



# The effects of conformity on recognition judgements for emotional stimuli

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## ABSTRACT

Exposure to another's account of a shared event can influence the content of an individual's memory report. We examine whether the emotionality of the to-be-remembered information influences the likelihood that socially encountered post-event information is accepted into memory. Participants were exposed to positive, negative or neutral emotional pictures. Subsequently, they had to discriminate these pictures from new pictures in a 'yes/no' recognition decision either before or subsequent to a confederate providing misinformation, accurate or no information. Post-event information influenced participants' responding in the recognition test. Effects were larger for participants viewing neutral items and persisted for these items on a subsequent private source monitoring test. These findings indicate that people rely more on information from others when encountering non-emotional compared to emotional items. We suggest that increased memory strength in conjunction with access to strong retrieval cues in the recognition test serves to shield emotional items from vulnerability to effects of memory conformity.

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## 1. Introduction

Memory for an event is generally acknowledged to be affected by the circumstances surrounding its encoding and retrieval. Two key factors identified as affecting the accuracy of eyewitness reports are exposure to socially encountered post-event information (e.g., from a fellow witness) and the emotional content of the event. However, as yet, little consideration has been given to how these factors interact. In the present experiment, participants' susceptibility to socially encountered post-event information for negative, positive and neutral emotional events was investigated.

Memory conformity has been found to arise when a witness is asked to recall or recognise information in the presence of another (e.g., Gabbert, Memon, & Wright, 2006; Meade & Roediger, 2002; Wright, Mathews, & Skagerberg, 2005; Wright, Self, & Justice, 2000). Several researchers have investigated memory conformity effects using a social recognition paradigm. For example, in a study by Wright et al. (2000; Experiment 1) two participants separately viewed pictures of cars and were subsequently asked to discriminate previously seen cars from new cars in a recognition test. Importantly, both participants were led to believe that they had studied the same set of cars, when in fact a small proportion of the cars were different. Thus, in some instances in the recognition test, a picture that was "old" for one participant was "new" to the

other. Both participants responded to each picture taking turns at responding first. In this way, when a participant responded second their co-respondent had previously exposed them to an accurate or inaccurate (misinformed) recognition judgement for that picture. When the participant responded first however, their recognition judgement could not be affected by the co-respondent's subsequent decision. In this case the co-respondent provided an accurate or inaccurate recognition judgement following the participants own recognition judgement to the picture. Participants' accuracy was clearly influenced by the information their co-respondent provided. Compared to judgements made prior to the co-respondents decision, participants' accuracy increased when the co-respondent had previously provided accurate information, but decreased when they were misinformed (see also Reysen, 2005; Schneider & Watkins, 1996; Wright et al., 2005).

Some researchers suggest that acceptance of misinformation largely depends upon the trace strength of the original memory representation (e.g., Brainerd & Reyna, 1988). By this account poorer memories are subject to greater effects of misinformation as participants are less likely to detect any discrepancy between the misinformation and their original memory (Tousignant, Hall, & Loftus, 1986). Consistent with this, several studies have shown that misinformation is more likely to be accepted when the quality of the memory is poor (e.g., Loftus, Levidow, & Duensing, 1992; Roediger, Meade, & Bergman, 2001; Tomes & Katz, 1997; although see Coxon & Valentine, 1997; Gabbert, Memon, Allan, & Wright, 2004). In a similar vein, Wright et al. (2005) have shown co-respondent responses to exert significantly larger effects on

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participants' recognition memory reports for new than old items, indicating that participants may be more susceptible to accepting information into their memory report about items for which they have no actual memory. Nevertheless, post-event information introduced by a co-respondent has been found to exert a powerful influence upon peoples' memory accounts. Wright et al. (2000) found that despite participants' initial memory reports being highly accurate, engaging in co-witness discussion resulted in the acceptance of particularly salient misinformation (i.e., the reported presence/absence of an accomplice). More recent work by Paterson and Kemp (2006) has found participants to be more likely to report post-event information when it is introduced via a co-witness than when the same information has been presented in the form of leading questions.

Let us now turn to the effects of emotion on memory. In general emotional items are reported to be better remembered than neutral items. A general benefit of emotion on memory has been found using both recall and recognition memory measures, although the benefit of emotion on recognition memory is not always robust (e.g., for a review see Kensinger & Schacter, 2008). Nevertheless, several studies have demonstrated that emotional content enhances recognition memory. For example, Kensinger, Garoff-Eaton, and Schacter (2006) have shown negative compared to neutral emotional content to enhance subsequent recognition of the specific visual details of an object as well as more generally the likelihood that some (if not all) aspects of the object will be remembered (see also Touryan, Marian, & Shimamura, 2007). Similarly, Ochsner (2000) found complex scenes of negative and positive valence tended to be better recognised in an old/new recognition test than scenes of neutral valence (see also Bradley, Greenwald, Petry, & Lang, 1992). These enhancements in memory are hypothesised to arise due to the facilitated processing of emotional items, via increased attentional or elaborative processing, or due to additional components associated with the emotional stimuli serving to increase their distinctiveness in memory (e.g., personal relevance and/or physiological responses; e.g., Dewhurst & Parry, 2000; Kensinger et al., 2006; Kern, Libkuman, Otani, & Holmes, 2005; Libkuman, Stabler, & Otani, 2004).

The picture however, is complicated by the fact that memory benefits are not robust for all aspects of an emotional event. In particular, memory for peripheral information associated with a negative emotional event may be impaired (e.g., Burke, Heuer, & Reisberg, 1992; Christianson & Loftus, 1991; Touryan et al., 2007). For example, Christianson and Loftus (1991) found participants viewing a slide depicting an emotional scene better recalled central details that related to the theme of the event than participants viewing a neutral event. However, compared to those in the neutral condition, participants viewing the emotional scene were worse at recalling details that were spatially peripheral to the event. Information peripheral to the emotional content of the event is often less well remembered. However, it seems that detriments in memory for peripheral information may be overcome when appropriate retrieval support allows better access to this information in memory. Christianson and Nilsson (1984) found participants to exhibit a detriment in the recall of peripheral information associated with an emotional scene (in this case verbal information) that was no longer apparent when memory was assessed using a recognition test (c.f. Christianson, 1992 for a review).

To date, studies investigating the effects of emotion on memory and suggestibility have focused upon recall memory. Paz-Alonso and Goodman (2008) found participants to incorporate false information from a misleading narrative into their memory for a highly negative event (a film of a vivid murder). In their study a two week delay between seeing the event and reading the narrative increased participants' suggestibility perhaps due to the delay

weakening the original memory trace for the event. Similarly, memories for well-known public tragedies have been found to be susceptible to contamination by false information introduced by an experimenter (e.g., Crombag, Wagenaar, & Van Koppen, 1996; Porter, Taylor, & ten Brinke, 2008). However, although these findings indicate that negative emotional events are prone to suggestive influences, they do not address the question of whether susceptibility to misinformation varies for emotional compared to non-emotional events.

Only one study has investigated the influence of post-event misinformation on recall memory for events differing in emotional valence. Porter, Spencer, and Birt (2003) compared susceptibility to misinformation for a negative, positive or neutral scene. Overall, they found no significant effects of emotional valence upon participants' susceptibility to misleading questions concerning details about specific aspects of the scene (i.e., information relating to people or vehicles in the scene). However, participants viewing a negative scene were *more likely* to recall seeing a major, but peripheral, false detail (e.g., the presence of an animal in the background of a scene). In the Porter et al. (2003) study, participants may have been more prone to accepting this type of false information into memory for negatively valenced than positive or neutral scenes as: (a) the false information was related to peripheral aspects of the event that were likely to be less well remembered than central aspects of the event for negative scenes; (b) participants did not already have an established memory trace for the suggested item; and (c) memory was tested via a recall test without support from strong retrieval cues.

In the present experiment we examine the influence of post-event information on memory for previously studied emotional and non-emotional scenes using an 'old/new' recognition paradigm. Recognition memory in this paradigm likely relies upon a global match between the to-be-recognised stimulus and a stored memory representation of an earlier encountered item. In addition strong retrieval cues are available. Additionally, post-event information in the present study was introduced by a confederate acting as a fellow participant in the recognition test (e.g., Wright et al., 2000). Previous studies have found effects of misinformation introduced by a co-witness on recognition judgements to face, car and word stimuli (e.g., Schneider & Watkins, 1996; Wright et al., 2000, 2005). However, no study has yet examined the influence of socially encountered post-event information when varying the emotionality of the to-be-recognised stimuli. Information introduced by a co-witness has been found to have a more powerful effect upon memory performance than post-event information introduced by other sources (e.g., in the form of misleading questions; Paterson & Kemp, 2006). Thus we expect an effect of misinformation to occur for emotional items as well as neutral items even when emotional items are well remembered and retrieval is well supported (i.e., via the presence of retrieval cues in a recognition test).

To allow comparison of our finding with previous studies that have examined the effects of socially encountered post-event information (i.e., Wright et al., 2000) and emotion (e.g., Ochsner, 2000) upon old/new recognition memory we use the  $d'$  sensitivity index from signal detection theory as our main measure of recognition accuracy. The  $d'$  index provides an index of participants' ability to accurately discriminate old from new items in the recognition test (Snodgrass & Corwin, 1988). Generally, we expect participants' to make less accurate responses in the recognition test (as evidenced by lower  $d'$  scores) when the confederate exposes them to misinformation compared to no information or accurate information. We expect this to be the case across both emotional and non-emotional stimuli. Nevertheless, we also expect that the effect of misinformation will be reduced for emotional compared to neutral stimuli. Emotional stimuli are likely to possess stronger

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