % as [-generic] in the stage-level condition (L1 German children: 71 %, L1 German adults: 86 %, L1 English adults: 80 %, L1 French adults: 56 %).

In L1 German, the L1 children allowed more [+generic] interpretations for definite plurals than the L1 adults, a finding consistent with previous studies (e.g., Kupisch and Pierantozzi 2010) and which can be accounted for as difficulties with type shifting due to maturational constraints. Both L1 German groups interpreted more definite plurals as [+generic] with individual-level predicates than with stage-level predicates. The L1 German adult group allowed more generic interpretations than the L1 English adults, which is not unexpected given that some varieties of German permit generic definite plurals and the L1 German adults grew up in areas of Germany assumed to speak different varieties of German (see Barton et al. 2015 for further details). These L1 German adults also participated in a study by Barton et al. (2015) and were shown to accept 67.7 % of the definite plurals with generic reference. The choice of the predicate was found to further influence the acceptance rate in that study, since definite plurals were accepted more often with kind-level predicates (84.9 %) than with individual-level predicates (61.9 %).

The performance of the L1 French adults was not predicted; the L1 French adults were expected to show a [+generic] preference for definite plurals with individual-level predicates and a [-generic] preference for definite plurals with stage-level predicates. Possibly, the differing testing format, i.e., the written version of the TVJT without pictures, can explain the performance of the L1 French adults. In addition, the L1 French adult (N=4) and L1 English adult groups (N=5) consist of small participant numbers, which might not be representative.

In the AJT, the L1 German children and the L1 English adults accepted 100 % of the bare nominals with generic reference and the majority of the bare nominals with non-generic reference. The L1 English adults corrected some bare nominals with non-generic reference to definite nominals (e.g., *Sugar is on the table* corrected to *The sugar is on the table*). The L1 German children accepted all definite plurals, which was targetlike with non-generic reference but not with generic reference. The L1 English adults accepted 70 % of the definite plurals with non-generic reference (e.g., definite plurals in object position were rejected and corrected to bare plurals, e.g., *He takes the pictures* corrected to *He takes pictures*), and rejected 27 % of ungrammatical generic definite plurals. This low rejection rate of ungrammatical generic definite plurals can either be traced back to the small number of items on definite plurals with generic reference (N=3), the written test format for the adults, or to the small participant group (N=5). It can also be argued to result from task effects, possibly due to the generic contexts preceding the 3 test items on definite plurals in the AJT not being unambiguously generic if only 27 % of the items are rejected by native English speakers. The L1 French adults rejected 100 % of the ungrammatical bare nominals and accepted 100 % of the grammatical definite plurals with generic and non-generic reference.

The individual results of the cL2 learners reveal that a total of 6 cL2 learners in the L2 French group (6/25) and 5 in the L2 German group (5/19), who participated in the AJT, the TVJT, and the SOPA, show targetlike performance in the experiments. This leads to the conclusion that 24 % of the cL2 French learners and 26 % of the cL2 German learners have acquired generic reference to a targetlike level. Let us analyze the performance of these subjects in more detail as well as the influential factors. Their performance was considered to be 'targetlike' in L2 French if (a) in the TVJT, 80–100 % of the definite plurals with individual-level predicates were interpreted as [+generic] and 80–100 % of the definite plurals with stage-level predicates as [-generic]; and (b) in the AJT, 67–100 % of the ungrammatical bare plurals and bare mass singulars were rejected. The performance was considered 'targetlike' in L2 German if (a) in the TVJT, 80–100 % of the definite plurals with individual-level and with stage-level predicates were interpreted as [-generic] and (b) in the AJT, the participants accepted 60–100 % of the bare plurals and bare mass singulars.

If the criteria were based on the response patterns, i.e., including all L2 participants that interpret 60–100 % as [+generic] or [-generic], 10 L2 French learners (10/29) and 9 L2 German learners (9/22) perform targetlike in the individual-level and stage-level condition. This range (60–100 %) rather matches the L1 German children's performance, whereas the range of 80–100 % matches the L1 German adults' performance. The 10 L2 French learners show a [+generic] response pattern in the individual-level condition and a [-generic] response pattern in the stage-level condition. The 9 L2 German learners show a [-generic] response pattern in both conditions. Out of these 10 L2 French learners, 8 reject 67–100 % of the ungrammatical bare nominals. Thus, 32 % (8/25) of the L2 French learners and 47 % (9/19) of the L2 German learners, who participated in the AJT, the TVJT, and the SOPA, are assumed to have acquired generic reference to a targetlike level by achieving a high accuracy rate on all L2 learning tasks.

4.2.3 L2 Developmental Course

The child L2 data offer evidence that the developmental course is different in L2 German than L2 French for the acquisition of bare nominals but not for the interpretation of definite plurals, and that the acquisition of generic reference proves challenging for cL2 learners despite access to UG. The initial state of L2A in this study is comparable based on full transfer from L1 English. The L2 developmental stages differ significantly for the acceptance/rejection of bare nominals with increasing LoE, proficiency, and age at testing as regards targetlikeness in German and French. However, no significant differences were found between the L2 French and L2 German group with increasing LoE for the interpretation of definite plurals.

No significant differences were found between the cL2 German and French learners at early stages of acquisition suggesting that full transfer from L1 English is confirmed as the cognitive initial state of L2A is alike. Initially, bare plurals, bare mass singulars, and definite plurals with generic and non-generic reference are accepted by cL2 learners of both L2s in the AJT (L2 German Low: generic bare nominals 95 % accepted, non-generic bare nominals 86 % accepted, generic definite plurals 100 % incorrectly accepted, non-generic definite plurals 96 % accepted; L2 French Low: generic bare nominals 83 % incorrectly accepted, non-generic bare

nominals 81 % incorrectly accepted, generic definite plurals 90 % accepted, non-generic definite plurals 86 % accepted). Furthermore, definite plurals are initially accepted as generic and non-generic by cL2 learners of both L2s in the TVJT ([+generic] interpretation rate in the L2 German Low group: 51 % for individual-level, 25 % for stage-level; and in the L2 French Low group: 43 % for individual-level, 45 % for stage-level).

In L2 French, increased LoE and proficiency led to higher rejection rates of bare plurals and bare mass singulars and to a tendency of an increase of the interpretation rate as [+generic] in the individual-level condition and a decrease in the stage-level condition. In L2 German, as LoE increased, a tendency of a decrease of the interpretation rate as [+generic] in the individual-level condition and an increase in the stage-level condition.

The interpretation rate of definite plurals as [+generic] is higher in L2 French than in L2 German. Furthermore, 45 % (13/29) of the cL2 French learners explicitly allow [±generic] interpretations for definite plurals – even though this was not part of the instructions nor suggested by the interviewer – a pattern that has also been found in previous studies (e.g., Kupisch and Pierantozzi 2010). Most of these participants were more advanced L2 learners with regards to LoE, proficiency, and age at testing. Thus, the explicit awareness of definite plurals allowing [±generic] reference may be part of an advanced interlanguage stage.

Based on FTFA, the cognitive initial state of L2A is the final state of L1A. The cL2 data confirmed previous findings in L1A (e.g. Pérez-Leroux et al. 2004) showing that native English children allow generic and non-generic reference for definite plurals due to difficulties with type shifting that is linked to cognitive maturational constraints. With respect to French, cL2 learners of French first learn (with increasing LoE and proficiency) that the projection of D is obligatory – meaning that bare nominal arguments are ungrammatical in French – and that [-definite] must be reassembled to [+definite]. As cognitive maturity increases, cL2 learners of French further learn that definite plurals have to be mapped to generic and non-generic reference depending on the grammatical context, since bare nominal arguments are ungrammatical. This means that, for definite plurals, no features have to be reassembled since cognitive maturational constraints lead to [±generic] definite plurals in the L2 initial state due to L1 transfer. French learners at all L2 developmental stages in the present study interpreted definite

plurals as generic and non-generic, first due to maturational constraints and L1 transfer and then due to maturity and target-likeness in French. As regards German, cL2 learners of German learn, with increasing cognitive maturity, that definite plurals cannot have generic reference since bare nominals shift to generic reference and that the feature [±generic] has to be reassembled to [-generic].

Returning to the individual results of the participants who performed targetlike (as described in Section 4.2.2), the 8 L2 French learners' proficiency scores range from 3.94 to 6.13, with a length of L2 exposure from 3;8 to 6;5 years. The 9 L2 German learners' proficiency scores range from 3.00 to 4.44 and the length of L2 exposure from 0;8 to 5;8 years. As is evident in the ranges both within each cL2 group and between groups, the L2 learners who are targetlike with respect to generic reference show considerable variability in proficiency level and even more variability in length of L2 exposure. Though LoE and proficiency certainly influence the acquisition of generic reference, these two factors cannot reliably predict the interlanguage stage at which generic reference will be acquired. Furthermore, this individual variation and indeterminacy suggests that an L1 that is typologically closer to the L2, i.e., L1 English to L2 German, is not necessarily an advantage, i.e., does not necessarily lead to facilitative influence at early or later stages of acquisition. Thus, challenges for learners are not necessarily linked to differences between the initial state in L2A and what must be acquired to achieve targetlikeness in the L2.

4.2.4 Maturational Constraints

With regard to Hypothesis 4 on maturational constraints, difficulties with type shifting confirm cognitive maturational constraints, since definite plurals were initially overinterpreted as generic by all cL2 learners. Even the older L2 learners of German overinterpreted definite plurals as generic, which might be due to maturational constraints or the complexity of the learning task.

Comparing cL2A to L1A and to aL2A of generic reference reveals that these groups are rather similar than different. However, the L2 initial cognitive state differs in cL2A and aL2A. The cL2 learner's learning tasks differ from adult L2 learner's learning tasks. The main difference between cL2A

and aL2A is the L2 initial cognitive state. The cL2 data of the present study as well as previous findings in L1 English provided evidence for difficulties with type shifting in the age range of 4–7 years, which is the age of onset in cL2A, and beyond, due to maturational constraints. These difficulties led to overacceptance and overinterpretation of definite plurals with generic reference in L1 English, which have been transferred to the initial state of L2 German and L2 French. In contrast, L1 English adults do not have difficulties with type shifting, since they are cognitively mature. Therefore, adult native speakers of English acquiring L2 German or L2 French are expected to accept bare nominals and non-generic definite plurals in the L2 initial cognitive state, and in contrast to children, to reject generic definite plurals and not to interpret definite plurals as generic. In aL2A, L1 transfer effects were found leading to different L2 initial states depending on the L1 (e.g., Ionin and Montrul 2010; Snape et al. 2013). Consequently, aL2 learner's learning tasks differ from cL2 learner's learning tasks in the acquisition of generic reference due to varying L2 initial states. If we take L2 French as an example, aL2 learners will transfer the targetlike interpretations from L1 English, i.e., generic bare nominals and non-generic definite nominals. Therefore, the learning tasks will be to acquire that bare nominal arguments are ungrammatical, which consequently means that definite plurals can have generic reference. The underlying rules are the same since cL2 learners will also have to learn that ungrammatical bare nominals lead to definite plurals having generic and non-generic reference. However, the task is easier for cL2 learners since they will not have to reassemble any features, since L1 transfer from English led to definite plurals allowing generic and non-generic reference due to maturational constraints. Thus, even if the underlying rule will have to be learned, i.e., if bare nominals are ungrammatical, definite plurals can have generic reference, the cL2 learners perform targetlike in the L2 initial state and therefore at an earlier interlanguage stage than aL2 learners. In aL2 acquisition, L1 transfer as well as recovery from L1 transfer was found, which both have been confirmed by the cL2 data. In summary, the difference between cL2 and aL2 learners is the L2 initial cognitive state due to maturational constraints in cL2A, which lead to varying learning tasks as well as differences in the L2 developmental course for both populations when acquiring generic reference; the similarity is that L1 transfer as well as recovery from L1 transfer has been found.

In L1A, it has been shown that children go through developmental sequences when acquiring generic reference. Chierchia (1998) suggested that in the acquisition of generic reference children pass a Chinese stage, followed by a Romance stage, followed by a Germanic stage, until the target language stage is reached. The native English cL2 learners, who are first exposed to the L2 between the ages of 4–7 years, have been found to be in a Romance stage in reference to definite plurals, which are overaccepted and overinterpreted as generic. The L1 German children in the present study also provided evidence for being in a Romance stage by overinterpreting definite plurals as generic. Consequently, if L1 children between the ages of 4 to 7 years are in the Romance stage, L1A and cL2A in Romance and Germanic languages are identical. Following this logic, L1A and cL2A in Chinese are assumed to differ. The native English cL2 child is in the Romance stage when starting to acquire the L2, whereas the native Chinese cL2 child is in the Chinese stage when starting to acquire the L2, since the following stages did not have to be passed for the acquisition of Chinese. If the native English child acquires L2 Chinese, the child will be in the Romance stage and has to move back to the Chinese stage in order to acquire target-likeness. Therefore, native English cL2 Chinese learners are not assumed to go through the same developmental stages as L1 English learners. In contrast, native English cL2 German learners are assumed to go through the same developmental stages as L1 English and L1 German children, since they all acquire type 3 languages. Consequently, native English cL2 French learners are assumed to go through the same developmental stages as L1 French learners, as well as L1 English learners until they reached the Romance stage; in L1 English the developmental stages beyond the Romance stage differ from the cL2 developmental course in French.

It has also been suggested that L1 and L2 systems are rather similar than different:

> We will assume representational similarity between L1 and L2 systems […]. In other words, the linguistic representations of L2 learners and native speakers are NOT fundamentally different, and the ways L2 linguistic representations are established are fundamentally similar with the ways children acquire their native language.
>
> (Slabakova 2016: 390)

Since the complexity of interface properties requires more computational space and consumes more cognitive resources for processing, L1A and cL2A are both constrained by cognitive maturity when acquiring generic reference, which leads to the same developmental course in L1 English and L2 German, and in L1 English and L2 French until the Romance stage. For generic reference, complexity refers to a combination of it being a grammatical property at the syntax-semantics interface and it requiring more computational space for processing. Cognitive maturity can also account for individual variation in the oldest age group, i.e., 10;4–12;2 years of age, since maturation is a gradual process and some participants might already have more cognitive resources for processing than others as "[o]lder children with greater working memory and presumably more developed cognitive abilities might be advantaged for properties that require more computational space" (Rothman et al. 2016: 681). As further discussed in Section 4.4, higher age is taken as a proxy for higher cognitive maturity in the present study. However, if we had additional independent measures on cognitive development, this could provide further evidence on whether a sub-group of the older participants are cognitively more mature than others.

4.2.5 Synthesis

In the previous sections, it has been discussed to what degree the Nominal Mapping Parameter, the Full Transfer/Full Access Model, the Feature Reassembly Hypothesis, and the Bottleneck Hypothesis can account for the data. The high degree of inter-individual variability for cL2 learners at advanced stages with a length of exposure of 4;8 to 6;6 years is worth further discussion. Furthermore, as pointed out in Section 4.2.1, the findings of the present study are only partially in line with the NMP. Languages such Brazilian Portuguese and German, with some varieties of German allowing both definite and bare nominals with generic reference, pose a challenge to the NMP. Thus, it seems pertinent to explore other theoretical semantic accounts.

Dayal's (2004) universal scale of definiteness, which though built on Chierchia's (1998) principles, allows languages to fall on a continuum rather than necessarily being classified as a specific type. According to Dayal, languages vary according to the degree to which maximality (ɩ) and

kind formation (∩) are lexicalized. At one end of the scale are article-less languages where neither is lexicalized, and at the other end are languages which lexicalize both. Importantly, languages may fall between the two ends, constituting hybrids to various degrees. English is one such language: Only maximality is lexicalized and thus bare plurals have generic reference. French is clearly situated at the end of the scale, with both maximality and kind formation being lexicalized (hence generic reference with definite plurals). German constitutes a mixed type between English and Romance, in which both operations are lexicalized but with some exceptions in the case of German as compared to French (see Section 1.3.2 for further details).

Under Dayal's (2004) account, French and German behave more similarly with respect to generic reference than English and German, given that both operations are lexicalized in French and German but only maximality is lexicalized in English. This is largely in line with the data in this study: the L2 German and L2 French learners do not differ significantly in their interpretation rates of definite plurals as [+generic]. Thus, the gradience in the expression of definiteness with generic reference permitted along Dayal's (2004) universal scale seems to offer a better-fitting account of the results in this study than the NMP.

The findings of the present study also make a pertinent contribution to L2 research in general. In particular, it is interesting that the acquisition of generic reference is a challenge for cL2 learners of both L2 German and L2 French, despite access to UG and the typological and structural similarities between English and German that do not exist between English and French. While the fact that intuitions on generic reference were influenced by proficiency levels is expected based on previous research, it is notable that similarities between the L1 and L2 do not seem to minimize the learning tasks for cL2 learners of German who are native speakers of English. A possible debate that arises from this is whether cL2A is more similar to L1A or aL2A. If one were to adopt Meisel (2011), then cL2A is fundamentally different from (2)L1 acquisition and thus cL2 learners are more similar to aL2 learners. However, given that the cognitive initial state of cL2A is the final state of L1A and it has been shown that L1 English children up to 10 years of age overaccept and overinterpret definite plurals as generic, L1 English, L1 German, and L1 French children are all in a Romance stage in their L1 when the age of onset of the L2 is 4–7 years old. It follows then

that the fact that there is crosslinguistic variation in the way generic reference is expressed in English, German, and French may be irrelevant for the L2 initial state of cL2 learners, who are in a developmental stage in L1A. Thus, we can argue that cL2A resembles (2)L1A in this case rather than aL2A. The question that remains then is what the cL2 learners' learning task is when acquiring generic reference. The learning task should then be the same for L1 English, L1 German, and cL2 German/L1 English children, and, though the initial state is the same for cL2 French/L1 English as cL2 German/L1 English children due to L1 transfer and the L1 English developmental stage, the learning task in L2 French should differ. Following the FRH, the same features that are relevant to generic reference must to mapped differently in L2 German and L2 French, and according to the BH, the cL2 German learners' task also includes the acquisition of the German article system – despite similarities between German and English – which may cause a bottleneck given its morphological complexity. It is also worth exploring the influence of the learning context.

The context of cL2 acquisition in the present study, i.e., immersion education, which is a specific cL2 acquisition context is another variable that needs to be considered beyond the complexity of the learning task, cognitive maturity, and L2 development. Rothman et al. (2016) discuss that "limited input (both in overall quantity and in richness of variation) in immersion contexts; especially when such contexts are outside of a native environment" (684) has to be considered as a factor. Thus, potentially, input quantity and quality can explain why not all L2 learners who have been exposed to the L2 for up to 6 years have acquired generic reference. Potentially, late-acquired properties require more exposure to input and are therefore acquired at later stages of acquisition. In an immersion setting, often the teacher is the only native speaker of the target language that the students have access to and the amount of input is limited. While many grammatical properties, and even more so listening comprehension and fluency as demonstrated in the SOPA, develop quite fast in immersion settings, this does not seem to be the case for late-acquired properties. Thus, "we need to be realistic with respect to what children L2 learners can do with limited input" (Rothman et al. 2016: 684). We will come back to this debate in the next section on implications for L2 teaching in immersion education.

4.3 Implications for Second Language Teaching in Immersion Education

RQ2 is repeated here for convenience:

RQ2: Which conclusions can be drawn from the native English L2 learners' learning tasks and their L2 developmental course in the acquisition of generic reference in L2 German and L2 French for immersion education?

The Bottleneck Hypothesis suggests that efficiency in L2 teaching increases by focusing on grammatical areas that are more difficult to acquire in L2A, such as functional morphology and the related semantics in the case of a mismatch between L1 and L2. Since cL2A is maturationally constrained, focusing on functional morphology and its semantics in cL2 immersion classrooms in elementary school, i.e., below the age of approximately 10 years, is not assumed to lead to more target-likeness. Difficulties with the acquisition of generic reference remain for many cL2 learners even in the more advanced interlanguage stages. Beyond grade 6, focus on form lessons on functional morphology and the related semantics in the case of a mismatch between L1 and L2 are predicted to increase target-likeness as suggested by the Bottleneck Hypothesis. However, as evidenced by individual L2 learner results in the empirical cL2 data in the present study, focus on form lessons are not a requirement for the targetlike acquisition of generic reference. With increasing age, length of L2 exposure, and proficiency, generic reference is assumed to be acquired by most cL2 learners in immersion education. The precondition for successful L2A is high-quality comprehensible linguistic input in high quantity, which is offered in immersion education. Immersion classrooms are a natural learning context in an educational setting, which does not include explicit grammar teaching. Language is used to convey meaning. Therefore, it can be questioned whether focus on form lessons should be integrated in such a concept, in particular if it is assumed that generic reference and functional morphology in general will be acquired either way – with and without focus on form. On the one hand, focus on form lessons might increase target-likeness for grade 6 and higher. On the other hand, focusing on grammatical structures might lead to less fluency since the cL2 learners might be worried about making mistakes instead of being focused on communication. Fluency, listening comprehension, and vocabulary acquisition were particularly well

developed for the cL2 learners in the present study, as evaluated in the SOPA, which is representative for L2 immersion classrooms since the focus is on communication, which leads to increasing fluency.

Furthermore, the heterogeneity of L2 classrooms has to be taken into consideration. The cL2 learners differ with regard to several factors, one of them possibly being the L1. If the cL2 learners in one classroom have several L1s, the teacher would need to take all of the mismatches under consideration, or focus on the majority of the class. Thus, L2 teachers need to know methods of differentiation in the classroom. Every L2 learner is different with regards to e.g., L2 proficiency, LoE, cognition, knowledge of the subject matter, learning pace, learner type, motivation. Thus, differentiation in the classroom is a requirement for successful learning and for successful cL2A. According to Bongartz and Rohde (2015), inclusion is part of the concept of magnet schools, which implies differentiated teaching in order to respond to the varying needs of the cL2 learners in the immersion classroom.

In summary, in the Bottleneck Hypothesis it has been argued that generative SLA can contribute to L2 teaching so that teaching efficiency increases by focusing on what is difficult to acquire. The Bottleneck Hypothesis states that functional morphology is hard to acquire if L1 and L2 differ and therefore focus on form leads to increasing target-likeness. In immersion education, focus on form is not assumed to lead to target-likeness for cL2 learners in grade 1 through 5 when acquiring generic reference due to maturational constraints.

4.4 Limitations of the Present Study

As is often the case with empirical research, it is relevant to consider the possible influence of task effects on the pattern of results. In this study, task effects could explain why the performance is not at ceiling, i.e., why not all items in each condition were accepted or rejected. When the experiments were carried out, one could also notice that the children focused on content rather than on grammar: For instance, during the AJT some children replied "That's true, yes, they are dangerous" and rather than focusing on the fact that *Requins sont dangereux* is missing the definite article since they were not accustomed to judging the acceptability of sentences. In the

TVJT, each story was created such that both statements (definite plurals with an individual- and a stage-level predicate) were plausible and correct in the context of the story. Consequently, the results are less clear-cut since both true and false replies were true in the context of the stories. In addition, the stories were rather long. The overall impression was that the children listened well and explained their judgments in a meaningful way. However, when listening to twelve short stories, it is always possible that the children listened better to one story than the other, and this could lead to variation in the judgments within the same condition.

Another consideration is that the present study focused on the acceptance and interpretation of bare and definite nominals with generic and non-generic reference and did not examine the production of generic reference. It remains to be investigated whether cL2A production data on generic reference confirm the findings of this study. Furthermore, the quantity and quality of the L2 input were not investigated in detail though this would be an interesting future step in terms of the implications for L2 teaching in immersion education.

The control groups of the present study were L1 English adults, L1 German adults, L1 French adults, and L1 German children. Since cL2A has been found to be constrained by maturity, the ideal control groups would be age-matched monolingual children of all languages involved.

Furthermore, independent measures such as (verbal) working memory tasks would ideally be added to the testing battery in order to show older children's cognitive maturity rather than using higher age as a proxy for higher cognitive maturity. Due to time limitations with the cL2 learners during regular school days, it was not possible to include any additional tasks in this study. As also pointed out by Rothman et al. (2016), future research should ideally include such measures given that "[c]laims of cognitive maturity operationalized by older age as a proxy cannot tease apart which aspects of cognition are implicated for age effects" (681–682).

4.5 Future Research

Further empirical evidence from the juxtaposition of different acquisitional populations within the same experiments is necessary. Thus far, most studies have used different experiments, and for this reason, the comparison

of L1A, 2L1A, cL2A, aL2A, and L3A is only possible to a certain degree. Furthermore, most studies focus on one grammatical structure, such as definite plurals, when analyzing generic reference. These two aspects together make it difficult to draw definitive conclusions on the learning tasks of each population.

In future research, additional grammatical contexts such as kind-level predicates, aspect, and generic sentences should be included in order to further refine the findings from the present study on the cL2 learner's learning tasks when acquiring generic reference. It would also be beneficial to increase the number of participants and number of items per condition so as to have more statistically relevant data. Length of L2 exposure, proficiency, and age at testing should also be disentangled, though as LoE and proficiency are assumed to be interdependent, these variables may prove challenging for future studies as well. Given maturational constraints in cL2A, optimal future study designs would include L1 control groups for each language involved with identical age at testing. Going forward, language background questionnaires could be more detailed, e.g., the Language and Social Background questionnaire (LSBQ) (Anderson, Mak, Keyvani Chahi and Bialystok 2017), and would ideally be filled out with the help of the parents in order to control for L2 input outside of the classrooms as well as time spent abroad.

Further empirical data on child L2 learners with further languages needs to be collected in order to complement the picture on the acquisition of generic reference and the cL2 learner's learning tasks.

4.6 Summary

In this chapter, the L2 developmental course as well as the cL2 learner's learning tasks when acquiring generic reference have been discussed in the light of The Full Transfer/Full Access Model, the Feature Reassembly Hypothesis, and the Bottleneck Hypothesis. The initial cognitive state of L2A was found to be the final state of L1A, as predicted by the FT/FA. The features [±definite] and [±generic] have been reassembled in the L2 acquisition process as predicted by the FRH, though [±generic] in particular has not been reassembled to a targetlike level by the majority of cL2 learners due to difficulties with generic reference that persist at advanced

interlanguage stages (in line with the BH). CL2 learners in L2 German and L2 French overinterpret definite plurals as generic with a high degree of inter-individual variation. For L2 German, the data suggests that L2 learners go through a Romance stage when acquiring generic reference by interpreting definite plurals as generic before progressing to a Germanic stage. Furthermore, in contrast to the assumptions of the BH (which was not developed for cL2A per se), it is assumed that focus on form does not increase targetlikeness for cL2 learners in immersion education due to cognitive maturational constraints. However, an intervention study would be required to provide additional evidence in support of these assumptions. Furthermore, the NMP was argued to be untenable and Dayal's (2004) universal scale of definiteness was applied to the findings since a continuum rather accounts for the findings. Under Dayal, French and German pattern together by lexicalizing maximality and kind formation, whereas English only lexicalizes maximality.

Conclusion

This empirical study investigated the child L2 learner's learning tasks in the L2 developmental course when acquiring generic reference in German and French. The cL2 learners acquired functional categories, i.e., definiteness, earlier than the related semantics, i.e., generic reference. The individual results revealed that 32 % of the L2 French learners and 47 % of the L2 German learners acquired generic reference to a targetlike level.

The cL2 data provide evidence for full transfer from L1 English by transferring definiteness and the related semantics, as well as all features involved, as predicted by the Full Transfer/Full Access Model. All cL2 learners initially accept bare plurals, bare mass singulars, and definite plurals with generic and non-generic reference and interpret definite plurals with individual- and stage-level predicates as generic and non-generic. Thus, L2 French learners allow ungrammatical bare nominals arguments, and L2 German learners overaccept generic definite plurals and overinterpret definite plurals as generic, suggesting that cL2 German learners go through a Romance stage when acquiring generic reference. Research in L1A provided evidence for English monolingual children overaccepting generic definite plurals and overinterpreting definite plurals as generic between the ages of 4 to 10 years. Thus, in L1A, English-speaking children also go through a Romance stage when acquiring generic reference. It has been argued that these children have difficulties with type shifting and shift both definite and bare nominals to generic (kind) reference. Difficulties with type shifting can be explained by maturational constraints since the complexity of the learning tasks requires more computational space and consumes more cognitive resources for processing. Therefore, the initial cognitive state of cL2 German and cL2 French is identical to the final state of L1 English. When native English cL2 learners start acquiring L2 German or L2 French in the age range of 4 to 7 years, they overaccept and overinterpret definite nominals as generic (due to difficulties with type shifting) and accept bare nominals (due to targetlikeness in L1 English), which is exactly what has been found for the cL2 learners in this study. Subsequently, the L2 developmental course between cL2 German and cL2 French increasingly differs

with increasing length of L2 exposure, proficiency, and age. With regard to definiteness, the cL2 learners' performance becomes more targetlike with increasing LoE, proficiency, and age, i.e., the cL2 French learners increasingly reject ungrammatical bare nominals. This process involves feature reassembly from [-definite] to [+definite]. With regard to generic reference, which involves feature reassembly of [±generic], the cL2 learners' performance also becomes more targetlike with increasing LoE, proficiency, and age, but the performance is less linear, and difficulties with the targetlike interpretation of definite plurals remain even in the most advanced interlanguage stages in the present study. The acquisition of generic reference has been argued to be a poverty of the stimulus phenomenon, since the cL2 learners in immersion education do not receive explicit grammar instruction. Furthermore, the input does not provide evidence for bare nominals being ungrammatical in French and for definite plurals having solely non-generic reference in German. Therefore, the L2 grammar has been argued to be restructured by full access to Universal Grammar in combination with L2 input, which leads to increasing targetlikeness in L2 German or L2 French.

The remaining difficulties with the targetlike interpretation of definite plurals in the advanced interlanguage stages confirm the Bottleneck Hypothesis. According to the Bottleneck Hypothesis, acquiring functional morphology with the related syntax and semantics takes longer in the acquisition process due to the complexity of the L2 learner's learning tasks. The mismatches between L1 English (child-like) and L2 French (targetlike) or L2 German (targetlike) with regard to generic reference lead to difficulties. L2A is predicted to be particularly difficult when the parameter values are non-overt and not fixed by overt functional morphology, which is the case for generic reference, since no overt morpheme expresses solely generic reference. Due to the complexity of the cL2 learner's learning tasks, the cL2 data provide evidence for remaining difficulties with the targetlike interpretation of definite plurals since definite plurals with individual-level and stage-level predicates are overinterpreted as generic even at the most advanced interlanguage stages of the present study.

Furthermore, the context of cL2 acquisition has been considered as an additional factor. While immersion education offers significantly more input than foreign language classrooms and lead to a high degree of fluency, listening comprehension, and vocabulary knowledge. However, the input is

still limited in immersion education in particular if the societal majority language differs. Thus, potentially complex and late-acquired properties will be acquired at a later interlanguage stage due to the cumulative input being less than in naturalistic cL2 acquisition contexts in which the societal majority language is the L2, i.e., the target language.

Based on the assumption of the Full Transfer/Full Access Model and the Feature Reassembly Hypothesis, following Dayal's universal scale of definiteness and the Bottleneck Hypothesis, the L2 learner's learning tasks when acquiring generic reference are mapping forms to correct interpretations, mapping forms to grammatical features, and identifying the grammatical context. The features [±definite] and [±generic] have to be reassembled. The grammatical contexts are the same in all three languages, but due to maturational constraints and due to the complexity of the learning tasks, which includes that the forms are not unambiguously [+generic], the cL2 learners have difficulties with the targetlike interpretation in the particular grammatical contexts. The cL2 data provided evidence for difficulties with the interpretation of definite plurals with stage-level and individual-level predicates. Even in the most advanced interlanguage stage, with stage-level predicates the interpretation rate as [+generic] was 48 % for the L2 French High and 57 % for the L2 German High groups; this overinterpretation of definite plurals as generic is neither targetlike in French nor in German. With individual-level predicates, the interpretation rate was more targetlike: 65 % for the L2 French group, and 31 % for the L2 German group.

In summary, based on these findings, full L1-transfer for functional categories and the related semantics is assumed, as well as full transfer of all features involved. Cognitive maturational constraints lead to difficulties with type shifting. The complexity of the L2 learner's learning tasks leads to the (possibly) targetlike acquisition of generic reference at an advanced interlanguage stage.

The Bottleneck Hypothesis suggests that efficiency in L2 teaching increases by focusing on grammatical areas that are more difficult to acquire in L2A, such as functional morphology and the related semantics in the case of a mismatch between L1 and L2. Since cL2A is maturationally constrained, focusing on functional morphology and its semantics in L2 teaching in elementary school, i.e., below the age of approximately 10 years,

is not assumed to lead to more targetlikeness. However, focus on form lessons on functional morphology and the related semantics in the case of a mismatch between L1 and L2 beyond grade 6 is assumed to lead to more targetlikeness.

The L2 developmental course is identical in child L2 acquisition of German and in L1 acquisition of English and German when acquiring generic reference. The L2 developmental course is also identical in child L2 acquisition of French and in L1 acquisition of French and English until the L1 English children reach the Romance stage. Adult L2 acquisition has a different starting point than child L2 acquisition, since the L2 initial cognitive state varies due to maturational constraints in child L2 acquisition. However, L1 transfer and recovery from L1 transfer effects due to access to UG have been found for both acquisitional groups when acquiring generic reference, which suggests that L1 acquisition, child L2 acquisition, and adult L2 acquisition are all constrained by Universal Grammar.

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Appendix

Table A.1: SOPA – results for L2 German

Participant	Grade	LoE (in months)	SOPA Result
P1	k	8	3.25
P2	k	8	3.25
P3	k	8	3.75
P4	k	8	4
P5	1	8	3.25
P6	1	20	3
P7	1	20	3.25
P8	1	20	3.25
P10	3	44	3.75
P11	3	44	3.75
P12	3	44	3.75
P13	3	44	4.5
P14	3	32	4.5
P15	3	49	5.25
P16	3	44	3.75
P17	5	68	4
P18	5	68	4.25
P19	5	68	5.5
P21	5	68	5.75
P22	5	72	5.75
P23	5	68	5.25
P24	5	68	6
P130	k	8	–
P131	1	20	–
P132	1	20	–

Table A.2: SOPA – results for L2 French

Participant	Grade	LoE (in months)	SOPA Result
P25	k	8	3.25
P26	k	8	3.25
P27	k	8	3.25
P29	k	8	2
P31	k	8	2.75
P32	k	8	2.75
P33	k	8	3.25
P34	k	8	3.25
P35	1	20	3.75
P36	1	20	–
P37	1	20	2.75
P38	1	20	3.25
P39	3	44	5
P40	3	44	5
P41	3	44	4.25
P42	3	44	4.25
P43	3	44	5
P44	3	44	5
P45	3	32	4.25
P46	3	32	5
P48	3	44	4.75
P49	5	68	6
P50	5	68	6
P51	5	77	5.5
P52	5	78	5.25
P53	5	68	5.75
P54	5	63	5.5
P55	5	68	5.5

Table A.2: Continued

Participant	Grade	LoE (in months)	SOPA Result
P56	5	56	5.75
P57	5	56	5.25
P58	5	56	5.25
P59	k	8	–
P60	k	8	–
P61	1	20	–

Table A.3: Cloze test – results for L2 German

Participant	Grade	LoE (in months)	Cloze Test Score	Cloze Test Result
P1	k	8	–	–
P2	k	8	–	–
P3	k	8	–	–
P4	k	8	–	–
P5	1	8	–	–
P6	1	20	–	–
P7	1	20	–	–
P8	1	20	–	–
P10	3	44	2	1
P11	3	44	40	6
P12	3	44	4	1
P13	3	44	13	2
P14	3	32	2	1
P15	3	49	47	7
P16	3	44	2	1
P17	5	68	41	6
P18	5	68	30	5
P19	5	68	30	5
P21	5	68	22	4
P22	5	72	54	8
P23	5	68	28	5
P24	5	68	20	3
P130	k	8	–	–
P131	1	20	–	–
P132	1	20	–	–

Table A.4: Cloze test – results for L2 French

Participant	Grade	LoE (in months)	Cloze Test Score	Cloze Test Result
P25	k	8	–	–
P26	k	8	–	–
P27	k	8	–	–
P29	k	8	–	–
P31	k	8	–	–
P32	k	8	–	–
P33	k	8	–	–
P34	k	8	–	–
P35	1	20	–	–
P36	1	20	–	–
P37	1	20	–	–
P38	1	20	–	–
P39	3	44	33	5
P40	3	44	31	5
P41	3	44	17	3
P42	3	44	29	5
P43	3	44	27	4
P44	3	44	30	5
P45	3	32	21	4
P46	3	32	42	7
P48	3	44	37	6
P49	5	68	38	6
P50	5	68	38	6
P51	5	77	50	8
P52	5	78	32	5
P53	5	68	40	6
P54	5	63	31	5
P55	5	68	46	7

Table A.4: Continued

Participant	Grade	LoE (in months)	Cloze Test Score	Cloze Test Result
P56	5	56	44	7
P57	5	56	–	–
P58	5	56	43	7
P59	k	8	–	–
P60	k	8	–	–
P61	1	20	–	–

Table A.5: Proficiency results for L2 German

Participant	Grade	LoE (in months)	Cloze Test Result	SOPA Result	Proficiency Result
P1	K	8	–	3,25	3.25
P2	K	8	–	3,25	3.25
P3	K	8	–	3,75	3.75
P4	K	8	–	4	4
P5	1	8	–	3,25	3.25
P6	1	20	–	3	3
P7	1	20	–	3,25	3.25
P8	1	20	–	3,25	3.25
P10	3	44	1	3,75	3.06
P11	3	44	6	3,75	4.31
P12	3	44	1	3,75	3.06
P13	3	44	2	4,5	3.88
P14	3	32	1	4,5	3.63
P15	3	49	7	5,25	5.69
P16	3	44	1	3,75	3.06
P17	5	68	6	4	4.5
P18	5	68	5	4,25	4.44
P19	5	68	5	5,5	5.38
P21	5	68	4	5,75	5.31
P22	5	72	8	5,75	6.31
P23	5	68	5	5,25	5.19
P24	5	68	3	6	5.25
P130	K	8	–	–	–
P131	1	20	–	–	–
P132	1	20	–	–	–

Table A.6: Proficiency results for L2 French

Participant	Grade	LoE (in months)	Cloze Test Result	SOPA Result	Proficiency Result
P25	K	8	–	3.25	3.25
P26	K	8	–	3.25	3.25
P27	K	8	–	3.25	3.25
P29	K	8	–	2	2
P31	K	8	–	2.75	2.75
P32	K	8	–	2.75	2.75
P33	K	8	–	3.25	3.25
P34	K	8	–	3.25	3.25
P35	1	20	–	3.75	3.75
P36	1	20	–	–	–
P37	1	20	–	2.75	2.75
P38	1	20	–	3.25	3.25
P39	3	44	5	5	5
P40	3	44	5	5	5
P41	3	44	3	4.25	3.94
P42	3	44	5	4.25	4.44
P43	3	44	4	5	4.75
P44	3	44	5	5	5
P45	3	32	4	4.25	4.19
P46	3	32	7	5	5.5
P48	3	44	6	4.75	5.06
P49	5	68	6	6	6
P50	5	68	6	6	6
P51	5	77	8	5.5	6.13
P52	5	78	5	5.25	5.19
P53	5	68	6	5.75	5.81
P54	5	63	5	5.5	5.38

(*Continued*)

Table A.6: Continued

Participant	Grade	LoE (in months)	Cloze Test Result	SOPA Result	Proficiency Result
P55	5	68	7	5.5	5.88
P56	5	56	7	5.75	6.06
P57	5	56	–	5.25	5.25
P58	5	56	7	5.25	5.69
P59	K	8	–	–	–
P60	K	8	–	–	–
P61	1	20	–	–	–

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CAL ORAL PROFICIENCY EXAM AND STUDENT ORAL PROFICIENCY ASSESSMENT RATING SCALE (COPE/SOPA-RS)
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	JR. NOVICE-LOW	JR. NOVICE-MID	JR. NOVICE-HIGH	JR. INTERMEDIATE-LOW	JR. INTERMEDIATE-MID	JR. INTERMEDIATE-HIGH	JR. ADVANCED-LOW	JR. ADVANCED-MID	JR. ADVANCED-HIGH
Oral Fluency	-Produces only isolated words and/or high-frequency expressions such as good morning and thank you. -Has essentially no functional communicative ability.	-Uses a limited number of isolated words, two- to three-word phrases, and/or longer memorized expressions within predictable topic areas. -May attempt to create sentences, but is not successful. Long pauses are common.	-Uses high frequency expressions and other memorized expressions with reasonable ease. -Signs of originality are beginning to emerge. -Creates some sentences successfully, but is unable to sustain sentence-level speech.	-Goes beyond memorized expressions to maintain simple conversations at the sentence level by creating with the language, although in a restrictive and reactive manner. -Handles a limited number of everyday social and academic interactions.	-Maintains simple sentence-level conversations. May initiate talk spontaneously without relying on questions or prompts. -Gives simple descriptions successfully. -May attempt longer, more complex sentences. Few, if any, connectors are used.	-Maintains conversation with increasing fluency. Uses language creatively to initiate and sustain talk. -Emerging evidence of paragraph-like speech with some connected sentences in descriptions and simple narratives, but cannot sustain paragraph-level speech.	-Reports facts easily. Can discuss topics of personal interest and some academic requirements of school and every day situations. -Narrates and describes at the paragraph level, though haltingly at times. -False starts are common.	-Handles with ease and confidence concrete topics of personal and general interest and some academic topics. -Narrates and describes successfully. -Connects sentences smoothly, and organizes speech into paragraphs using connectors such as first, next, finally, etc.	-Handles most social and academic requirements confidently, but may break down under the demands of complex, formal tasks. -Organizes and extends speech beyond paragraph. -Emerging ability to support opinions and hypothesize on abstract topics is evident.
Grammar (Speaking)	-May use memorized, high frequency phrases accurately. -Lacks an awareness of grammar and syntax.	-Memorized expressions with verbs and other short phrases may be accurate, but inaccuracies are not uncommon. -Does not successfully create at the sentence level with conjugated verbs.	-Creates some sentences with conjugated verbs, but in other attempts to create sentences, verbs may be lacking or are not conjugated. -Other grammatical inaccuracies are present.	-Verbs are conjugated in present tense, but may be inaccurate. -Many other grammatical inaccuracies are common.	-Uses mostly present tense verbs although awareness of other tenses (i.e., future or past) may be evident. -Many grammatical inaccuracies may be present.	-Uses present tense well, but lacks control of the past tenses. May use future tense. -Some awareness of these inaccuracies may be evident.	-Uses present, past, and future tenses. -May effectively self-correct when aware of grammatical inaccuracies. -Structures of native language may be evident (e.g., literal translation)	-Has good control of present, past, and future tenses. -Some inaccuracies may remain, but speech is readily understood by native speakers of the language. *In some cases, may use non-standard varieties of grammar.	-Uses all verb tenses accurately and sometimes uses increasingly complex grammatical structures. -Some patterns of error may persist, but they do not interfere with communication.
Vocabulary (Speaking)	-Uses words in very specific topic areas in predictable contexts. -May use a few memorized, high frequency expressions.	-Uses specific words in a limited number of topic areas, high-frequency expressions, and other memorized expressions. -Frequent searches for words are common. May use native language or gestures when attempting to create with language.	-Uses vocabulary centering on basic objects, places, and common kinship terms, adequate for initially elaborating utterances in predictable topic areas. -Use of native language is common.	-Has basic vocabulary for making statements and asking questions to satisfy basic social and academic needs, but not for explaining or elaborating on them. -Use of some native language is common.	-Has basic vocabulary, permitting discussions of a personal nature and limited academic topics. Serious gaps exist for discussing topics of general interest. -If speaker lacks precise word, use of circumlocution may be ineffective. May resort to native language.	-Has a broad enough vocabulary for discussing simple social and academic topics in generalities, but lacks detail. -Sometimes achieves successful circumlocution when precise word is lacking. May use native language occasionally.	-Vocabulary is primarily generic but is adequate for discussing concrete or factual topics of a personal interest, topics of general interest, and academic subjects. -May use circumlocution successfully when specific terms are lacking.	-Has adequate vocabulary for including detail when talking about concrete or factual topics of a personal nature, topics of general interest, and academic subjects. -Uses circumlocution effectively. Rarely uses native language.	-Uses precise vocabulary for discussing a wide variety of topics related to everyday social and academic situations. -Lack of vocabulary rarely interrupts the flow of speech.
Listening Comprehension	-Recognizes isolated words and high frequency expressions.	-Understands simple questions, statements, and commands in familiar topic areas (with strong contextual support), though at slower than normal rate of speech. May require repetition, slower speech, and/or rephrasing.	-Understands simple questions, commands and new sentence-level speech in familiar topic areas, and some new sentences with strong contextual support.	-Understands familiar and new sentence-level questions and commands in a limited number of content areas with strong contextual support. -Follows conversation at a fairly normal rate.	-Understands sentence-level speech in new contexts at a normal rate of speech although slow-downs may be necessary for unfamiliar topics. -Carries out commands without prompting.	-Understands longer stretches of connected speech on a number of topics at a normal rate of speech. -Seldom has comprehension problems on everyday topics. (Can request clarification verbally.)	-Understands main ideas and many details in connected speech on some academic topics and on topics of personal interest.	-Understands main ideas and most details in connected speech on a variety of topics, but may be unable to follow complicated speech. -May have difficulty with highly idiomatic speech.	-Understands complex academic discourse and highly idiomatic speech in conversation. -Confusion may occur due to socio-cultural nuances or unfamiliar topics.

* This feature may not appear, but if present in student speech, is acceptable at the Advanced-Mid level of proficiency.

Scale based on the ACTFL Proficiency Guidelines, American Council on the Teaching of Foreign Languages (1986, 1999)
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Figure A.1: Student Oral Proficiency Assessment – rating scale

Inquiries in Language Learning
Forschungen zu Psycholinguistik und Fremdsprachendidaktik

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