



Children's false memories: Easier to elicit for a negative than for a neutral event

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ABSTRACT

The present study examined the role of valence in the development of children's implanted false memories. Seventy-six 7-year-old children listened to two true and one false narrative. The false narrative was either neutral ("moving to another classroom") or emotional negative ("being accused by the teacher for copying off your neighbor"). In addition, half of the children were presented with their class photograph while listening to the narratives. During two interviews, children recalled as many details as possible from the true and false events. Results showed that the negative event elicited more false memories than the neutral event. The presentation of a true photograph did not promote the development of false memories.

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1. Introduction

There is an abundance of studies showing that it is relatively easy to elicit false memories, i.e., memories for events that were never experienced, in both adults and children (e.g., Loftus, 2004). Loftus and Pickrell (1995), for example, demonstrated that exposing participants to suggestive narratives promotes the development of false memories. In their study, adults listened to false narratives describing how they were lost in a shopping mall in their childhood. Next, they were instructed to recall everything they could remember about the event. After two interviews, 25% of the participants ($n = 6$) reported details about the never experienced event. More recently, Wade, Garry, Read, and Lindsay (2002) demonstrated the suggestive power of doctored photographs. In their study, adults were confronted with false photographs depicting themselves during a hot air balloon ride. Over three interviews, they were instructed to recall the event as detailed as possible. Fifty percent ($n = 10$) of the participants eventually concurred with the hot air balloon ride. Despite this straightforward finding, Lindsay, Hagen, Read, Wade, and Garry (2004) questioned the ecological validity of the doctored photograph paradigm. These authors argued that in real life, people rarely encounter doctored photographs. They do, however, look occasionally at true photographs. Some trauma-memory-oriented psychotherapists even use true photographs to help their clients to remember negative events that might have happened to them in their childhood (cf. Poole, Lind-

say, Memon, & Bull, 1995). To examine the effects of true photographs on the development of false memories, Lindsay et al. (2004) presented half of their adult participants with true class photographs that served as a memory cue (photograph condition). All participants were given a false narrative describing that they put "slime" (i.e., a brightly colored gelatinous compound used as a toy) in the teacher's desk when they were a child. Sixty-six percent of the participants ($n = 18$) in the photograph condition developed a false memory for the slime event as compared to 25% of the participants ($n = 5$) in the no-photograph condition. Lindsay et al. argued that three mechanisms might account for these findings. First, the presentation of the photograph may have strengthened the apparent authenticity of the suggestive narrative. Second, the photographs may have encouraged participants to speculate about the details of the false event. Third, the photograph might have triggered memories of perceptual details (e.g., the teacher's appearance) which then might have become mixed up with imaginative details of the false event.

Like Lindsay et al.'s study, subsequent studies relying on photographs to elicit false memories in adults and children have focused exclusively on the innocuous target events (see for an overview Garry & Gerrie, 2005). Thus, Wade et al. looked at false memories for a hot air balloon ride, whereas Strange, Sutherland, and Garry (2006) used "drinking a cup of tea with a member of the British royal family" as one of their target events. Legal cases, however, are often about negative events. Therefore, the question arises whether negative events might become the target of false memories as easy as more neutral events. Moreover, no false memory studies using true photographs have concentrated on negative and neutral target events.

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Also, studying the effect of true photographs on memories for negative events is of practical interest, since many trauma-oriented therapies use true photographs as a means to discuss mainly emotional negative events (Poole et al., 1995).

There are only a handful of studies that used the false narrative paradigm to examine whether the valence of false target events affects the development of false memories. These studies have come up with mixed findings. For example, Ceci, Loftus, Leichtman, and Bruck (1994) demonstrated that fewer children assented to a negative false event (“falling off a tricycle and getting stitches in the leg”) than to a false positive event (“taking a hot air balloon ride”). On the other hand, Hyman, Husband, and Billings (1995) found that adults who were exposed to false feedback information were equally likely to develop false memories for a negative event (“an overnight hospitalization”) and a positive event (“a birthday party with pizza and a clown”). In sum, few studies involving children looked at false memories for a more ecologically valid negative event.

The purpose of the present study was to examine the role that the valence of target events plays in the development of children’s false memories. We hypothesized that a negative target event would elicit more false memories than a neutral one. This expectation was based on the recent findings by Talmi and colleagues (2004, 2007) that negative emotional information is more highly associated and interrelated in memory than neutral information. Moreover, research suggests that the associative structures that underlie emotional information may be available earlier than neutral information during the development (e.g., Pollack & Kistler, 2002). Therefore, to the extent that false memories rely heavily on interconnected associative structures (for a review, see Gallo, 2006), we expected that a false narrative about a negative event would elicit more false memories than a false narrative about a neutral event. Our hypothesis that a negative target event would evoke more false memories than a neutral one is also based on the *paradoxical negative emotion hypothesis* (Porter, Bellhouse, McDougall, ten Brinke, & Wilson, Submitted for publication; Porter, Taylor, & ten Brinke, Submitted for publication). According to this hypothesis, negative information will be well recalled over time, but will also be more vulnerable for memory distortion over time than other information. This counterintuitive prediction could be explicated from an evolutionary perspective. That is, although negative events should be well remembered to avoid future dangers, it would be of adaptive value to include relevant information about negative events from other reliable sources (e.g., family, therapists, or researchers). Indeed, recent studies using misinformation and implantation paradigms suggest that negative information increases the susceptibility for false memory formation (e.g., Candel, 2006; Nourkova, Bernstein, & Loftus, 2004; Porter, Spencer, & Birt, 2003; Porter, Yuille, & Lehman, 1999). According to Porter and colleagues (Submitted for publication), the intense (negative) emotion associated with the negative information does not protect memory from false memory effects, but actually increases the likelihood for memory distortion. A subsidiary aim of the present study was to explore whether the presentation of a true photograph would have an effect on false memory rates. To test this, children were presented with either a neutral or a negative false narrative that was either accompanied with a true class photograph or not. Based on Lindsay et al. (2004), we expected that a true photograph would promote false memories for both negative and neutral target events.

2. Method

2.1. Participants

Seventy-six second grade children ($M = 7.62$ years, $SD = 0.59$; range 7–9) participated in this study. All children had parental con-

sent and received a small present in return for their participation. The study was approved by the standing ethical committee of the Faculty of Psychology, Maastricht University.

2.2. Materials

2.2.1. True narratives

Children’s first grade teachers provided written information about two moderately unique class events that happened to all children a year ago. Event descriptions had to contain information about what the event was, where it took place, and when it took place. These details were integrated in the true narratives. True narratives had a length of approximately three sentences. An example would be “Your teacher from the first grade, miss/mister (name of the teacher), told me that the entire class had to perform a musical. This happened in the summer.”

2.2.2. False narratives

Our two target events were selected from a pilot study. In that study, 54 children ($M = 8.93$ years, $SD = 2.14$; range 7–13) rated the plausibility and valence of 10 class events (e.g., “seeing the teacher faint”) on two different 7-point Smiley scales (anchors: ☹ = *implausible/negative*, ☺ = *plausible/positive*) with bigger Smileys indicating more plausible/more positive events. Specifically, children were asked how likely the events were to happen for them (i.e., personal plausibility; Scoboria, Mazzoni, Kirsch, & Relyea, 2004) and how pleasant the events were for them. Children crossed the smiley face that corresponded to their answers. Based on the valence ratings, we selected two events: a neutral event (i.e., “moving to another classroom”; $M = 4.28$, $SD = 2.24$) and a negative event (i.e., “being accused by the teacher for copying off your neighbor”; $M = 1.34$, $SD = 1.27$, $t(52) = -9.18$, $p < .001$, 1 missing value). These events did not differ in terms of plausibility ($M_{\text{neutral}} = 6.11$, $SD = 1.53$, $M_{\text{negative}} = 5.93$, $SD = 1.78$, $t(53) < 1$, n.s.). Furthermore, a randomly selected group of 18 children ($M = 9.44$, $SD = 2.12$, range 7–13) also had to provide script knowledge about the target events. That is, they were instructed to report the typical procedures of our target events. Script knowledge was assessed by using the number of idea units that children reported (Scoboria et al., 2004). For example, when a child reported that all belongings should be brought to the other classroom when the whole class has to move to another classroom, this counted as 1 idea unit. Script knowledge did not significantly differ between the two events ($M_{\text{neutral}} = 3.33$, $SD = 1.28$, $M_{\text{negative}} = 2.83$, $SD = 1.54$, $t(17) = 1.28$, n.s.).

The false narratives were complemented with self-relevant details of the name of the teacher and the grade in which the events allegedly happened. The following descriptions were used as the neutral and negative false narrative, respectively: “Your teacher from the first grade, miss/mister (name of the teacher), told me that your class suddenly had to move from one classroom to another. You had to take all your belongings with you to the other classroom” and “Your teacher from the first grade, miss/mister (name of the teacher), told me that he told you a year ago that you were copying off your neighbor. This shocked you very much, because you were not copying at all.” The teachers confirmed that the children had never experienced these events.

2.2.3. Photographs

Photographs were authentic class photographs from the first grade.

2.3. Design and procedure

The study employed a 2 (photograph: yes vs. no) \times 2 (valence: neutral vs. negative) between-subjects design. Children were ran-

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