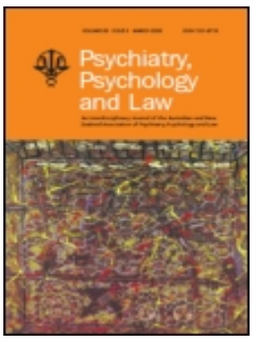

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Individual Differences in Susceptibility to False Memories for Neutral and Trauma-Related Words

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People with a known propensity towards false memories may be considered less credible eyewitnesses. It is therefore important to investigate individual factors related to susceptibility to false memory development. The Deese–Roediger–McDermott (DRM) procedure involves participants remembering lists of related words. The tendency to produce critical lures – words not originally presented, but strongly related to the studied words – is considered a measure of susceptibility to false memories. Participants completed the DRM using neutral and trauma-related words along with measures of dissociation, post-traumatic cognitions and the looming cognitive style. Analyses indicated that dissociation was related to false recall for traumatic stimuli; higher levels of post-traumatic cognitions were associated with a decrease in false recognition; and looming cognitive style was related to an increase in confabulations but a decrease in false recognition. The implications of this research are discussed.

Key words: cognitive biases; dissociation; DRM; false memories; looming cognitive style; post-traumatic stress.

Episodic memory is considered reconstructive in nature, with memory distortion a strong possibility (Smeets, Merckelbach, Horselenberg, & Jelicic, 2005). Foundational studies by Loftus and colleagues demonstrated that participants can be led to believe they witnessed events that never occurred (see Loftus, 2005, for a review). Consequently, a variety of techniques arose to investigate ''false memory'' phenomena. Research has typically focused on the role of experimentally manipulable variables in producing or decreasing false memories (e.g., McDermott & Watson, 2001; Paterson & Kemp, 2006). People with a known propensity towards false memories may be less credible eyewitnesses, necessitating research investigating individual differences in susceptibility to false recall (e.g., Peters, Smeets, Giesbrecht, Jelicic, & Merckelbach, 2007; Zhu et al., 2010).

One method of investigating false memories is the Deese–Roediger–McDermott (DRM; Deese, 1959; Roediger & McDermott, 1995) paradigm. It involves participants memorizing sets of word-lists (e.g., with words being semantically related such as bed, alarm, pillow . . .). When recalling these lists, participants often report a critical lure (CL) – a word not originally presented but strongly related to the studied words (e.g., sleep). Presented words can activate similar words in the mind automatically, creating confusion over whether words were viewed or imagined, known as a source-monitoring error

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(Johnson, Hashtroudi, & Lindsay, 1993). This paradigm has been found to elicit robust effects, with participants often confidently recalling and recognizing words never presented. Participants reporting a strong feeling of remembering viewing words never shown indicates that a false memory has occurred (see Gallo, 2010, for a recent review).

Considering the mixed findings in the literature concerning whether emotional stimuli enhance or impede recall (e.g., Dehon, Laroi, & Van der Linden, 2010; Gallo, Foster, & Johnson, 2009; Kensinger, O'Brien, Swanberg, Garoff-Eaton, & Schacter, 2007), and the fact that many court cases requiring eyewitness testimony are of unpleasant events, it is also important to investigate the role of negative, compared with neutral, stimuli (Dehon et al., 2010). Emotional stimuli (particularly negative) may evoke more memories of personal experiences, leading to greater encoding. This could increase the distinctiveness of the stimuli and therefore more accurate remembering occurs (Doerksen & Shimamura, 2001; Kensinger et al., 2007). One study, for example, found higher rates of true recognition for emotional over neutral material, but no differences in false-recognition rates between neutral and negative items (Budson et al., 2006).

However, others propose that false memories for negative word-lists can substantially exceed those of neutral lists. This is proposed to be due to negative stimuli being more semantically linked to each other, and an inability to suppress errors by using verbatim (surface, specific details) traces (as opposed to gist, semantic theme traces; Brainerd, Stein, Silveira, Rohenkohl, & Reyna, 2008). One study using neutral and negative word-lists in the DRM found that there was more false free recall for neutral over negative lists, but false recognition was higher for negative over neutral items (although the participants were children; Howe, 2007). By contrast, Dehon et al. (2010) in their DRM study found that emotionally valenced words were significantly more likely to be falsely remembered than neutral words, particularly for negative words.

The current study was designed to provide some insight into how individual differences influence susceptibility to false memories in the DRM procedure, using both neutral and negative stimuli. Two individual difference variables potentially involved in false memories are dissociation and cognitive biases. Both attributes may involve source-monitoring issues; as such, they may be important predictors of false memories.

Dissociation

Dissociation is a disruption in integrating functions of consciousness, memory, identity or perception (American Psychiatric Association, 2000). While dissociative experiences can happen during ordinary circumstances, they can also occur in response to a distressing event (Morgan et al., 2001), as a maladaptive way to avoid threat (McCaslin et al., 2008). Some authors, however, suggest that dissociation may not be an avoidance method, but related to faulty information processing and heightened distractibility (Giesbrecht, Lynn, Lilienfeld, & Merckelbach, 2008), or linked with other factors such as fantasy proneness and suggestibility (Merckelbach, Muris, Rassin, & Horselenberg, 2000).

People who dissociate frequently may be less confident in their recollections and more open to suggestion on how to fill those memory gaps (Eisen, Winograd, & Qin, 2002). This could lead to source-monitoring errors due to an inability to determine whether false information was introduced or actually experienced. Studies using the Dissociative Experiences Scale (DES; Bernstein & Putnam, 1986) to investigate false memory vulnerability have produced varied results. Some studies reported dissociation

related to increased false memories (e.g., Eisen, Morgan, & Mickes, 2002; Wright & Livingston-Raper, 2002); others found no significant association (e.g., Geraerts, Smeets, Jelicic, van Heerden, & Merckelbach, 2005; Winograd, Peluso, & Glover, 1998). Responding to criticisms that the DES produces floor effects in non-clinical populations, an alternative form was developed, the Dissociative Experiences Scale–Comparative (DES-C; Wright & Loftus, 1999). One study found a positive relationship between the DES-C and false recall (Dehon, Bastin, & Larøi, 2008), while another did not (Wright, Startup, & Mathews, 2005); however, both used neutral word-lists only. Given these mixed findings, combined with many studies investigating only neutral and not negative words in the DRM, it is necessary to investigate the DRM for neutral and trauma-related words, using the DES-C.

Schemas and Biases

Schemas are mental frameworks regarding specific concepts, considered to help organize information (Baron & Byrne, 2003). They influence attention, encoding and retrieval, which can create a tendency to distort information leading to persistent biases and stereotypes (Baron & Byrne, 2003). People may be more likely to take on false memories related to their biases (e.g., Wiseman, Greening, & Smith, 2003), due to an increased accessibility of these concepts and an inability to suppress them. This could lead to difficulties determining whether stimuli were imagined or viewed (i.e., problems in source-monitoring; Joormann, Teachman, & Gotlib, 2009).

Cognitive schemas surrounding traumatic events potentially serve to enhance or inhibit recovery from a trauma (Regehr, Hill, & Glancy, 2000), as well as increase susceptibility to false memories for such stimuli. Potentially problematic pre-trauma cognitive schemas include the self as incompetent to cope with threat, self-blame and viewing the world as dangerous (Foa, Ehlers, Clark, Tolin, & Orsillo, 1999). It is important to investigate the role of biases that may predispose people to interpret stimuli in detrimental ways which might lead to not only false memories, but also the development or continuance of some disorders. One DRM study found that, relative to controls, participants with post-traumatic stress disorder (PTSD) had a heightened susceptibility to trauma-related false memories, but showed similar levels of susceptibility for neutral items (Brennen, Dybdahl, & Kapidzic, 2007). As such, it is important to investigate in non-clinical populations the role of underlying vulnerabilities that may predispose people to interpret stimuli (both neutral and emotional) in unhealthy ways, which might lead to not only potential false memories, but also the development or continuance of a disorder.

A related cognitive bias towards threat is the looming cognitive style (LCS). The LCS concept involves exaggerated perceptions of the urgency and escalation of threat, focusing on two threatening themes: physical danger (e.g., the possibility of a car accident) and social danger (e.g., rejection by peers; Riskind, Williams, Gessner, Chrosniak, & Cortina, 2000). People with this bias often employ avoidance as a coping method (Elwood, Hahn, Olatunji, & Williams, 2009), which could prevent extensive processing of threatening material leading to source-monitoring errors. This could lead to an increase in false recall for threat stimuli. To date, only one study has investigated the relationship between LCS and memory using the DRM. This study revealed that participants with high LCS had a lower rate of false memories for threat (Consolla, 2006). The author suggested that participants may have been externally focused, looking for threat, and hence better noticed the presence or absence of particular words.

This warrants further investigation to clarify these results.

Cognitive Biases and Dissociation

Cognitive bias accounts and dissociative accounts of memory for traumatic events are somewhat contradictory. Dissociative theories suggest people are paying less attention (either through heightened distraction or purposeful avoidance) to stressful stimuli and therefore cannot properly process the event. Uncertainty over whether events were imagined or experienced (a source-monitoring error) in people who dissociate may lead to a susceptibility to false memories. Cognitive bias theories, however, suggest that people with particular schemas may pay more attention to the threatening parts of the event and interpret it in a more threatening way. This could invoke false memories due to source-monitoring errors from difficulty suppressing related concepts. It is also possible that people who dissociate have an initial subconscious hypervigilance to threat based on cognitive biases, and employ dissociation as a coping strategy (e.g., Dorahy, 2006; Ehlers & Clark, 2000).

Study Aims

This study aimed to investigate the relationship between the two individual difference areas (dissociation and cognitive biases) and false memories for neutral and trauma-related word-lists. It was expected that dissociation, post-traumatic cognitions and the LCS would be related to false recall and recognition, especially for the threatening CLs.

Method

Participants

Undergraduate psychology students ($N = 109$, 34 male) from the University of Sydney participated for credit. The mean age of the participants was 19.4 years ($SD = 1.7$; range 18–28). Participants were tested in groups of 2–12. Participation was voluntary and conducted following informed consent.

Materials

Dissociation

The DES-C (Cronbach's $\alpha = 0.947$) consists of 28 statements each with an 11-point response scale, with a rating of 0 indicating that an item is experienced "Much less than others", 5 indicating "About the same as others" and 10 indicating "Much more than others". Higher scores indicate more self-reported dissociative experiences.

Cognitive biases

The Post-Traumatic Cognitions Inventory (PTCI; Foa et al., 1999) consists of 36 items responded to on a 7-point Likert scale (1 = *Strongly Disagree*, 7 = *Strongly Agree*), with higher scores indicating a stronger endorsement of negative cognitions surrounding a personal event perceived as traumatic (Foa et al., 1999). The subscales in the PTCI are the self-as-incompetent subscale (Cronbach's α 0.953), the world is dangerous subscale (Cronbach's $\alpha = 0.909$) and the self-blame subscale (Cronbach's $\alpha = 0.814$).

The Looming Maladaptive Style Questionnaire–Revised (LMSQ-R; Riskind, 1997, Cronbach's $\alpha = 0.911$) consists of six scenarios (three physical threat and three social), with four questions per scenario. Responses were on a 5-point Likert scale (that changed depending on the question), with higher scores indicating a higher tendency to employ the LCS.

Other

Demographics such as age, gender and educational achievement (as measured by the Australian University Admissions Index)

were recorded. Several other questionnaires unrelated to the hypotheses were added to the battery, purely to help disguise the purpose of the study. These questionnaires included the Ten-Item Personality Measure (TIPI; Gosling, Rentfrow, & Swann, 2003), the Brief Fear of Negative Evaluation Scale (BFNE; Watson & Friend, 1969) and the Social Desirability Scale (SD; Crowne & Marlowe, 1960). In addition, variables thought to be related to hypotheses: the Tellegen Absorption Scale (TAS; Tellegen & Atkinson, 1974), the Beck Depression Inventory – II (BDI-II; Beck, Steer, Ball, & Ranieri, 1996) and the Beck Anxiety Inventory (BAI; Beck, Epstein, Brown, & Steer, 1988) were included. Owing to non-significant correlations with the dependent variables of interest, however, the scores on these scales were not considered further.

DRM

Twelve lists of ten words were generated, with six lists of trauma-related words (T; e.g., cut, assault, beaten; adapted from Brennen et al., 2007, English translation; and Moulds, 2002), and six neutral word-lists (N; e.g., shoe, hill, postman from Brennen et al., and Stadler, Roediger, & McDermott, 1999). Based on the standardized Affective Norms for English Words (ANEW) database (Bradley & Lang, 1999), the trauma CLs were significantly more negatively valenced than the neutral CLs ($t_3 = 5.033$, $p < .02$), but not significantly different regarding arousal ratings ($t_3 = 1.499$, $p > .05$). Display of lists was alternated (N, T, N, T, etc; see Appendix). Each word was projected individually onto a screen for two seconds.

Participants completed the free recall (FR) and recognition questionnaires via computer. Each FR list was scored for CLs (target word not shown) and confabulations (words not shown, not the target word). The recognition questionnaire included 72 words presented in pseudo-random order; 36 words were previously shown (termed ''studied words'', three were taken from each list, at serial position 1, 8 and 10, as in Brennen et al., 2007), 12 words were CLs (one for each list) and 24 were words never shown, not related to displayed words (termed ''non-studied''). Reporting of CLs was measured by the number of target words designated ''Old''.

Procedure

Participants were instructed to attend carefully to the lists shown, as after each list they were to recall the words (one minute per list). Following FR, the participants completed filler questionnaires and the recognition test. Finally, participants were given a manipulation check, and then debriefed. The length of the experiment was approximately 60 minutes.

Results

Analyses were based around two questions. First, were accurate and false memories related to the valence of the word-lists? Second, do dissociation and cognitive biases have an influence on memory or valence effects?

Three participants were excluded from analyses by scoring over three standard deviations above the mean on several measures (Osborne & Overbay, 2004); two were excluded for guessing the experiment purpose; and one participant provided incomplete data, however, their results were included for completed sections. Although only 31.2% of participants were male, gender was not found to be significantly related to any of the dependent variables (all $p > .05$).

Scales

Table 1 presents mean answer scores on the PTCI and LMSQ-R, and mean total scores on the DES-C.

Table 1. Descriptive statistics for PTCI subscales, LMSQ-R and dissociation (DES-C) scales.

	Mean	*SD*	Range	*N*
PTCI-Self	2.21	1.15	1.00–6.61	109
PTCI-World	3.41	1.56	1.00–6.63	109
PTCI-Blame	2.86	1.40	1.00–6.60	109
LMSQ-R	3.17	0.65	1.04–4.71	107
DES-C	36.93	14.20	11.04–69.48	109

Free recall data: accuracy

Participants correctly recalled an average of 82.79 (of 120; $SD = 9.61$) of the words studied. Participants recalled significantly fewer neutral ($M = 40.07$, of 60; SD 5.58) than traumatic words ($M = 42.72$, $SD = 5.54$; $t_{108} = 4.966$, $p < .001$). Overall accuracy scores, accuracy for neutral words and accuracy for trauma words were regressed on the DES-C, the PTCI subscales, and the LMSQ-R respectively, using linear multiple regression analysis. No model was found to be significant (all $p > .05$).

Free recall data: critical lures

On average, participants reported 1.05 CLs (of 12, $SD = 1.12$), with 63.3% of participants reporting at least one CL overall. Participants reported significantly more neutral ($M = 0.66$, $SD = 0.85$) than traumatic CLs ($M = 0.39$, $SD = 0.58$; $t_{108} = 3.109$, $p < .003$). The main contributor towards this difference was high reporting of one neutral CL. Excluding "letter", led to non-significant differences between neutral and traumatic CL recall ($t_{108} = 0.928$, $p > .05$). However, excluding this word list did not considerably change the results of further CL analyses, so results are reported with "letter" still included.

A simultaneous multiple linear regression was conducted for overall CL recall, with the variables DES-C, PTCI subscales and LMSQ-R included. The model was significant, explaining up to 11.4% of the variance in overall CL recall ($F_{5,106} = 2.592$, $p < .05$). The main contributing predictor to the model was the DES-C ($p < .05$). In addition, a regression was conducted for neutral CL recall, however it was not significant ($p > .05$). A regression for trauma lures explained up to 10.4% of the variance, and the model was significant ($F_{5,106} = 2.338$, $p < .05$). Again, the only significant predictor in the model was the DES-C ($t = 2.293$, $p < .03$).

Free recall data: confabulations

Participants on average made 1.42 confabulations overall ($SD = 1.42$), with an average of 0.65 confabulations for neutral word-lists ($SD = 0.87$) and 0.77 confabulations for trauma word lists ($SD = 1.00$), with no differences in confabulations for the two list types ($t_{108} = 0.972$, $p > .05$). Confabulation scores overall, as well as for neutral and trauma lists, were simultaneously regressed on the DES-C, the PTCI subscales and the LMSQ-R. Neither the overall nor the neutral confabulation regressions were significant, with no variable emerging as a significant predictor (all $p > .05$). For trauma list confabulations, although the model was not significant, both the PTCI-Self subscale, and the LMSQ-R emerged as significant predictors, with the PTCI-Self scale suggesting a negative association with confabulations ($t = -1.987$, $p = .050$), and the LMSQ-R suggesting a positive relationship with confabulations ($t = 2.001$, $p < .05$).

Recognition data: accuracy

Overall, participants identified on average 58.98 words (of 72) as being previously studied ($SD = 4.82$). Participants correctly identified a mean of 29.39 neutral words (of 36; $SD = 2.95$) and 29.59 trauma words ($SD = 2.65$). There were no differences in

accuracy for the two word list types ($t_{108} = 0.766$, $p > .05$). Overall accuracy scores, accuracy for neutral words and accuracy for trauma words were regressed on the DES-C, the PTCI subscales and the LMSQ-R, respectively, using linear multiple regression analysis. For overall accuracy, no model was significant; however, the PTCI-World subscale emerged as a significant predictor, with a negative association with accuracy ($t = -2.072$, $p < .05$). For neutral and trauma word list accuracy regressions, no models were significant, and no variable emerged as a significant predictor (all $p > .05$).

Recognition data: critical lures

On average, participants erroneously reported that 6.71 of the CLs had been studied previously (of 12; $SD = 3.12$), with an average of 3.22 ($SD = 1.91$) neutral CLs and 3.49 ($SD = 1.66$) traumatic CLs recognized as being "old". There were no differences in false recognition for the two word list types ($t_{108} = 1.591$, $p > .05$). Simultaneous multiple linear regressions were conducted for overall, neutral and trauma CL recognition respectively, with the variables DES-C, PTCI subscales and LMSQ-R. For both word-lists combined, the model was significant ($F_{5,106} = 2.512$, $p < .04$) , explaining 11.1% of the variance in overall CL recognition. Both the PTCI-Blame subscale and the LMSQ-R emerged as significant predictors ($t = -2.130$, $p < .04$; $t = -1.982$, $p = .050$ respectively), suggesting negative associations with these variables and CL recognition. For neutral CL recognition, the regression was not significant, with no significant predictors; this was also the case for trauma CL recognition (all $p > .05$).

Discussion

This study investigated the relationship between the two individual difference areas of interest (dissociation and cognitive biases) and false memories for neutral and traumatic word-lists. It was predicted that both dissociation and cognitive biases would be associated with higher false recall and recognition, especially for traumatic stimuli. Findings were mixed, with some hypotheses supported, while other results opposed predictions.

Although it was found that more trauma-related words were accurately recalled in comparison with neutral words for the FR task, this was not found to be the case for veridical recognition scores, with no significant differences observed. Overall, CL reporting appeared not overly high, with an average of 1 of 12 lures being recalled; however, over 60% of participants recalled at least one CL. Furthermore, the means observed are quite similar to those reported elsewhere using non-clinical populations (Dehon et al., 2008), so the task appears to have been successful in producing at least one false memory in a majority of participants.

In this study, it was found that the valence of the word-lists did not appear to be significantly related to increases *or* decreases in false memories, which is in line with the findings of Budson et al. (2006), but not others (Dehon et al., 2010). Although the variables of interest were largely not significantly related to accuracy scores for either word list type or in combination (with the exception of the PTCI-World subscale being related to lower overall accuracy scores for the recognition task), interesting results of this study are that the individual difference factors measured were differentially related to false memories, depending on the valence of the word-lists.

It was found that dissociation (as measured by the DES-C) was related to increased false recall of traumatic, but not neutral lures. Geraerts et al. (2005), by contrast, found non-significant correlations between the DES and neutral and trauma lures. These differences may be accounted

for by study differences, including the fact that Geraerts et al. tested only female participants, some of whom were assault victims, and the use of the DES instead of the non-clinical version DES-C. Dissociation was not found to be related to false recognition of CLs, however, which is consistent with the findings of Geraerts and colleagues. Dehon et al. (2008), however, did find dissociation to be significantly related to DRM memory errors for neutral words (although they did not test negative stimuli). Some accounts of dissociation suggest that it primarily involves a tendency towards distraction (Giesbrecht et al., 2008), or a lack of cognitive efficiency (Merckelbach et al., 2000). If dissociation is primarily a characteristic of distractibility then we might predict that measures of dissociation should be correlated with measures of false recall of both neutral and traumatic lures. This was not found to be the case in the present study.

A possible explanation regarding why dissociation was only related to false recall of trauma lures (and not neutral) invokes the concept of dissociation as an avoidance strategy employed to disengage from threatening information (Bremner, 2010). The activation-monitoring account (see McDermott & Watson, 2001) would suggest that strong associations between the list items and the CL result in the word being triggered, but then due to inadequate source-monitoring (perhaps due to attempts to avoid thinking about the negative stimuli) the participant is unable to realize that the lure was not part of the original list and subsequently reports the CL during the recall task. This finding has important implications regarding memory for a traumatic event. If highly dissociative people avoid threatening information, they may be more susceptible to the introduction of misinformation or develop pseudo-memories related to the avoided material due to a lack of proper source-monitoring. This could be problematic for recovery from trauma (Ehlers & Clark, 2000), and could also lead to errors in eyewitness testimony.

The LCS measure (the LMSQ-R) was not significantly related to false recall. This finding suggests the LCS is not a vulnerability factor for false recall for threatening stimuli. This finding is consistent with Consolla (2006), who found that participants who scored high on the LMSQ-R had fewer false memories for negative words than other participants. The LMSQ-R was a significant predictor of CL recognition overall, however it was a negative association, suggesting that people who employ the LCS reported fewer CLs as being previously studied. Interestingly, the LCS was significantly positively associated with confabulatory responding for trauma word-lists. It may still be the case that the LCS serves as a vulnerability to more extreme reactions to threatening events, but these people may be so vigilant in attending to the traumatic situation that they are less susceptible to false post-event information. However, they may still confabulate aspects of the event. As such, assessing the LCS prior to a traumatic event (similar to the prospective study employing the PTCI by Bryant & Guthrie, 2005) may prove useful.

The expectation that post-traumatic cognitions would be significantly related to an increase in false recall was not supported. Interestingly, however, the Self subscale of the PTCI was significantly negatively associated with confabulations for the trauma lists, and the blame subscale was found to be significantly negatively associated with overall CL recognition. Similarly to the LCS, it is possible that the threatening word-lists prompted people with these styles of negative appraisals to pay more attention to those words; however, it should be noted that the overall variable includes both neutral and trauma word-lists combined. Because the current study did not employ a clinical population, it is assumed most participants did not

have PTSD. However, the PTCI does ask questions regarding an event the participant found traumatic. Therefore, while biases towards threat may to some extent prevent false memory development for trauma material, this over-focus on negative concepts may prevent adequate recovery from a traumatic event (Regehr et al., 2000).

A surprising aspect of the experiment was the incongruent findings with the individual difference variables and the two false memory tasks. It was expected that if a variable was related to false memories, it would be for both free recall and recognition. However, dissociation only seemed to be related to false recall, and cognitive biases seem to be more related (although negatively) to recognition. One related study may help shed light on these findings. It was found that under divided attention conditions, participants experienced an increase in false recall, but a decrease in false recognition (Dewhurst, Barry, Swannell, Holmes, & Bathurst, 2007). The authors suggested that divided attention affects participants' response criterion (compensating for less attention by adopting a lower threshold for including a word) in the FR task; however, in the recognition task it prevents participants from generating associates of the words presented. In the FR task for the current study, participants are shown an entire list with the same theme and valence to recall immediately, however in the recognition task the words were presented after a delay and in a semi-random fashion. It is possible that the FR aspect allows more time to focus on a particular concept, and if that is a threatening one (e.g., rape) this may lead to attempts to avoid the stimuli by dissociation, and hence less attention. As dissociation has been suggested to be due to heightened distractibility, perhaps especially for threatening stimuli (Giesbrecht et al., 2008), this may also explain this result. For the recognition task, perhaps hypervigilance in the recognition task (or rumination during the FR task; see Joormann et al., 2009) in people with biases towards threat prevents participants from recognizing the CLs as old. Further research is required to expand on these findings.

The variance explained in the regressions was quite modest. It is therefore important to conduct further studies including other variables to gain a fuller picture of what makes an individual more or less susceptible to false memories. Some possibilities include suggestibility and cognitive failures, as these have been previously implicated (Giesbrecht et al., 2008). Future studies should also include diagnostic measures, including a trauma history, so that a more accurate picture of the relationship between vulnerability to dissociation, PTSD and other disorders, and false memory reporting can be determined. In addition, ratings were not taken which assessed whether participants actually found the trauma word-lists threatening. Nonetheless, there did appear to be differential effects depending on word list type. Future studies could address these factors, along with employing more ecologically valid procedures similar to a traumatic event, such as showing a stressful film and providing misinformation (e.g., Devilly, Varker, Hansen, & Gist, 2007).

In conclusion, the DRM task revealed that dissociation was significantly related to false recall for trauma-related words, but not neutral words or CL recognition. Particular pre-trauma schemas were significantly related to lower confabulations, and recognizing fewer CLs. The LCS was related to an increase in confabulations, but also negatively related to CL recognition. This study has revealed some important relationships, and has built on previous research suggesting that susceptibility to false memories may be related to cognitive biases and/or dissociative tendencies.

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Appendix

Neutral and Trauma-Related Word Lists for the DRM Task

Adapted from Brennen et al. (2007), Moulds (2002), and Stadeler, Roediger, and McDermott (1999).

Neutral List						
	Critical Lure					
	Wedding	School	Foot*	Music	Letter	Mountain*
Word List	Cake	Students	Shoe	Song	Postman	Hill
	Bride	Teacher	Hand	Singer	Mail	Valley
	Groom	Principal*	Toe	Melody	Envelope	Climb
	Best Man	Professor	Kick	Instruments	Send	Summit
	Bridesmaid	Class	Walk	Guitar	Write	Molehill
	Party	Classroom	Ankle	Opera	Mailbox	Peak
	Nuptial	Lesson	Arm	Sound*	Stamp	Glacier
	Celebrant*	Bell	Boot	Pop	Card*	Goat
	City Hall	Faculty	sock	Note	Telegram	Steep
	Ring	Academic*	Knee	Orchestra	Post-office*	Ski

*Words changed from Brennen et al. (2007).

Trauma List						
	Critical Lure					
	Blood	Tears	Funeral	Hurt*	Rape	Spider*
Word List	Red	Cry	Burial	Wounded	Humiliation	Web
	Warm	Burn	Procession	Bruised*	Abuse	Insect
	Clot*	Salty	Grave	Bullet	Sexual	Bug
	Thorn	Flowing	Black*	Injured	Women	Fright
	Fresh	Sob	Cemetery	Injury	Girls	Fly
	Running	Sweat	Priest	Suffer	Dishonour	Arachnid
	Gushing*	Joy	Church*	Harmed*	Torture	Crawl
	Cut	Eyes	Dead*	Weak	Force	Tarantula
	Sticky	Sadness	Prayer	Damaged*	Violation	Poison
	Knife	Bitter	Coffin	Beaten*	Assault*	Bite

*Words changed from Brennen et al. (2007).