Chapter 4: **Imagery-Based Cognitive-Behavioral Assessment**. Authored by Susie Hales, Simon E. Blackwell, Martina Di Simplicio, Lalitha Iyadurai, Kerry Young and Emily A. Holmes. From *Assessment in Cognitive Therapy*, Edited by Gary P. Brown and David A. Clark.

4

Imagery-Based Cognitive-Behavioral Assessment

Susie Hales, Simon E. Blackwell, Martina Di Simplicio, Lalitha Iyadurai, Kerry Young, and Emily A. Holmes

A BRIEF, SELECTED REVIEW OF IMAGERY RESEARCH

What is mental imagery? Mental imagery occurs when perceptual information is accessed from memory, giving rise to the experience of "seeing with the mind's eye," "hearing with the mind's ear," and so on. By contrast, perception occurs when information is directly registered from the senses. Mental images need not result simply from the recall of previously perceived objects or events; they can also be created by combining and modifying stored perceptual information in novel ways (see review by Kosslyn, Ganis, & Thompson, 2001). Thus, mental imagery can occur in any sensory modality, although in psychopathology we often focus on visual images. In psychopathology, problematic images typically have the qualities of being highly emotional and of intruding into consciousness unbidden. This involuntary property has led to the idea that images can "flash" to mind. "Flashbacks" are the hallmark of posttraumatic stress disorder (PTSD; see box on page 83 for description). However, images of negative past events are not the only ones that can spring to mind with high levels of emotion. Our group coined the term "flashforwards" to refer to intrusive imagery of the future (Holmes, Crane, Fennell, & Williams, 2007), which has now been used by other researchers (e.g., Engelhard, van den Hout, Janssen, & van der Beek, 2010).

The importance of mental imagery in day-to-day functioning and its potential usefulness for effecting change has been recognized beyond the world of clinical practice—for example, in cognitive neuroscience (e.g., Addis, Pan, Vu, Laiser, & Schacter, 2009; D'Argembeau, Renaud, & Van der Linden, 2011; Schacter, Addis, & Buckner, 2008) and social psychology (Crisp, Birtel, & Meleady, 2011). The use of mental imagery in cognitive-behavioral therapy (CBT) was recognized early by Beck (1971), and researchers such as P. J. Lang (1979) developed pioneering theories of the role that imagery may play in human behavior. However, it is only in the last decade that clinical research concerning imagery has truly gathered momentum. Indeed, it is now regarded as a "hot topic" and a new frontier for development in CBT.

Our clinical research group called EPaCT (Experimental Psychopathology and Cognitive Therapies) has been intrigued by the role of mental imagery in psychopathology (Holmes, James, Blackwell, & Hales, 2011). Mental imagery has been described richly and widely in the literature (for reviews, see Edwards, 2007; Holmes & Mathews, 2010; and Arntz, 2012). It is beyond the scope of this chapter to discuss the whole field of mental imagery research and practice to date, and therefore the focus of this chapter is restricted to the imagery work that has been conducted within EPaCT. There are various key issues that the EPaCT lab have been concerned with. One is the impact of imagery on emotion. Our work has shown that imagery has a more powerful impact on our emotions than thinking in words about the same topic (Holmes, Mathews, Mackintosh, & Dalgleish, 2008). If this is the case, then it seems particularly important to ask about the presence of any imagery at assessment.

Another key issue that fascinates us is the occurrence of emotional imagery in disorders where it hitherto may have been neglected. Assessing the content of intrusive, emotional imagery can reveal useful clinical insights. For example, we have identified and described imagery in suicidal thinking (e.g., Hales, Deeprose, Goodwin, & Holmes, 2011), in agoraphobia (Day, Holmes, & Hackmann, 2004), in bipolar disorder (Holmes, Geddes, Colom, & Goodwin, 2008) and in chronic pain (Berna et al., 2011). Identifying and characterizing the presence of imagery across a range of psychological disorders have been the focus of various special issues in recent years—see Holmes and Hackmann (2004) and Holmes, Arntz, and Smucker (2007). More recently, research has been investigating imagery-related treatments too (see special issues by Hagenaars & Holmes, 2012; Krans, 2011; and Moulds & Holmes, 2011).

A third key area is thus how to harness the properties of imagery for our clinical work. We have been developing treatment innovations using

imagery and imagery techniques. These may involve CBT techniques such as imagery rescripting (Giesen-Bloo et al., 2006; Hackmann, Bennett-Levy, & Holmes, 2011). However, new techniques may also consist of more novel forms, such as positive imagery promotion (T. J. Lang, Blackwell, Harmer, Davison, & Holmes, 2012) and imagery interference (Holmes, James, Coode-Bate, & Deeprose, 2009). While mental imagery research is exciting and has plenty of room for further development, imagery treatment techniques are beyond the scope of the current chapter. The main purpose of this chapter is to focus on the assessment of imagery within a CBT framework.

Why is it important to assess for imagery? There are many reasons. Imagery helps us build a fuller understanding of the content of people's concerns. Imagery is important to know about, as it has a strong impact on behaviors and beliefs (see Holmes & Mathews, 2010). Perhaps the pivotal reason, however, relates to the research discussed above: Imagery has been found to have a greater impact on emotion than verbal thoughts. We have proposed that imagery acts as an "emotional amplifier" across emotional disorders (Holmes, Geddes, et al., 2008). If imagery heightens our emotions, then clearly we need to consider how it may impact on emotional disorders.

COGNITION, VERBAL THOUGHTS, AND MENTAL IMAGERY

Cognition is defined as "the mental process by which external or internal input is transformed, reduced, elaborated, stored, recovered, and used. As such, it involves a variety of functions such as perception, attention, memory coding, retention, and recall, decision-making, reasoning, problem-solving, imaging, planning and executing actions" (Neisser, 1967, p. 4). We argue that imagery is different from verbal thinking and so needs a different assessment approach. When we recall events from the past or imagine something happening in the future, we recruit mental imagery. Mental imagery has been described as comparable to having a sensory experience in the absence of a physical sensory stimulus (Kosslyn et al., 2001). Although mental imagery frequently consists of visual images, it can also refer to images in any of the five senses. When we think in verbal thoughts, we tend to use words and verbal language of the sort we would use when we speak. Verbal thoughts are thus very different in nature from images.

In the course of CBT, we routinely ask our patients, "What is going through your mind?" The awareness of this type of cognition can take the two forms described above: verbal thoughts or mental images. When we think in verbal thoughts, we use verbal language of the sort we would

use when we speak. For example, a verbal thought of someone with social anxiety about giving a presentation might be "There will be so many people! I will be awful." This would be experienced as a mental phenomenon in the form of words, that is, a verbal representation. In contrast, when we think in mental images, these are sensory impressions. So, for the same person with social anxiety, an associated mental image about giving a presentation might be seeing oneself walk on stage, shaking and as red as a tomato. We will argue that compared to verbal thoughts, images have a greater impact on emotion and may contain extra information. Images should, therefore, form a critical part of assessment (Di Simplicio, McInerney, Goodwin, Attenburrow, & Holmes, 2012). Henceforth in this chapter we consider imagery as a subset of cognitive processes and as different from verbal thought.

HOW HAS IMAGERY BEEN ASSESSED IN CBT RESEARCH AND PRACTICE?

Imagery is a natural part of all human experience. Therefore, when it comes to assessing imagery, commonalities can be found across laboratory research, translational research, and clinical practice.

Laboratory Research

The experience of mental imagery can be measured experimentally in several ways. These can include computer tasks as well as pen-and-paper questionnaires. Various standardized measures are summarized in a recent review by Pearson and colleagues, which includes information about the validity and reliability of these measures (Pearson, Deeprose, Wallace-Hadrill, Burnett Heyes, & Holmes, 2013).

While the assessment of imagery has evolved independently in laboratory research and clinical practice, there is certainly an argument for bringing laboratory measures to the clinic. For example, the process of creating a mental image (image generation) is argued to be distinct from the process of mentally manipulating the image (image transformation). Computer-based assessment tasks such as the Image Generation Task (Dror & Kosslyn, 1994) and the Mental Rotation Task (Shepard & Cooper, 1982) can be used to assess these two processes, respectively. This may be clinically important when it comes to making decisions about the types of intervention techniques to use with a patient, so they are tailored to the patient's specific imagery abilities. In laboratory studies, physiological responses to imagery have been measured as a proxy for the emotionality of imagery (Cummings,

Olphin, & Law, 2007). This type of measurement could also have useful clinical applications.

A variety of pen-and-paper questionnaires can be used in both the laboratory and the clinic to measure trait and state levels of different kinds of imagery experience (see review by Pearson et al., 2013). In our experience, we have found the following measures particularly useful. The Spontaneous Use of Imagery Scale (SUIS; Reisberg, Pearson, & Kosslyn, 2003) is a 12-item measure assessing the extent to which an individual uses imagery in everyday life, and as such can be considered a measure of trait imagery use. It includes items such as "When I first hear a friend's voice, a visual image of him or her almost always springs to mind," each of which are rated on a 5-point Likert scale for the extent to which it occurs (1 = never, 5 = always). Other useful questionnaires, assessing state future imagery processes, are the Impact of Future Events Scale (IFES; Deeprose & Holmes, 2010)[1] and the Prospective Imagery Task (PIT; Holmes, Lang, Moulds, & Steele, 2008; Stöber, 2000). As previously stated, intrusive future imagery can be just as clinically significant as intrusive past imagery. The IFES is based on the Impact of Event Scale—Revised (IES-R; Weiss & Marmer, 1997) but reworded to reflect future rather than past events. Respondents are first required to identify three future events that they have been imagining over the past 7 days and then to state whether these imagined events were positive or negative. The remaining questionnaire items assess the impact of this future imagery on the respondents. The PIT is a measure of ability to generate mental imagery about future events. Participants are asked to form a mental image of 10 negative future scenarios and 10 positive future scenarios. These include events such as "You will have a serious disagreement with your friend," or "You will do well on your course." Each image is rated for vividness on a continuous 5-point Likert scale (1 = no image at all and 5 = very vivid). For the positive items of the PIT, the internal consistency is excellent (alpha = .92), and for the negative items, internal consistency is good (alpha = .87).

Translational Clinical Research

Experimental studies that investigate the effects of novel imagery-based therapeutic approaches (e.g., Jacob et al., 2011) in a controlled laboratory setting provide a natural link between assessment in the laboratory and assessment in clinical practice. One example of where laboratory-based assessment may have increasing clinical relevance is in the delivery of novel computerized interventions for depression that use mental

[1] Available on request.

imagery (Blackwell & Holmes, 2010; T. J. Lang et al., 2012). As depression is associated with a deficit in positive future imagery (Holmes et al., 2008; Morina, Deeprose, Pusowski, Schmid, & Holmes, 2011) and a negative interpretation bias (Butler & Mathews, 1983; Rude, Wenzlaff, Gibbs, Vane, & Whitney, 2002), these interventions aim to boost positive imagery and train positive interpretation. They involve repeated practice in generating positive mental imagery in the context of ambiguous cues, presented either as photos (e.g., Pictet, Coughtrey, Mathews, & Holmes, 2011) or as audio descriptions listened to via headphones (e.g., Holmes, Lang, & Shah, 2009). There is preliminary evidence that an individual's scores on imagery questionnaire measures may predict whether the intervention will be of benefit (T. J. Lang et al., 2012). This suggests that questionnaire measurement of imagery may be an important part of the assessment for these novel interventions, as it may identify people for whom the intervention may be less useful, or who may need additional preparation in generating imagery before embarking on the course of treatment.

In addition to this questionnaire assessment of mental imagery ability, an initial face-to-face introduction to the imagery training program offers the opportunity to assess patients' ability to engage in imagery in the way required for the intervention to be effective. By guiding patients through examples of the kinds of scenarios they will be required to imagine in the intervention, the researcher can pick up potential problems such as a tendency to switch into a verbal, analytical thinking style (Holmes, Lang, et al., 2009), or a tendency to imagine the scenarios from a detached "observer" perspective (Holmes, Coughtrey, & Connor, 2008). Noticing and correcting these cognitive styles may be crucial in increasing the chance of the intervention being effective. Patients with depression may be particularly sensitive to feeling that they are "doing it wrong," but if this exploration is carried out with genuine interest and encouragement from the researcher, the assessment becomes an opportunity to instill in patients a sense of curiosity about their experience of imagery. This turns the assessment into an interesting experience that will enhance their motivation to engage with the computerized intervention on their own over the forthcoming weeks.

Clinical Practice

However, we would not recommend the use of questionnaires alone to assess imagery, as these do not capture the full clinical presentation and are often designed to tap a single dimension of imagery experience. Nevertheless, questionnaires are useful in providing supplementary information or for outcome research, but should not be used as a standalone

clinical assessment tool. Assessment and microformulation of patients' idiosyncratic imagery can be more informative in a clinic setting.

Assessment of Imagery with Disorder-Specific Questionnaires

There are a number of disorder-specific questionnaires that contain items about mental imagery, most notably for assessment of posttraumatic stress symptoms. The IES-R (Weiss & Marmer, 1997) is a questionnaire that measures the subjective response to a perceived traumatic event. It contains an Intrusions subscale, which includes items such as "Pictures about it [the trauma] popped into my mind," and "I had dreams about it [the trauma]." As such, it is a useful tool for clinicians and researchers wishing to assess for trauma-related imagery, though it should be noted that it is not a diagnostic instrument for PTSD. Another disorder-specific instrument that includes items about imagery is the Yale–Brown Obsessive Compulsive Scale (Goodman et al., 1989), which assesses symptoms of obsessive–compulsive disorder (OCD). Respondents are simply asked to indicate whether they have experienced each symptom on the scale currently or in the past. The scale contains four imagery symptom items: "violent or aggressive images," "intrusive (nonviolent) images," "forbidden or perverse sexual thoughts, images, or impulses," and "intrusive nonsense sounds, words, or music."

There are obvious limitations to the sole use of disorder-specific questionnaire measures to assess for imagery. The types of questionnaires administered can often be influenced by subjective clinician or researcher judgments about a respondent's likely diagnosis, rather than based on a full clinical diagnostic assessment, such as the Structured Clinical Interview for DSM-IV-TR (First, Spitzer, Gibbons, & Williams, 2002). A further issue is that respondents can only indicate the presence or absence of imagery included in the questionnaires; therefore, key imagery experiences may be missed. Indeed, many commonly used clinical questionnaires do not include items regarding imagery at all. Administration of imagery-specific questionnaires (as detailed below) may therefore be more useful in providing supplementary information for the clinical assessment of imagery than disorder-specific questionnaires.

Assessment of Imagery with Imagery-Specific Questionnaires

Another approach to imagery assessment is to administer questionnaires that assess general imagery processes, rather than specific imagery-related clinical symptoms. These are suitable for administering to both clinical and nonclinical participants and have been discussed in

an earlier section on laboratory assessment of imagery. Such measures include the SUIS (Reisberg et al., 2003), the IFES (Deeprose & Holmes, 2010), and the PIT (Holmes, Lang, et al., 2008; Stöber, 2000).

Administration of both disorder-specific and imagery-specific questionnaires can certainly prove useful in assessing some aspects of mental imagery. However, questionnaire measures are unlikely to capture the "full picture" when it comes to assessing imagery.

A Phenomenological Approach to Assessment of Imagery

Phenomenological approaches are concerned with the study of experience from the perspective of the individual, and data are typically gathered through qualitative methods such as interviews. This type of research is suited to increasing understanding of subjective experience and gaining insights into people's motivations and actions. It is particularly useful in areas where there is a lack of an established knowledge base. In the past decade or so, a growing body of clinical research (see "A Brief, Selected Review of Imagery Research" on pp. 69–71) has used phenomenological methods to capture rich information about the content and qualities of mental imagery experienced by different clinical populations. An example of a useful interview assessment is the Mental Imagery Interview, as used, for example, by Day et al. (2004), which is drawn from previous work by Ann Hackmann. This interview allows the exploration of both quantitative measures of imagery experience (such as the frequency of mental images), but also asks participants to describe in detail the images they experience. A key part of the interview is identification of an image that is important to a participant. The participant is then asked to describe the image in detail before answering further questions about the image, including "How did [the image] make you feel?," "What did it mean to you?," "What did it make you want to do?" Identification of common themes of imagery experienced by different populations has led to the development of novel treatments targeting distressing image-based cognitions (e.g., Wheatley et al., 2007). Research of this kind may also pave the way for improved imagery assessment questionnaires.

Although developing an understanding of the types of imagery frequently present in different disorders is undoubtedly useful, mental imagery is also highly idiosyncratic in nature. In therapeutic work with a patient, an individualized approach to assessment is therefore likely to produce the most valid and clinically useful results. Next, we detail how to assess imagery and use the information gained to create an imagery "microformulation" with a patient.

Individual Assessment and "Microformulation" of Imagery

Some psychological models do emphasize the assessment and subsequent formulation of problematic mental imagery. Ehlers and D. M. Clark's (2000) model of PTSD and D. M. Clark and Wells's (1995) model of social phobia are two well-validated examples. However, the presence and impact of mental imagery can be neglected unless the researcher or clinician is working from a model within which maladaptive imagery processes are core features. In our experience, we have found it useful to assess imagery-based cognitions (in addition to verbal thoughts), regardless of the provisional or established diagnosis of a patient.

We suggest that the clinical assessment of imagery should contain the following steps:

1. Patients are first provided with a definition of what is meant by the term "mental imagery."
2. Clinicians then ask patient whether he or she experiences any mental images that have a strong impact on him or her—for example, ones associated with feeling afraid, or ashamed, or perhaps overly excited (in a bipolar population).
3. Once a significant image is identified, a clinician guides a patient to examine the image in detail. An imagery micro-formulation template (see Figure 4.1) is used to guide the assessment and "map out" the content and impact of the image.

Refer to the box on page 79 for a step-by-step guide of how to complete the imagery microformulation. Further information and a comprehensive guide to imagery assessment and practice can be found in the *Oxford Guide to Imagery in Cognitive Therapy* (Hackmann et al., 2011).

REASONS FOR NEGLECT OF IMAGERY ASSESSMENT

Perhaps the most fundamental reason that patients do not report imagery is that clinicians simply do not ask about its presence. We know that the majority of patients will not spontaneously report imagery; therefore, clinicians must take responsibility for including questions about imagery in their standard assessments. There are several reasons why patients do not report their experiences of imagery. We examine the key ones in more detail.

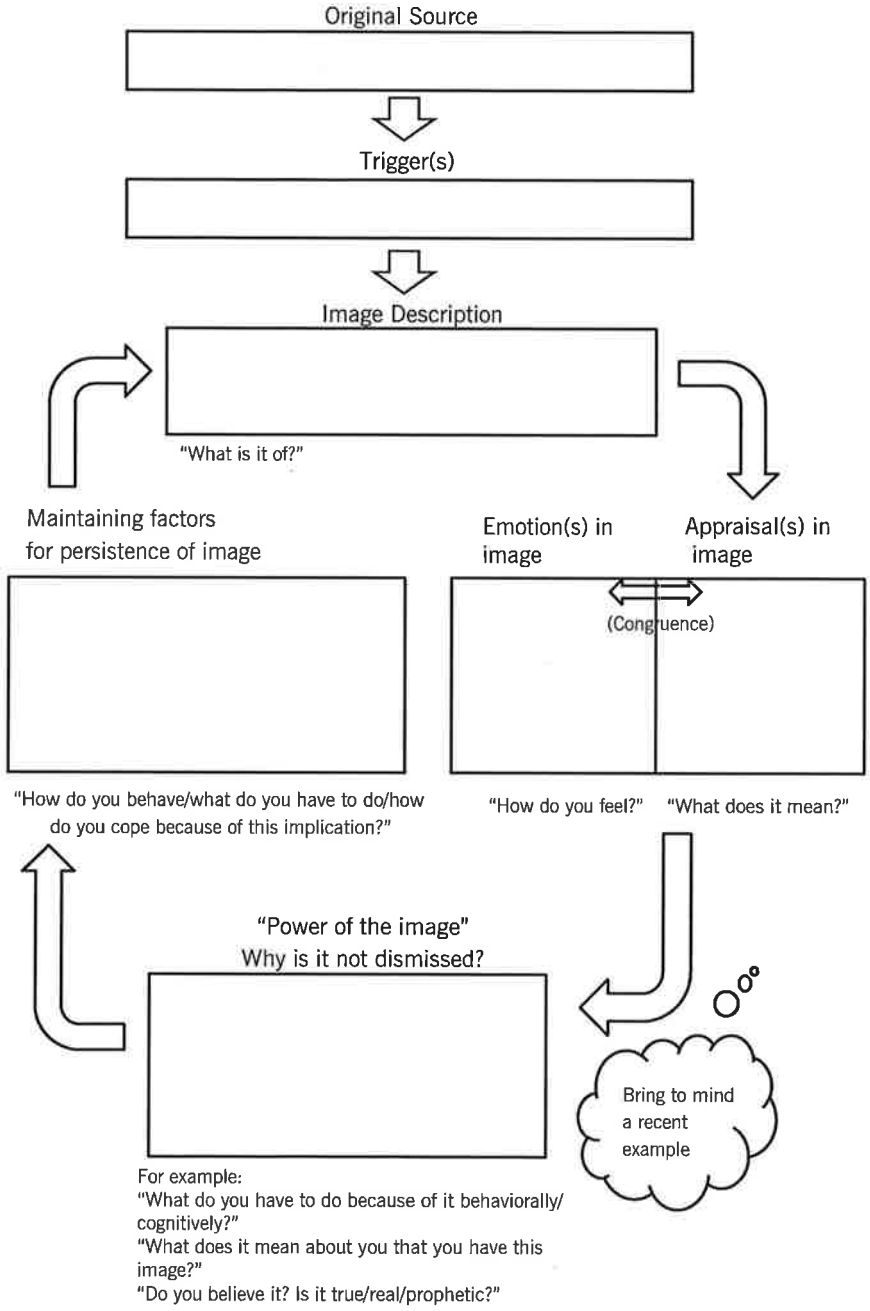

FIGURE 4.1. Microformulation template.

A Step-by-Step Guide for How to Complete an Imagery Microformulation

General ethos. Completion of the microformulation should be a collaborative, curious process, with responsibility for completion shared equally between a therapist and a patient. It is good practice to have the microformulation template where it can be seen by both the therapist and the patient and to encourage the patient to write on the template him- or herself.

Choosing an image to microformulate. A patient may report more than one significant image. The following may be helpful in selecting the image to start a microformulation on: choosing an image that seems directly connected to the treatment target identified by the patient, or an image that is relevant in the current clinical presentation and that has been present in the most recent week(s) preceding the session.

Image description. To aid the patient in describing the image selected, ask her to remember the last time she had the image, then ask her to bring it back to mind and describe it in as much detail as possible (keeping the eyes closed can be helpful but is not necessary). Make sure you get to know from which perspective the image is seen: Is a patient in the picture, or is it seen from an observer position? Elicit details about dimensions, colors, if and how the image(s) changes, if there is any action going on, and so on. Remember to explore characteristics from sensory modalities other than visual, such as sounds, smells, and tactile sensations.

Emotion(s) in image. Ask the patient how she feels as she holds the image in mind and/or how she felt on the last occasion she experienced it. If this is difficult to grasp, you can try prompting the patient by summarizing the image description she gave you and asking how specific details and features in the image make her feel as you describe the image back to her. An image may often elicit more than one emotion; write down as many emotions as are present. Sometimes emotions will not be described using the standard labels but in more idiosyncratic ways. It is fine to keep the patient's exact words in this case, provided that you ask her to explain fully to you what she means so that you share the felt sense behind each word.

Appraisal(s)/meaning(s) in image. The next step is to understand what specific meaning is attributed to the image. You can find this out by asking the patient why she feels the various emotions she has just described—for example, "Why does this image make you anxious?" You can also ask what thoughts are present as she holds the image in mind. Note that images that elicit multiple emotions will tend to have a variety of appraisals attached, perhaps even contradictory ones.

"The power of the image." Once you have identified the main emotions and appraisals linked to the emotions, you want to explore further what implications and consequences these have. This can lead to discovering further and more general/deeper appraisals and also behaviors. Behaviors can also lead to or directly represent maintaining factors (see next step). Useful questions to obtain this information are "What does it mean to you that you have this image?", "What does it say about you?", "What does it make you think or do?" Answers to these questions will elucidate why the image(s) has such a "powerful" impact on a patient and why the patient is unable or unwilling to dismiss it. Often a patient comments that the image "feels so real" that she thinks that it must be "true" or prophetic in some way.

Maintaining factors. The last step is to identify what the patient does when she experiences the image—that is, actions and behaviors that contribute to the persistence of the image and related emotions, thus creating a vicious cycle. It is useful to ask directly, "What do you have to do when the image pops into your mind? For example, do you try to push it away? Or perhaps replay it in your mind's eye?" It is also useful to investigate not just the immediate reaction, but what further behaviors follow in different contexts and situations. Avoidance strategies ("Do you do anything so that the image does not happen to you again?") and/or engagement strategies ("Do you do anything to make the image come back or change it?") are often used to cope with imagery.

• *The patient doesn't understand what is meant by "mental imagery."* If the assessing clinician asks about mental imagery, then it is essential to provide a description. We have provided a technical definition of mental imagery at the beginning of this chapter (Kosslyn et al., 2001), but the following definition can be easier for patients to grasp:

> "When we think in *mental images*, we imagine pictures in our mind's eye. A mental image of this assessment might be picturing in your mind's eye what the room looks like with us sitting in it. Although mental images often take the form of pictures, they can actually include any of the five senses. For example, you could 'hear' the sounds of us talking in your imagination. We can also have images that come in the form of smells, tastes, or bodily sensations. Images can be clear or unclear, fully formed or fleeting. When we talk about *mental images*, we are referring to *all* these types of imagining."

• *Not all images are visual.* Mental images comprise any type of sensory impressions; therefore it is essential that clinicians make this clear. For example, olfactory (smell) intrusions can be a feature of PTSD. Sometimes patients will report that they "don't have images." This may be true in a minority of cases, but it may be that further enquiry about all forms of mental imagery are warranted in this instance.

• *Patients may appraise their mental imagery as a sign that they are "really going mad."* Among the general public, the experience of "seeing things" has tended to become synonymous with severe mental health problems, such as psychosis. Patients may therefore have a real fear that if they discuss their mental imagery with health professionals, they will be appraised as severely ill and treated accordingly.

• *Patients may also find their mental imagery shaming.* Some intrusive images are particularly nasty, such as those involving violence,

bestiality, or incest. The most repugnant and persistent imagery tends to be associated with OCD (Rachman & de Silva, 1978). Unsurprisingly, patients may find it extremely difficult to "admit" that they are experiencing socially inappropriate, ego-dystonic imagery.

In summary, imagery-based cognitions are unlikely to be elicited unless clinicians specifically ask their patients about them.

THE PLACE OF IMAGERY IN COGNITIVE CASE FORMULATION

The fundamentals of the cognitive case formulation approach have been described in detail elsewhere (Bieling & Key, Chapter 10, this volume; Kuyken, Padesky, & Dudley, 2009), and so these aspects are not repeated here. To illustrate how imagery assessment can be integrated into the cognitive case formulation approach, we present an example from our service, the Mood Action Psychology Programme (MAPP).

The MAPP Service

MAPP is a clinical psychology service for people with bipolar disorder, located within a psychiatric outpatient setting. We offer a detailed, four-session assessment to map out current presenting difficulties, using a cognitive-behavioral approach with an imagery focus. The aim of assessment is to identify a target for intervention that is distressing in its own right but also has impact on mood stability.[2]

Referral Information

Serena was offered an initial assessment with MAPP following referral from a psychiatrist at a community mental health team. She was a 45-year-old graphic designer living in inner London. She had a diagnosis of bipolar II disorder; that is, she experienced episodes of both depression and hypomania. She had a 20-year history of such mental health difficulties, having experienced approximately 10 episodes of depression and 15 episodes of hypomania during this period. Serena had a 9-year-old daughter for whom she provided most of the care. Serena's psychiatrist noted that she had prominent anxiety in addition to ongoing mood instability, for which she was seeking help. She declined medication but was open to trying a psychological approach.

[2]We typically have two therapists present at each assessment session.

MAPP Assessment

The following aspects are covered as part of a standard MAPP assessment.

Reported Priorities

Serena stated that she had two priorities for treatment. The first was to tackle the anxiety she experienced that she felt was associated with intrusive mental images of (1) real negative past events ("flashbacks") and (2) imagined negative future events ("flashforwards") (see box on the facing page). She reported that, as a result of these images, she constantly felt "stuck in fight/flight mode" and she wanted to find "respite" from this sense of ongoing agitation. Serena's second priority was to improve her mood stability, particularly when it interfered with her work or weekend activities with her daughter.

Reported Difficulties

At the initial assessment session, which directly asked about imagery, Serena stated that she "visualized everything." While this could be extremely useful for her—for example, in her work as a graphic designer—it could also cause her difficulties. She reported that the following types of imagery had a particularly negative impact on her:

1. Serena experienced frequent vivid intrusive imagery of a recent real event in which her daughter had nearly choked. She reported these image "flashbacks" to be highly anxiety-provoking, consistent with an early posttraumatic stress reaction.
2. In addition to experiencing images of past events, Serena also reported that she regularly experienced "horrible images of bad things happening to my daughter or me" in the future. The content of this "flashforward" imagery included finding her daughter dead in a local park or her daughter contracting a fatal illness. When these "flashforwards" occurred, they made her feel very anxious and agitated, and consequently unable to concentrate on her work or household chores.

In addition to the negative imagery symptoms described above, Serena had ongoing issues with general management of her bipolar disorder; for example, she reported that her mood was frequently unstable and her sleeping and eating patterns were often disturbed.

Definition of Flashbacks and Flashforwards

What is a "flashback"? A "flashback" is the term used to describe a mental image of a past real event—for example, of a traumatic situation—that springs to mind unbidden (involuntarily). "Flashbacks" are the hallmark of PTSD, but such negative intrusive images can occur across many disorders and be of a range of events.

What is a "flashforward"? A "flashforward" is a mental image of a simulated future event, that is, one that has not yet occurred. For example, someone with depression may experience a "flashforward" of being rejected by peers, or being unable to complete a work assignment; someone with bipolar disorder may have a "flashforward" of creating an amazing piece of art.

Scores on Mood and Imagery Measures Administered at Assessment

The key clinical issues for Serena related to the intrusive "flashbacks" and "flashforwards" that she experienced. Along with the detailed assessment and microformulation to be described next, supplementary information was gained through administration of a variety of mood and imagery measures at the first MAPP assessment session. Serena scored in the "severe" range of depression on the Quick Inventory of Depressive Symptomatology (QIDS; Rush et al., 2003) and in the "moderate" range of anxiety on the Beck Anxiety Inventory (BAI; Beck & Steer, 1993). No manic symptoms were present. Serena's scores on the SUIS (Reisberg et al., 2003), IES-R (Weiss & Marmer, 1997), and IFES (Deeprose & Holmes, 2010) indicated high trait use of imagery and a high impact of "flashback" and "flashforward" imagery.

Selection of Potential Intervention Targets

Two potential intervention targets were selected to microformulate: (1) intrusive imagery of past harm to her daughter (in the form of "flashbacks" to her daughter nearly choking) and (2) intrusive imagery of future harm to her daughter (in the form of "flashforwards" to bad events happening to her). These targets were selected as they were both distressing in their own right, but were also hypothesized to link with her mood stability. Serena noted that both the "flashbacks" and the "flashforwards"

she experienced could have a strong impact on her mood and made it difficult for her to remain calm. Importantly, the problematic imagery symptoms were also ones which the MAPP team judged to be tractable via a cognitive intervention.

Microformulation of Each Potential Intervention Target

Once a potential imagery intervention target or targets have been identified, the next stage in the MAPP assessment procedure is to collaboratively map out the imagery process with the patient using a microformulation template as a guide. Note that the template provided in Figure 4.1 is a basic template that can be adapted for use with different types of disorders (e.g., anxiety, depression, bipolar disorder, OCD). The MAPP service has produced a more comprehensive template for use with people with bipolar disorder, highlighting imagery processes proposed to be particularly pertinent for this group.[3] This bipolar-specific template was used to microformulate both of the imagery targets that Serena identified.

The Next Stage: Formulation-Based Treatment

Once a thorough assessment and microformulation of imagery have been completed, clinicians can then choose from their general clinical skills "toolkit" to intervene with the problematic imagery process. A variety of intervention techniques may be appropriate, depending on the formulation of the problem. For example, imagery rescripting techniques may be used to actively modify and update the problematic imagery, attention retraining could be used to switch the focus of attention away from internal imagery and onto external targets, or metacognitive techniques could be applied to teach a patient that "an image is just an image." Note that it is not always necessary to work actively with imagery (e.g., in the form of imagery rescripting) to achieve therapeutic benefit. For a review of both "direct" and "indirect" ways of working with imagery, see Holmes, Arntz, and Smucker (2007).

MAPP Treatment and Outcome

After assessment, Serena was offered a brief treatment intervention. Following from the microformulations mapped out in the assessment process, imagery rescripting (IR) was chosen as an appropriate intervention to treat the "flashback" and "flashforward" images, as the meaning

[3] Available to download from our team website at *www.mrc-cbu.cam.ac.uk*.

contained within these images seemed to be maintaining the negative imagery processes.

MAPP delivered a six-session intervention consisting of two sessions of IR of the "flashback" image, two sessions of IR of the "flashforward" image, and two sessions of consolidation. The consolidation sessions included the creation of a video "blueprint"—a record of the strategies Serena used in therapy, which she could refer back to in the future. (We hypothesize that a visual form is more accessible to patients with bipolar disorder than verbal-based records, like the traditional paper-based "blueprints" used in CBT.)

At the end of the treatment period, Serena's image intrusions had decreased substantially in frequency. More important, when "flashback" and "flashforward" imagery did intrude, she did not rate it as distressing. In addition, a number of behavioral changes occurred across the treatment period: Serena ceased consuming cannabis, alcohol, and caffeine, and reported a more regular sleeping pattern. At 1-month follow-up, Serena's levels of anxiety, mania, and depression were all within the "nonclinical" range, and her mood had become more stable (as defined by the frequency with which her mood cycled up and down) compared with the pretreatment period. Thus, as predicted in the model, treating and modifying Serena's intrusive emotional imagery had a corresponding impact on her mood stability. At 18-month follow-up, Serena's improvements in mood and behavioral changes had been maintained, and she reported no difficulties related to the images that had been treated in the MAPP intervention.

DOES RESEARCH ON IMAGERY HAVE ANY IMPLICATIONS IN RELATION TO DSM-5?

Future directions in systematizing and diagnosing mental disorders—including the 2013 publication of the *Diagnostic and Statistical Manual of Mental Disorders*, fifth edition (DSM-5)—point to the fact that numerous symptoms and cognitive processes are reported across the traditional boundaries of diagnostic categories. Some of these symptoms and processes may not be tied to a patient's primary diagnosis, but still have a relevant clinical impact. Typical examples could be anxiety, insomnia, or anhedonia. It is important to recognize these to ensure adequate clinical care. Unsurprisingly, therefore, DSM-5 (in the new Section III) integrates dimensional assessments of cross-cutting symptom measures as an additional way to help clinicians (1) capture general functioning and the severity of mental illnesses and (2) track in a comprehensive way a patient's progress in treatment (American Psychiatric Association,

2013; Kupfer & Regier, 2011). Parallel to and informing this process of diagnostic review, the National Institute of Mental Health has also recently launched a research initiative based on a dimensional approach to the study of the genetic, neural, and behavioral features of mental disorders. This approach includes domains such as cognition, along with social processes, arousal/regulatory systems, and negative and positive valence (Insel et al., 2010). Imagery-based cognitions fit within this approach.

The majority of individuals experience imagery-based cognitions, but they will vary in the extent to which they use imagery rather than verbal thoughts, and in the intrinsic characteristics of this imagery (such as vividness, emotional arousal, etc.) and possibly in the subjective impact that imagery has on their feelings and behavior (Cui, Jeter, Yang, Montague, & Eagleman, 2007; Deeprose & Holmes, 2010; Holmes & Mathews, 2010). As already described in "A Brief, Selected Review . . . ," intrusive and clinically significant images are found across different mental disorders. Hence, imagery can be considered both a dimensional and a transdiagnostic phenomenon (see Smith, Ratcliff, & Norton, Chapter 9, this volume) similar to most of the other psychological processes that merge into psychiatric symptoms. This means that the presence of intrusive or disturbing images is not indicative of a specific diagnosis; however, imagery assessment can both clarify diagnosis and represent a valuable parameter of disease severity. For example, assessing the specific emotion and appraisal associated with an image can help elucidate affective states and behavioral responses, which might otherwise remain unclear.

Investigating imagery can directly contribute to differential diagnosis. In a case of first-onset psychosis, Marcus, a 38-year-old male, presented with paranoid ideation and persecutory voices. He denied visual hallucinations but described vivid images of his younger brother who had recently died of cancer, staring at him from the hospital bed. On further investigation, while Marcus was aware that this image was not real, he reported that to him it meant he should have looked after his brother better and been of greater comfort in his last days. The imagery assessment process led to the disclosure of deep guilt feelings and a sense of bereavement, allowing us to make a diagnosis of psychotic depression rather than delusional disorder.

In line with the more dimensional approach proposed in Section III of DSM-5 (American Psychiatric Association, 2013; Narrow & Kuhl, 2011) and by the most recent developments in the understanding of the neurobiological bases of mental disorders (Morris & Cuthbert, 2012), the level of intensity and frequency of imagery-based cognitions can also guide severity assessment and treatment decisions. For example, arousing and unstoppable imagery of future scenarios often occurs in

patients with bipolar disorder and is associated with both anxiety and excitement. When such phenomena remain between full-blown manic–depressive episodes, they can signal partial remission of the overall mood instability and a potential for more frequent relapses. This has implications in terms of both medication management and additional psychological intervention (Perlis et al., 2010; Simon et al., 2007).

In conclusion, future directions in the diagnosis and assessment of mental disorder support the need to integrate a thorough investigation of imagery across all psychiatric disorders. This inquiry can serve as a tool to refine diagnosis, to identify comorbid syndromes, and to highlight additional isolated but clinically relevant symptoms. Moreover, a dimensional approach to imagery-based cognition can help capture residual risk and improve relapse prevention.

SUMMARY

Mental imagery can have a powerful impact on emotion, and dysfunctional mental imagery may play an important role in maintaining distress or problematic behavior in many psychological disorders. However, mental imagery is often neglected in assessment procedures. A variety of means can be used to assess mental imagery, including questionnaires, computer tasks, and interviews. A thorough assessment of mental imagery can aid development of a formulation to guide the application of powerful imagery-focused techniques in treatment. However, patients often do not spontaneously report mental images, and so it is crucial that clinicians inquire specifically about them in order to ascertain their presence and potential as a target for treatment.

KEY POINTS

FOR PRACTITIONERS

- Mental images typically take the form of static or moving pictures. However, it is important to remember that frequently they also involve "hearing" sounds in imagination, as well as "smelling," "tasting," or "feeling" bodily sensations.
- The ability and propensity to have mental images varies from person to person, but can be developed through practice.
- Mental images have been found to have a more powerful impact on mood than verbal thoughts.
- Patients tend not to spontaneously report mental images—so it is important that clinicians ask about them at assessment.

- Imagery-based cognitive-behavioral assessment should have five steps:
  - First, provide the patient with a definition of mental imagery that encompasses its multisensory nature.
  - Second, get a broad idea of the different types of images that the patient experiences and how often they occur. Use imagery questionnaires to provide supplementary information or as outcomes in research, but do not rely on them alone as assessment tools.
  - Third, with the patient, identify a particularly troublesome, pivotal, or tractable image.
  - Fourth, ask questions about this image so that together you are able to "microformulate" it—that is, to draw out a formulation describing the image and its meaning, why the patient does not simply dismiss/ignore it, and how the patient responds cognitively or behaviorally to it.
  - Fifth, repeat for other troublesome, pivotal, or tractable images. The microformulation(s) can then be integrated into the wider case formulation.

FOR RESEARCHERS

- It is important to remember that images can involve any of the five senses, alone or in combination; research participants may need to be prompted to think about this possibility, as most people associate images with the visual sense only.
- People's experiences of mental imagery can be measured experimentally in several ways: via computer tasks (e.g., Image Generation Task, Mental Rotation Task); questionnaires (e.g., Spontaneous Use of Imagery Scale [SUIS; measuring everyday imagery use], Prospective Imagery Task [PIT; measuring ability to generate images about future events], Impact of Future Events Scale [IFES; measuring intrusive future-related imagery]; or interviews (e.g., Mental Imagery Interview [a largely qualitative tool]).
- Computerized imagery training packages are being developed to improve positive imagery for people with depression. This area is likely to evolve rapidly for assessing patients' use of imagery and developing training tools.

FOR STUDENTS AND EDUCATORS

- Cognitions can take the forms of verbal thoughts and mental images. Verbal thoughts consist of words and sentences—for example, in social anxiety, "They will notice me shaking." In contrast, a mental image is a sensory representation, so in social anxiety one might picture oneself from an observer's point of view shaking violently, and imagine the sounds of observers laughing.

- Experimental research has demonstrated that mental imagery has a greater impact on both negative and positive emotions than verbal thoughts.
- It is therefore important for both researchers and clinicians to continue to investigate the role of mental imagery in both clinical and nonclinical populations.

ACKNOWLEDGMENTS

Susie Hales was supported by a Wellcome Trust fellowship (WT088217) awarded to Emily A. Holmes. Simon E. Blackwell, Martina Di Simplicio, and Emily A. Holmes are supported by the Medical Research Council (United Kingdom) intramural programme (No. MC-A060-5PR50). Simon E. Blackwell and Emily A. Holmes were supported by a grant from the Lupina Foundation. Emily A. Holmes is supported by a Wellcome Trust Clinical Fellowship (No. WT088217) and the National Institute for Health Research (NIHR) Oxford Biomedical Research Centre based at Oxford University Hospitals National Health Service (NHS) Trust, Oxford University. Lalitha Iyadurai was supported by an NIHR Doctoral Research Fellowship (No. NIHR-DRF-2011-04-076). The views expressed are our own and not necessarily those of the NHS, the NIHR, or the Department of Health.

Thank you to our MAPP assistants Ian Clark, Aiysha Malik, and Sophie Wallace-Hadrill for their help with MAPP.

REFERENCES

Addis, D. R., Pan, L., Vu, M., Laiser, N., & Schacter, D. L. (2009). Constructive episodic simulation of the future and the past: Distinct subsystems of a core brain network mediate imagining and remembering. *Neuropsychologia, 47*, 2222–2238.

American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). Arlington, VA: Author.

Arntz, A. (2012). Imagery rescripting as a therapeutic technique: Review of clinical trials, basic studies, and research agenda. *Journal of Experimental Psychopathology, 3*, 121–126.

Beck, A. T. (1971). Cognitive patterns in dreams and day dreams. In J. H. Masserman (Ed.), *Dream dynamics: Science and psychoanalysis* (Vol. 19, pp. 2–7). New York: Grune & Stratton.

Beck, A. T., & Steer, R. A. (1993). *Beck Anxiety Inventory manual.* San Antonio, TX: Psychological Corporation.

Berna, C., Vincent, K., Moore, J., Tracey, I., Goodwin, G. M., & Holmes, E. A. (2011). Presence of mental imagery associated with chronic pelvic pain: A pilot study. *Pain Medicine, 12*(7), 1086–1093.

Blackwell, S. E., & Holmes, E. A. (2010). Modifying interpretation and imagination in clinical depression: A single case series using cognitive bias modification. *Applied Cognitive Psychology, 24*(3), 338–350.

Butler, G., & Mathews, A. (1983). Cognitive processes in anxiety. *Advances in Behaviour Research and Therapy, 5*(1), 51–62.

Clark, D. M., & Wells, A. (1995). A cognitive model of social phobia. In R. G. Heimberg, M. Liebowitz, D. Hope, & F. Schneier (Eds.), *Social phobia: Diagnosis, assessment, and treatment* (pp. 69–93). New York: Guilford Press.

Crisp, R. J., Birtel, M. D., & Meleady, R. (2011). Mental simulations of social thought and action: Trivial tasks or tools for transforming social policy? *Current Directions in Psychological Science, 20*(4), 261–264.

Cui, X., Jeter, C. B., Yang, D., Montague, P. R., & Eagleman, D. M. (2007). Vividness of mental imagery: Individual variability can be measured objectively. *Vision Research, 47*(4), 474–478.

Cummings, C., Olphin, T., & Law, M. (2007). Self-reported psychological states and physiological responses to types of motivational general imagery. *Journal of Sport and Exercise Psychology, 29*, 629–644.

D'Argembeau, A., Renaud, O., & Van der Linden, M. (2011). Frequency, characteristics, and functions of future-oriented thoughts in daily life. *Applied Cognitive Psychology, 25*(1), 96–103.

Day, S. J., Holmes, E. A., & Hackmann, A. (2004). Occurrence of imagery and its link with early memories in agoraphobia. *Memory, 12*(4), 416–427.

Deeprose, C., & Holmes, E. A. (2010). An exploration of prospective imagery: The Impact of Future Events Scale. *Behavioural and Cognitive Psychotherapy, 38*(2), 201–209.

Di Simplicio, M., McInerney, J. E., Goodwin, G. M., Attenburrow, M., & Holmes, E. A. (2012). Revealing the mind's eye: Bringing (mental) images into psychiatry. *American Journal of Psychiatry, 169*(12), 1245–1246.

Dror, I. E., & Kosslyn, S. M. (1994). Mental imagery and aging. *Psychology and Aging, 9*(1), 90–102.

Edwards, D. (2007). Restructuring implicational meaning through memory-based imagery: Some historical notes. *Journal of Behavior Therapy and Experimental Psychiatry, 38*(4), 306–316.

Ehlers, A., & Clark, D. M. (2000). A cognitive model of posttraumatic stress disorder. *Behaviour Research and Therapy, 38*(4), 319–345.

Engelhard, I. M., van den Hout, M. A., Janssen, W. C., & van der Beek, J. (2010). Eye movements reduce vividness and emotionality of "flashforwards." *Behaviour Research and Therapy, 48*(5), 442–447.

First, M. B., Spitzer, R. L., Gibbon, M., & Williams, J. B. W. (2002). *Structured Clinical Interview for DSM-IV-TR Axis I Disorders, Research Version, Patient Edition (SCID-I/P).* New York: Biometrics Research, New York State Psychiatric Institute.

Giesen-Bloo, J., van Dyck, R., Spinhoven, P., van Tilburg, W., Dirksen, C., van Asselt, T., et al. (2006). Outpatient psychotherapy for borderline personality disorder: A randomized clinical trial of schema-focused therapy versus transference-focused psychotherapy. *Archives of General Psychiatry, 63*(6), 649–658.

Goodman, W. K., Price, L. H., Rasmussen, S. A., Mazure, C., Fleischmann, R. L., Hill, C. L., et al. (1989). The Yale–Brown Obsessive Compulsive Scale:

I. Development, use and reliability. *Achives of General Psychiatry*, *46*(11), 1006–1011.

Hackmann, A., Bennett-Levy, J., & Holmes, E. A. (2011). *Oxford guide to imagery in cognitive therapy*. Oxford, UK: Oxford University Press.

Hagenaars, M. A., & Holmes, E. A. (2012). Mental imagery in psychopathology: Another step [Editorial for the special issue of *Journal of Experimental Psychopathology*]. *Journal of Experimental Psychopathology*, *3*(2), 121–126.

Hales, S. A., Deeprose, C., Goodwin, G. M., & Holmes, E. A. (2011). Cognitions in bipolar disorder versus unipolar depression: Imagining suicide. *Bipolar Disorders*, *13*(7–8), 651–661.

Holmes, E. A., Arntz, A., & Smucker, M. R. (2007). Imagery rescripting in cognitive-behavior therapy: Images, treatment techniques, and outcomes. *Journal of Behavior Therapy and Experimental Psychiatry*, *38*(4), 297–305.

Holmes, E. A., Coughtrey, A. E., & Connor, A. (2008). Looking at or through rose-tinted glasses?: Imagery perspective and positive mood. *Emotion*, *8*(6), 875–879.

Holmes, E. A., Crane, C., Fennell, M. J. V., & Williams, J. M. G. (2007). Imagery about suicide in depression—"Flash-forwards"? *Journal of Behavior Therapy and Experimental Psychiatry*, *38*(4), 423–434.

Holmes, E. A., Geddes, J. R., Colom, F., & Goodwin, G. M. (2008). Mental imagery as an emotional amplifier: Application to bipolar disorder. *Behaviour Research and Therapy*, *46*(12), 1251–1258.

Holmes, E. A., & Hackmann, A. (2004). Mental imagery and memory in psychopathology [Special issue]. *Memory*, *12*(4).

Holmes, E. A., James, E. L., Blackwell, S. E., & Hales, S. (2011). "They flash upon that inward eye." *The Psychologist*, *24*(5), 2–5.

Holmes, E. A., James, E. L., Coode-Bate, T., & Deeprose, C. (2009). Can playing the computer game "Tetris" reduce the build-up of flashbacks for trauma?: A proposal from cognitive science. *PLoS ONE*, *4*(1), e4153.

Holmes, E. A., Lang, T. J., Moulds, M. L., & Steele, A. M. (2008). Prospective and positive mental imagery deficits in dysphoria. *Behaviour Research and Therapy*, *46*(8), 976–981.

Holmes, E. A., Lang, T. J., & Shah, D. M. (2009). Developing interpretation bias modification as a "cognitive vaccine" for depressed mood—Imagining positive events makes you feel better than thinking about them verbally. *Journal of Abnormal Psychology*, *118*(1), 76–88.

Holmes, E. A., & Mathews, A. (2010). Mental imagery in emotion and emotional disorders. *Clinical Psychology Review*, *30*(3), 349–362.

Holmes, E. A., Mathews, A., Mackintosh, B., & Dalgleish, T. (2008). The causal effect of mental imagery on emotion assessed using picture–word cues. *Emotion*, *8*(3), 395–409.

Insel, T., Cuthbert, B., Garvey, M., Heinssen, R., Pine, D. S., Quinn, K., et al. (2010). Research Domain Criteria (RDoC): Toward a new classification framework for research on mental disorders. *American Journal of Psychiatry*, *167*, 748–751.

Jacob, G. A., Arendt, J., Kolley, L., Scheel, C. N., Bader, K., Lieb, K., et al. (2011). Comparison of different strategies to decrease negative affect and increase positive affect in women with borderline personality disorder. *Behaviour Research and Therapy, 49*, 68–73.

Kosslyn, S. M., Ganis, G., & Thompson, W. L. (2001). Neural foundations of imagery. *Nature Reviews Neuroscience, 2*(9), 635–642.

Krans, J. (2011). Introduction to the special issue: Intrusive imagery in psychopathology: New research findings, implications for theory and treatment, and future directions. *International Journal of Cognitive Therapy, 4*, 117–121.

Kupfer, D. J., & Regier, D. A. (2011). Neuroscience, clinical evidence, and the future of psychiatric classification in DSM-5. *American Journal of Psychiatry, 168*, 172–174.

Kuyken, W., Padesky, C. A., & Dudley, A. (2009). *Collaborative case conceptualization: Working effectively with clients in cognitive-behavioral therapy.* New York: Guilford Press.

Lang, P. J. (1979). A bio-informational theory of emotional imagery. *Psychophysiology, 16*(6), 495–512.

Lang, T. J., Blackwell, S. E., Harmer, C. J., Davison, P., & Holmes, E. A. (2012). Cognitive bias modification using mental imagery for depression: Developing a novel computerized intervention to change negative thinking styles. *European Journal of Personality, 26*(2), 145–157.

Morina, N., Deeprose, C., Pusowski, C., Schmid, M., & Holmes, E. A. (2011). Prospective mental imagery in patients with major depressive disorder or anxiety disorders. *Journal of Anxiety Disorders, 25*(8), 1032–1037.

Morris, S. E., & Cuthbert, B. N. (2012). Research domain criteria: Cognitive systems, neural circuits, and dimensions of behavior. *Dialogues in Clinical Neuroscience, 14*(1), 29–37.

Moulds, M. L., & Holmes, E. A. (2011). Intrusive imagery in psychopathology: A commentary. *International Journal of Cognitive Therapy, 4*(2), 197–207.

Narrow, W. E., & Kuhl, E. A. (2011). Dimensional approaches to psychiatric diagnosis in DSM-5. *Journal of Mental Health Policy and Economics, 14*(4), 197–200.

Neisser, U. (1967). *Cognitive psychology.* New York: Appleton-Century-Crofts.

Pearson, D. G., Deeprose, C., Wallace-Hadrill, S. M. A., Burnett Heyes, S., & Holmes, E. A. (2013). Assessing mental imagery in clinical psychology: A review of imagery measures and a guiding framework. *Clinical Psychology Review, 33*(1), 1–23.

Perlis, R. H., Ostacher, M. J., Miklowitz, D. J., Hay, A., Nierenberg, A. A., Thase, M. E., et al. (2010). Clinical features associated with poor pharmacologic adherence in bipolar disorder: Results from the STEP-BD study. *Journal of Clinical Psychiatry, 71*(3), 296–303.

Pictet, A., Coughtrey, A. E., Mathews, A., & Holmes, E. A. (2011). Fishing for happiness: The effects of positive imagery on interpretation bias and a behavioral task. *Behaviour Research and Therapy, 49*(12), 885–891.

Rachman, S., & de Silva, P. (1978). Abnormal and normal obsessions. *Behaviour Research and Therapy, 16*, 233–238.

Reisberg, D., Pearson, D. G., & Kosslyn, S. M. (2003). Intuitions and introspections about imagery: The role of imagery experience in shaping an investigator's theoretical views. *Applied Cognitive Psychology, 17*(2), 147–160.

Rude, S. S., Wenzlaff, R. M., Gibbs, B., Vane, J., & Whitney, T. (2002). Negative processing biases predict subsequent depressive symptoms. *Cognition and Emotion, 16*(3), 423–440.

Rush, J., Trivedi, M., Ibrahim, H., Carmody, T., Arnow, B., Klein, D., et al. (2003). The 16-item Quick Inventory of Depressive Symptomatology (QIDS), clinician rating (QIDS-C), and self-report (QIDS-SR): A psychometric evaluation in patients with chronic major depression. *Biological Psychiatry, 54*(5), 573–583.

Schacter, D. L., Addis, D. R., & Buckner, R. L. (2008). Episodic simulation of future events: Concepts, data, and applications. *Annals of the New York Academy of Sciences, 1124*, 39–60.

Shepard, R. N., & Cooper, L. A. (1982). *Mental images and their transformations*. Cambridge, MA: MIT Press.

Simon, N. M., Zalta, A. K., Otto, M. W., Ostacher, M. J., Fischmann, D., Chow, C. W., et al. (2007). The association of comorbid anxiety disorders with suicide attempts and suicidal ideation in outpatients with bipolar disorder. *Journal of Psychiatric Research, 41*, 225–264.

Stöber, J. (2000). Prospective cognitions in anxiety and depression: Replication and methodological extension. *Cognition and Emotion, 14*(5), 725–729.

Weiss, D. S., & Marmer, C. R. (1997). The Impact of Event Scale—Revised. In J. P. Wilson & T. M. Keane (Eds.), *Assessing psychological trauma and PTSD: A handbook for practitioners* (pp. 399–411). New York: Guilford Press.

Wheatley, J., Brewin, C. R., Patel, T., Hackmann, A., Wells, A., Fisher, P., et al. (2007). "I'll believe it when I can see it": Imagery rescripting of intrusive sensory memories in depression. *Journal of Behavior Therapy and Experimental Psychiatry, 38*(4), 371–385.