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False memories for suggestions: The impact of conceptual elaboration

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ABSTRACT

Relatively little attention has been paid to the potential role that reflecting on the meaning and implications of suggested events (i.e., conceptual elaboration) might play in promoting the creation of false memories. Two experiments assessed whether encouraging repeated conceptual elaboration, would, like perceptual elaboration, increase false memory for suggested events. Results showed that conceptual elaboration of suggested events more often resulted in high confidence false memories (Experiment 1) and false memories that were accompanied by the phenomenal experience of *remembering* them (Experiment 2) than did surface-level processing. Moreover, conceptual elaboration consistently led to higher rates of false memory than did perceptual elaboration. The false memory effects that resulted from conceptual elaboration were highly dependent on the organization of the postevent interview questions, such that conceptual elaboration only increased false memory beyond surface-level processing when participants evaluated both true and suggested information in relation to the same theme or dimension.

Introduction

Our memories for specific life events are influenced by the related events that follow them. We discuss event memories with others (Marsh, Tversky, & Hutson, 2005), reflect and ruminate about them, and sometimes reinterpret or reappraise them from a different perspective. These postevent experiences (both internal and external) have the potential to enhance memory, by, for example, preserving and reinforcing accurate elements of the original experience (see, e.g., Bergman and Roediger (1999), for a discussion). However, they also have the potential to contaminate memory with falsehoods and distortions. One well-studied example of memory errors caused by postevent experiences is the false memories that can result from suggestive forensic or therapeutic interviews. Many studies have documented that misleading suggestions provided by an interviewer can result in confidently held recollections of having witnessed fictitious items and even entire fictitious autobiographical events (see, e.g., Loftus (2003), Zaragoza, Belli, and Payment (2007), for recent reviews).

Although mere exposure to suggestive interviews can lead to false memory development, *reflectively elaborating* on misleading suggestions in ways that make the memories for suggested information more similar to memories of actually witnessed events can increase both the incidence and magnitude of the resulting false memory effects (e.g., Drivdahl, Zaragoza, & Learned, 2009; Zaragoza et al., 2007). By reflective elaboration we mean any post-perceptual cognitive processing that embellishes the representation in some way. Such reflective elaboration can occur during the initial encoding episode or at later points in time, when thinking about, reviewing (e.g., Lane, Mather, Villa, & Morita, 2001), or reevaluating a prior event.

Evidence that reflective elaboration can contribute to false memory development comes from research on the role

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of imagery as a catalyst to false memory creation. Many studies have shown that encouraging participants to imagine fictitious events can increase false memory development, even when the imagined events are rather bizarre (such as proposing marriage to a Pepsi machine, see, e.g., Seamon, Philbin, & Harrison, 2006; Thomas & Loftus, 2002). Moreover, *repeatedly* imagining how things might have happened can further increase false memory for fictitious events (see also, e.g., Goff & Roediger, 1998; Suengas & Johnson, 1988), and even for entire autobiographical events (e.g., Ceci, Crotteau Huffman, Smith, & Loftus, 1994; Hyman & Pentland, 1996; Loftus & Pickrell, 1995).

Control over exactly what participants imagine (and how) is somewhat limited in these studies, but in general, the focus is on encouraging percept-like images that contain sensory and spatio-temporal details. Instructions often include encouragement to imagine specific details (e.g., "include familiar places, people, and things in the imagined event", Garry, Manning, Loftus, & Sherman, 1996, p. 210), and both the language of the instructions (e.g., "picture the event", "you will answer some questions about your image", Garry et al., 1996, p. 210) and intermittent prompts (e.g., "...describe the image in detail...what the objects, people, and locations looked like", Hyman & Pentland, 1996, p. 106) often encourage focusing on sensory and spatio-temporal details in particular. The assumption, even if implicit, is that false memories for events are most likely to occur because of confusion about the source of percept-like qualities, such as perceptual and spatio-temporal details. Indeed, more direct evidence that mentally elaborating on the sensory/perceptual characteristics of suggested events increases false memories comes from studies that have asked participants questions specifically about the sensory/perceptual aspects of the suggested or imagined events rather than simply asking participants to imagine them more generally (see, e.g., Drivdahl & Zaragoza, 2001; Thomas, Bulevich, & Loftus, 2003; see also Lane & Zaragoza, 2007).

From the perspective of the source monitoring framework (SMF, Johnson, Hashtroudi, & Lindsay, 1993; Lindsay, 2008) the finding that visual imagery is a catalyst to false memory creation is perfectly understandable. According to the SMF, memory representations do not have labels or tags that specify their sources; rather, mental events are attributed to particular sources on the basis of their qualitative and quantitative characteristics. The more that the thoughts and images that come to mind have characteristics of an actually witnessed event, the more likely they are to be experienced as a memory of an actually-experienced event. Thus, imagining perceptual aspects of suggested events often promotes the development of false memories because such imagery induces participants to create a representation of the fictitious event that is rich in vivid sensory/perceptual and contextual details, characteristics that render it similar to, and hence confusable with, a memory for a "real" event (e.g., Johnson et al., 1993; Suengas & Johnson, 1988; see also, Johnson, Raye, Mitchell, and Ankudowich (in press), for a recent review and discussion of neuroimaging evidence). In addition, during reflection, perceptual details can be "borrowed" or "imported" from similar real events and become associated with the false event thereby making it seem more veridical (e.g., Henkel, Franklin, & Johnson, 2000; Lampinen, Meier, Arnal, & Leding, 2005; Lyle & Johnson, 2006). Of course, regardless of where the details originate, it is only when erroneous information is *taken as evidence of a real memory* that a source memory error occurs (Johnson & Raye, 2000; Johnson et al., 1993; Lindsay, 2008; Mitchell & Johnson, 2000).

Much less attention has been paid to the potential role that conceptual or evaluative reflective processes might have in false memory development in this context (although see Drivdahl et al. (2009), for an exception). However, imagining fictitious events involves more than simply creating a perceptually detailed representation. Imagining how a fictitious event might have transpired also likely involves more abstract sorts of reasoning about the meaning and implications of the fictitious event, and the creation of a plausible scenario that fits with other information in memory. This sort of meaningful elaborative processing may serve to establish stronger and more numerous connections between the suggested fictitious information and other related information in memory, and thereby promote the development of a false memory. In sum, it seems likely that false information that is well-embedded in a coherent network of true memories and knowledge is especially likely to be confused for "real" memories (Johnson, Foley, Suengas, & Raye, 1988). If this is the case, it is possible that reflectively elaborating on the meaning and implications of fictitious events might be an especially potent path to false memory.

The goal of the present study was to assess whether repeatedly elaborating on the meaning and implications of suggested events (hereafter referred to as *conceptual elaboration*), would, like repeated perceptual elaboration (e.g., Drivdahl & Zaragoza, 2001), increase false memory for having witnessed suggested fictitious events. To this end, a modification of the repeated eyewitness suggestibility paradigm was used in which participants were asked questions that encouraged either perceptual or conceptual elaboration of misleading suggestions (e.g., the suggestion that the thief had a gun, when in fact he had no weapon). Participants in a *Conceptual Elaboration Group* were asked questions that encouraged them to think about the meaning and implications of suggested events (e.g., they were asked how incriminating a jury would find it that the thief had a gun). Participants in a *Perceptual Elaboration Group* were asked questions that encouraged them to reflect on the visuo/spatial characteristics of the suggested item (e.g., Was the gun tucked in the front or back of the thief's jeans?). And, because previous studies have shown that false memory for suggested items increases as a function of number of exposures to the misleading suggestion even without prompts to elaborate (Mitchell & Zaragoza, 1996, 2001; Zaragoza & Mitchell, 1996), participants in a *No Elaboration Group* read the misleading suggestions but did not elaborate on them further. To minimize spontaneous perceptual and conceptual elaboration in this group, they answered follow-up questions that focused on superficial aspects of the misleading suggestion, such as its rhyming characteristics (e.g., what word in this sentence rhymes with "sun"). We note that our use of the terms "conceptual elaboration", "perceptual elaboration", and "no elaboration" does not