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# Correcting socially introduced false memories: The effect of re-study☆

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ABSTRACT

This study examined whether participants could utilize re-study and perceptual elaboration to correct erroneous suggestions from their partner in the social contagion of memory paradigm. Participants studied household scenes and then collaboratively recalled the scenes with a confederate who interjected erroneous items. Before completing subsequent individual recall and recognition tests, participants were allowed to re-study the original items and/or to generate perceptual details of the items. Across two experiments, participants who re-studied the original material were less likely to incorporate the confederate's misleading suggestions. Re-study reduced false recall and recognition and increased veridical recall and recognition (Experiment 1) and the effect was especially pronounced with longer re-study episodes (Experiment 2). Items generated on the perceptual elaboration test offered no corrective benefit above and beyond the effects of re-study. These data demonstrate that participants can rely on self-initiated correction processes engaged during re-study to reduce socially suggested false memories.



## 1. Introduction

When remembering the past, individuals frequently remember with others and reminisce together. However, when other people make errors, individuals often incorporate those errors into their own memory reports (e.g., Allan & Gabbert, 2008; Bodner, Musch, & Azad, 2009; Davis & Meade, 2013; Gabbert, Memon, & Allan, 2003; Gabbert, Memon, Allan, & Wright, 2004; Gabbert, Memon, & Wright, 2006; Huff, Davis, & Meade, 2013; Skagerberg & Wright, 2009; Wright, Memon, Skagerberg, & Gabbert, 2009; Wright, Self, & Justice, 2000; see Rajaram, 2011 for a review). Of interest to the current study is whether or not individuals can correct erroneous information suggested by a partner. The current study examines the effects of re-study and perceptual elaboration on participants' ability to correct socially introduced false memories. Re-study is the chance to encode the same information twice (cf. Benjamin, 2001); perceptual elaboration occurs when individuals generate perceptual or sensory details of an event (Drivdahl & Zaragoza, 2001). If participants are able to re-study the original event, will they spontaneously correct their false memories, especially when the details generated on the perceptual elaboration test direct their attention to memory errors?

Re-study and perceptual elaboration are important phenomena relevant to real world situations. For example, students may re-study their class notes following a group study session that contained inaccurate suggestions, eyewitnesses may give their testimony and then later see surveillance footage of the crime, and siblings may re-watch a home video after reminiscing with each other about the event. Perceptual elaboration can occur in everyday conversations such as recounting an event to a friend and also in more structured settings, such as when eyewitnesses are encouraged to provide detailed accounts of an event.

The current study examines the effects of re-study and perceptual elaboration using the social contagion of memory paradigm (Roediger, Meade, & Bergman, 2001). In this paradigm, participants remember common household scenes with a confederate who introduces incorrect information (e.g., there was a toaster in the kitchen, when really there was no toaster). The typical finding is that the participants incorporate the confederate's erroneous suggestions into their own memory on subsequent individual recall and recognition tests. Much work has established that false memories in the social contagion and related memory conformity paradigms can be reduced or minimized. For example, explicitly warning participants that their partner was inaccurate reduces false memories (e.g., Echterhoff, Groll, & Hirst, 2007; Echterhoff, Hirst, & Hussy, 2005; Meade & Roediger, 2002; see Hirst & Echterhoff, 2012 for a review) as does telling participants that

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they saw the event for twice as long as their partner (Allan, Midjord, Martin, & Gabbert, 2012; cf. French, Garry, & Mori, 2011; Mori, 2007). In contrast to previous work that explicitly warns participants that their partner is incorrect, re-study requires participants to self initiate error correction.

Evidence from individual false memory paradigms suggests that participants spontaneously error correct during re-study episodes. Watson, McDermott, and Balota (2004) gave participants five study-test trials of the Deese Roediger McDermott (DRM) word lists shown to elicit false memory (Deese, 1959; Roediger & McDermott, 1995). Most important to the current study was the finding that even without warning, young adults used the re-study phase for self-initiated source monitoring to decrease false memories. Watson et al. concluded that re-study encourages participants to direct attention to perceptual dimensions of studied items in order to discriminate between true and false memories (see too related work by Benjamin, 2001).

Of interest to the current study is whether or not re-study also reduces false memory in the social contagion paradigm. While similar in many respects to individual false memory paradigms, the key difference is that in social memory paradigms, misleading information is introduced by an actual person. The presence of an actual confederate (relative to an implied social influence) does influence memory (e.g., Meade & Roediger, 2002). Further, effects obtained in individual false memory paradigms do not always translate to social false memory paradigms. For example, taking a test prior to receiving misinformation paradoxically increases false memory in individual false memory paradigms (e.g., Chan, Thomas, & Bulevich, 2009) while it decreases false memory in the social contagion paradigm (Huff et al., 2013). Further, older adults reliably demonstrate increased susceptibility to false memory in individual paradigms (cf., Roediger & McDaniel, 2007) while the age differences in social false memory paradigms are equivocal (e.g., Gabbert et al., 2003, 2004; Meade & Roediger, 2009; Ross, Spencer, Blatz, & Restorick, 2008). As argued by Weldon and Bellinger (1997), memory is not radically different in individual and social contexts, but there are factors such as group norms, social context, and the function of retelling that may uniquely influence memory in the presence of others.

Examining self-initiated error correction is especially interesting in the context of the social contagion paradigm because the person delivering misinformation is a confederate who is similar to the subject. Recent research suggests there are metacognitive assumptions that partners on a memory test are trying their best to produce accurate information (e.g., Harris, Paterson, & Kemp, 2008) and that this assumption is especially strong when the partners are similar to the participants (Davis & Meade, 2013). Jaeger, Lauris, Selmeczy, and Dobbins (2012) demonstrated that the metacognitive assumptions regarding partner accuracy are so strong that even when one's partner is unreliable 75% of the time, participants continue to view the unreliable partner as informative. Numbers, Meade, and Perga (2014) demonstrated that within the social contagion paradigm, participants incorporated suggestions from a confederate who was entirely inaccurate for the duration of the experiment (i.e., they said *nothing* correct). Numbers et al. (2014) argued that participants did not critically evaluate their partners' suggestions because they assumed that their partners were trying their best to report accurate information. Given these metacognitive assumptions of partner accuracy, it is important to determine whether or not the self-initiated error correction found with re-study in individual paradigms extends to social memory paradigms.

Further, the current study examines any effects of re-study in conjunction with perceptual elaboration. Perceptual elaboration typically increases the incidence of false recall because the generated characteristics may be misattributed to having occurred in the real world (Drivdahl & Zaragoza, 2001; Lane & Zaragoza, 2007; cf. Johnson, Hastroudi, & Lindsay, 1993). However, our interest in including perceptual elaboration in the current study of error correction is that perceptual elaboration elicits sensory details associated with objects in the study episode. One hypothesis is that during re-study, the sensory details generated during perceptual elaboration (e.g., the toaster was white, it was on the left hand side of the counter) will direct attention to the fact that there was no toaster. Such discrepancy detection should reduce false memory (cf. Tousignant, Hall, & Loftus, 1986).

The current experiments are theoretically motivated by the source monitoring framework (Johnson et al., 1993). According to source monitoring theory, participants attribute information to a particular source (where the item was learned) by comparing the memory characteristics associated with the item during encoding (e.g., cognitive operations or physical characteristics) to the memory characteristics typical of a particular source (e.g., presented items have physical characteristics). Participants rely on this matching process and they also set a decision criterion. Re-study could influence participants' matching/attribution process because re-study allows encoding of additional characteristics that could later help discriminate veridical from false items. Re-study could also influence participants' response criterion through awareness of possible mistakes or through realization of a discrepancy between their memory and the re-presented item. Perceptual elaboration should influence the matching process because the self-generated perceptual details share characteristics of perceived items. Perceptual elaboration on its own, then, should increase false memory because the perceptually elaborated items will be misattributed to having been perceived. However, perceptual elaboration, when combined with re-study, should reduce false memory because the generated details will direct attention to discrepancies and so influence participants' response criterion.

## 2. Experiment 1

### 2.1. Method

#### 2.1.1. Participants

Participants were 81 Montana State University undergraduates who participated for course credit. Nine participants were excluded from the analyses (because of suspicion, English language deficiencies, or experimenter error), leaving 72 participants in the final analyses.

#### 2.1.2. Design

This experiment consisted of a $2 \times 2 \times 2$ mixed model design. Contagion (contagion items or control items) was manipulated within-subjects. Perceptual Elaboration (elaboration or no elaboration) and Re-Study (re-study or no re-study) were both manipulated between-subjects. The primary dependent variables were false recall and false recognition of the contagion items and also veridical recall and recognition.

#### 2.1.3. Materials

Six slides of household scenes (toolbox, bathroom, kitchen, bedroom, closet and desk) created by Roediger et al. (2001) were used. Each scene contains an average of 23.8 items. Four items per scene were intentionally left out of the scenes and used as contagion items. Contagion items are false items suggested by the confederate and control items are the same items when not suggested by the confederate. All four contagion items were suggested for 3 of the 6 scenes and served as control items for the other 3 scenes. Contagion items were counterbalanced across scenes and were determined by pilot data (see Roediger et al., 2001).