When and why does abuse predict reduced autobiographical memory specificity?

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When and why does abuse predict reduced autobiographical memory specificity?

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Two studies were conducted to explore the conditions that elicit autobiographical memory problems in abuse victims and the mechanism that underlie them. In Study 1 older adolescents (n = 80) with and without self-reported abuse histories completed a modified version of the Autobiographical Memory Test (AMT-U); participants were given an unlimited amount of time to provide specific memories in response to cue words. Participants also completed measures of depression and post-traumatic stress disorder (PTSD), working memory, and attentional biases. This study found that abuse severity and PTSD symptoms were positively related to memory specificity on the AMT-U. In Study 2 older adolescents (n = 78) with and without self-reported abuse histories completed the traditional (timed) version of the AMT. Participants also completed measures of working memory, attentional biases, self-reported coping, and psychopathological symptoms (i.e., depression and PTSD). In this study the opposite relationship was observed, such that abuse severity was related to poorer memory specificity, but this relationship was explained by disengagement coping and PTSD symptoms. This work suggests that poor memory specificity may represent a form of avoidance, but the application of avoidant mechanisms depends on the remembering context.

Keywords: Memory specificity; Abuse; Post-traumatic stress; Avoidance; Autobiographical memory.

Whether trauma fundamentally alters autobiographical memory functioning is a long-standing controversy with theoretical, forensic, and clinical implications. The most consistent evidence for trauma-related memory difficulties comes from research on autobiographical memory specificity. In much of this work memory specificity is assessed with the Autobiographical Memory Test (AMT; Williams & Broadbent, 1986), in which participants are instructed to rapidly (i.e., within 1 minute) recollect specific personal experiences (i.e., a one-time event) in response to cue words. Numerous studies indicate that adults and adolescents with histories of childhood trauma, most often operationalised as child physical or sexual abuse, provide fewer specific memories and more “overgeneral” memories (i.e., memories that refer to event categories rather than specific episodes) on this task than controls (e.g., Dalgleish et al., 2007; de Decker, Hermans, Raes, & Eelen, 2003; Johnson, Greenhoot, Glisky, & McCloskey, 2005; Kuyken & Brewin, 1995), although a few studies have failed to replicate this pattern (Orbach, Lamb, Sternberg, Williams, & Dawud-Noursi, 2001; Peeters, Wessel, Merckelbach, & Vermeeren, 2002). Overgenerality has also been observed in adults and adolescents with trauma-related psychopathology including depression (see, e.g.,...
Williams et al., 2007, for a comprehensive review) and post-traumatic stress disorder (e.g., Dalgleish, Rolfe, Golden, Dunn, & Barnard, 2008; McNally, Lasko, Macklin, & Pitman, 1995; Moradi et al., 2008).

There are multiple explanations for reduced memory specificity in people with trauma histories. One hypothesis suggests that this pattern reflects general episodic memory impairment caused by stress-induced damage to the hippocampus, but both the neuroanatomical and behavioural evidence for this explanation are mixed (e.g., Bremner, 1999, 2005; de Decker et al., 2003; Howe, Cicchetti & Toth, 2006; Sapolsky, 1996). Another hypothesis focuses on executive function deficits caused by intrusive thoughts and efforts to avoid them. Executive function limitations presumably make specific recollections more difficult because a top-down or “generative” memory search depends on effortful processes, including holding the retrieval model/instructions and the result of the memory search in working memory, and inhibiting the retrieval of irrelevant, potentially interfering categorical information (Conway & Pleydell-Pearce, 2000; Kuyken & Brewin, 1994, 1995; Williams et al., 2007). Consistent with this argument, intrusive thoughts do predict overgenerality in trauma survivors (e.g., McNally et al., 1995; Park, Goodyer, & Teasdale, 2002), and overgenerality is related to reduced executive capacity (Williams, Chan, Crane, & Barnhofer, 2006; Williams & Dritschel, 1992; Winthorpe & Rabbitt, 1988; but see Williams & Broadbent, 1986; Williams & Scott, 1988) and errors of inhibition (Dalgleish et al., 2007) in non-trauma-exposed samples. Nevertheless the few studies that have tested this explanation in trauma victims have failed to show that general indices of executive function, such as working memory and semantic fluency, can completely account for trauma-related patterns on the AMT (de Decker et al., 2003; Wessel, Merckelbach, & Dekkers, 2002).

The most widely cited explanation for the lack of memory specificity observed in people with trauma histories is the affect regulation hypothesis (Williams et al., 2007), which suggests that overgenerality is a result of avoidant emotion regulation mechanisms adopted in response to prolonged negative life events. According to this model when memory retrieval begins to elicit negative event specific details, the search may be truncated at a generic event level so as to limit exposure to aversive details and emotions (Conway & Pleydell-Pearce, 2000). The reduction of negative affect reinforces the broad application of this strategy for memory searches. This functional avoidance of specific memory content may be exacerbated by several other conditions that are common in adults with trauma histories and/or depression, including executive capacity and control limitations, as well as rumination and elaborate negative self-representations.

One prediction from the affect regulation model is that individuals who tend respond to stress and negative emotion with avoidance should be especially likely to exhibit low specificity on the AMT, particularly when combined with a history of aversive experiences. Research on non-traumatised, non-depressed adults finds that individuals who retrieve fewer specific memories on the AMT report higher trait levels of thought suppression, avoidance, and repressive coping (Hermans, Defranc, Raes, Williams, & Eelen, 2005; Raes, Hermans, Williams, & Eelen, 2006; Wegner & Zanakos, 1994), although one study has found a link between thought suppression and more specific responses to negative memory prompts (Neufeind, Dritschel, Astell, & MacLeod, 2009). To date, however, no studies have looked at whether avoidant emotion regulation processes account for poor memory specificity in people with trauma histories. Furthermore, the affect regulation model conceptualises avoidance as a strategic coping process, but it is also possible that low specificity reflects a more automatic form of avoidance (e.g., desensitisation) in response to stressful information. Therefore a primary goal of this investigation was to test whether broader measures of avoidant tendencies, including both conscious and automatic disengagement from negative stimuli, can help explain trauma-related patterns of autobiographical memory specificity. We examined memory specificity and conscious and automatic avoidance of abuse-related stimuli in emerging adults with and without abuse histories. We expected that avoidant tendencies would predict lower memory specificity and may help account for trauma-related memory patterns.

It is also not clear in the extant literature whether poor memory specificity in abuse victims is attributable to trauma per se or trauma-related psychopathology. Several studies have found that trauma predicts overgeneral memory while controlling for depression (e.g., Henderson, Hargreaves, Gregory, & Williams, 2002; Johnson et al., 2005; Peeters et al., 2002), but no published
studies of the association between abuse and memory specificity have also measured PTSD, in spite of the fact that it too has been linked to poor specificity (e.g., McNally et al., 1995). In their recent analysis of the literature Moore and Zoellner (2007) argue that overgeneral memory is more consistently linked to psychopathology than to trauma exposure alone and that overgeneral memory in trauma victims is probably more directly attributable to trauma-related psychopathology. Indeed, it would be a logical extension of the affect regulation model to suggest that it is one’s psychological reaction to trauma, rather than the trauma per se, that precipitates abuse-related specificity impairments. Therefore in the current study we measure PTSD as well as depression, and we predict that autobiographical memory patterns will be more directly linked to PTSD than trauma exposure per se.

Another limitation of the existing literature is that the vast majority of studies documenting reduced specificity with trauma, PTSD, or depression have relied on the AMT paradigm. The AMT context creates a distinct remembering context because it requires participants to retrieve memories in response to cue words under a strict time limit (30 or 60 seconds). As a result, it is not clear whether the findings generalize to conditions (e.g., untimed conditions) that are more similar everyday remembering situations. In fact, some of the failures to replicate previous patterns came out of studies using alternative memory paradigms (e.g., Orbach et al., 2001). Further, trauma-related patterns of overgeneral memory are difficult to reconcile with demonstrations that in some contexts, such as tests of attention and learning, trauma victims show heightened processing of trauma-related information (e.g., McNally, Kaspi, Riemann, Zeitlin, 1990; Pollak, 2003). To examine the context specificity of trauma-related overgenerality in the current investigation, we conducted two studies that utilised two different time intervals for memory retrieval: an untimed AMT and the traditional timed AMT. Given that the truncation of a memory search is thought to be intensified by reduced processing resources, one prediction is that the reduced cognitive load of an untimed AMT might attenuate any trauma or psychopathology-related specificity problems that are typically observed in the timed task.

To summarise, the present investigation was designed to elucidate when and why abuse-related memory difficulties are observed in a sample of emerging adults with and without self-reported abuse histories. We conducted two studies to address three specific predictions: (a) avoidant emotion management tendencies will be related to reduced memory specificity and will account, at least in part, for abuse-related specificity patterns; (b) abuse-related reductions in memory specificity will be linked to post-traumatic symptoms as opposed to trauma exposure when both are included in predictive models; and (c) the associations between memory specificity, abuse, and psychological symptoms will vary across the two studies, such that the untimed AMT will diminish overgenerality patterns seen in the traditional timed AMT context.

STUDY 1

In Study 1 we looked at whether the frequently documented association between low memory specificity and abuse exposure was replicated in an untimed AMT task, a context that may more closely resemble a naturalistic recall setting. Participants with varying levels of exposure to intrafamilial or domestic partner abuse, including individuals with no such exposure, were given an unlimited time in which to retrieve a specific memory in response to each cue word and were encouraged to elaborate on each memory after it was retrieved. We examined whether memory specificity in this paradigm was related to abuse exposure and to PTSD, controlling for depressive symptoms. To evaluate whether conscious or automatic avoidance of trauma-related stimuli can help explain overgenerality in abuse victims, we assessed participants’ propensity to direct their attention to/from abuse-related stimuli, as compared to neutral stimuli, either consciously or unconsciously. We also included a measure of working memory (reading span), to account for the contributions of executive capacity to reduced memory specificity.

Method

Participants

The participants were 80 undergraduate students ($M_{\text{age}} = 19.29$ years, $SD = 1.06$ years) at a large state university. They were recruited based on their answers to several items included in a prescreening questionnaire administered to all introductory psychology students at the university.
The items of interest in this study were adapted from the Conflict and Tactics Scale (CTS; Straus, 1979), which asked about recent and childhood experiences with domestic violence, physical abuse, and sexual abuse and assault, as well as other potentially stressful life events (e.g., serious illness, death of a family member, trouble with the police, witnessing domestic violence). Using the responses to these items we recruited participants with and without self-reported abuse exposure. Participants with abuse exposure reported experiencing at least one of the following types of events: escalated childhood physical abuse (i.e., being kicked, punched, hit with an object, burned, or choked), childhood sexual abuse, recent domestic violence (by a romantic partner), or sexual assault. Participants with no abuse exposure were defined as those who reported no lifetime exposure to abuse in any form (i.e., childhood physical or sexual abuse, recent domestic violence, and sexual assault), and no other major stressors in the previous year.

The prescreening items were only used for the identification of potential participants in the two groups for recruitment purposes. We collected more detailed information on participants’ abuse histories, including their exposure to more moderate forms of physical family or romantic partner aggression (e.g., spanking by a parent, pushing by a romantic partner), on a demographic questionnaire at the end of our procedure (see below). One individual reported child abuse on the prescreening items, but did not report it on the demographic questionnaire and therefore was excluded from the sample.

**Materials and measures**

**Autobiographical memory test.** We elicited autobiographical memories using an adaptation of the Autobiographical Memory Test (AMT; Williams & Broadbent, 1986) in which we instructed participants to generate memories of specific personally experienced events in response to five positive, five negative, and five neutral cue words. The positive and negative cue words were drawn from Williams and Broadbent (1986), and the neutral words were drawn from the Durda and Buchanan Frequency Norms (2006), and they were matched for length and frequency. In the traditional AMT participants generate each memory under time constraints (either 30 or 60 seconds). Our modification of the AMT (what we will refer to as the AMT-U) involved giving participants an unlimited amount of time to retrieve and describe a memory in response to each cue. Once the participant generated a memory, the researcher prompted for more detail by asking, “Is there anything else you would like to tell me about that event?” All responses were audio-taped for later transcription and coding.

Memory specificity was coded using the widely used criteria for scoring AMT performance described by Williams (1992). Memories were coded as “specific” if they referred to an event that was personally experienced by the participant and lasted for less than 1 day. Memories received an “overgeneral” code if they were autobiographical but referred to an extended event or a category of events. Finally, the code of “no memory” was assigned when a response was not personal memory or was omitted altogether. For a few participants a small number of cue word prompts were missing due to experimenter error or recording equipment failure; therefore we calculated the proportions of specific and overgeneral memories out of the total number of cues provided (i.e., the total number of specific, overgeneral, and no memory responses). All of the transcripts, across both studies, were coded in the same pool. Two research assistants were each assigned half of the transcripts to code, and a third reliability coder coded 20% of each research assistants’ coding assignment in order to assess reliability. The overall kappa was .91.

About 8% of the participants’ responses received a no memory code, and the remaining responses were coded as specific or overgeneral (see Table 2 later). Because our code of “no memory” could actually represent very early truncation of the memory search, we focused our major analyses on the proportion of specific memories, consistent with a majority of other studies in this area (for a review see Moore & Zoellner, 2007). Nonetheless, similar patterns of results were found for the proportion of overgeneral memories.

**Cognitive attentional bias task (CABT).** This task was adapted from Boyer et al. (2006) and examines subliminal and supraliminal attentional disengagement from trauma-related cue words. The stimuli included a total of 64 word pairs that were presented in random order. Of these pairs, 32 (the Trauma-Neutral pairs) consisted of a trauma-related word (e.g., stab, rape) paired with a neutral, household-related word (e.g.,
floor, table) matched for both frequency and length. These Trauma-Neutral word pairs were the test items. To control for possible response bias, a set of 32 filler word pairs (the Neutral-Neutral pairs), which consisted of pairs of non-categorised neutral word matched on length, was also included.

For each trial a fixation cross appeared on the screen before the word pair was presented, the two words were then briefly presented with one above the fixation mark and one below, and then a dot probe appeared in the position of one of the two words. In the subliminal condition the word pairs were presented for 20 ms before being replaced by a pair of length-matched nonsensical letter strings of consonants (e.g., GTYHC-SHTQ) for the next 1230 ms, followed by the dot probe appearing in one location. The other half of the word pairs were presented supraliminally, with the word pairs presented for 1250 ms, followed by the dot probe appearing in one location. Whether a particular word pair was presented subliminally or supraliminally also varied randomly across individuals. For all trials participants were instructed to indicate whether the dot probe replaced the word above the fixation mark or below the fixation mark, and reaction times were recorded using E-prime. During the presentation of the trauma-neutral pairs, the location (i.e., upper or lower) of the trauma words varied randomly across trials. Furthermore, on some trials (the trauma-target trials), the trauma word was replaced by the dot whereas on other trials (the neutral-target trials) the neutral word was replaced.

Attentional bias scores were based only on the trials involving trauma-neutral pairs. Two scores were calculated for each participant, one for subliminally presented words and one for supraliminally presented words. These scores were calculated by subtracting the average response time for trauma-neutral trials where the trauma-related word was targeted from the average response time for trials in which the neutral word was targeted (e.g., RT\textsubscript{neutral targets} − RT\textsubscript{trauma targets}). A greater tendency towards avoiding trauma-related stimuli was indicated by longer response times for trauma-target trials and shorter response times for neutral-target trials. Therefore difference scores significantly greater than 0 reflect greater attentional bias towards trauma-related stimuli, difference scores below 0 reflect attentional bias away (i.e., disengagement) from such stimuli, and scores close to 0 reflect no attentional bias.

Following the completion of the attention task we asked all participants to recall as many of the presented words as possible. We used their recall performance to construct a measure of recall bias, calculated as the difference in recall performance for trauma-related words compared to neutral words. Preliminary analyses indicated that this variable was unrelated to any of the other variables of interest, thus it was excluded from the final analyses.

**Working memory task.** To provide an index of executive capacity we administered a widely used reading span task (Daneman & Carpenter, 1980). Sentences of increasing length are presented to the participant, and the participant must read each sentence aloud and remember the last word of each sentence in the order that s/he read them. A working memory, or reading span, score was calculated based on the highest sentence length level that was correctly remembered.

**Measure of depressive symptoms.** To measure participants’ depressive symptoms, the Center for Epidemiologic Studies Depression Scale (CES-D; Radloff, 1977) was used. Good validity has been observed on this scale when used with Caucasian, Hispanic, and African American adolescents and adults (Roberts, 1992; Roberts, Vernon, & Rhoades, 1989), and re-test reliability has been found to range from .51 to .67 in 2- through 8-week intervals (Comstock & Helsing, 1976; Radloff, 1977; Weissman, Shlomoskas, Pottenger, Prusoff, & Locke, 1977). An overall depressive symptom score was calculated as a continuous variable, with higher scores on the CES-D indicate higher levels of depressive symptoms.

**Measure of post-traumatic stress disorder.** The UCLA Adolescent PTSD Index (Rodriguez, Steinberg, & Pynoos, 1999) was used to assess post-traumatic stress disorder symptoms. This measure has good reliability and consistency (Ellis, Lhewa, Charney, & Cabral, 2006; Rodriguez, Steinberg, Saltzman, & Pynoos, 2001; Roussos et al., 2005). The questions ask participants to report on thoughts, behaviours, and experiences related to the four criteria required for a PTSD diagnoses (experiencing of a traumatic event, re-experiencing symptoms, avoidance symptoms, and increased arousal symptoms). The standard scoring procedures on this assessment yield a dichotomous score, indicating whether individuals do or
do not meet the criteria for PTSD. In Study 1, 28 individuals met the criteria for PTSD.

Demographic and background questionnaire. The Demographic and Background Questionnaire included questions about demographic information (e.g., participant’s birth date, gender, GPA) as well as questions about childhood experiences with physical punishment, physical abuse, and sexual abuse, and recent exposure to physical abuse, domestic violence by a romantic partner, and sexual assault. The participants were first asked to respond to a global question about whether they had ever been exposed to child physical or sexual abuse, and a second global question asking whether they had been exposed to any kind of recent physical or sexual abuse. These global questions were then followed by specific questions assessing types of abuse and aggression exposure based on the Conflict Tactics Scale (Straus, 1979).

For both recent and childhood abuse exposure a severity score, ranging from 0 to 6, was calculated for each participant based on the highest severity level of abuse or aggression reported. The abuse severity codes were calculated as follows: 0 = no self-reported exposure to any physical tactics or sexual abuse; 1 = self-report being pushed, grabbed, or shoved; 2 = self-report being slapped or spanked; 3 = self-report being hit with an object; 4 = self-report being kicked or punched; 5 = self-report being burned; and 6 = self-report being choked, threatened to be hurt or killed, or any type of sexual abuse or assault, where sexual assault included reports of being forced to touch another person’s genital area, or unwelcomed touching or penetration of the genital area (coding drawn from Conflict Tactics Scale, CTS; Straus, 1979). A summary of Study 1 participants’ reports of childhood exposure to family conflict and childhood abuse and recent exposure to family conflict, abuse and assault is presented, as a function of gender, in Table 1. Participants reported abuse-related experiences that covered the full range of severity scores; many of the participants with no exposure to escalated forms of abuse did report experiences with more moderate family aggression. Therefore, to capture the range of severity of participants’ exposure to recent and childhood family violence, we used the continuous severity scores (for childhood and recent abuse exposure) in all analyses. Because of gender differences in the forms of abuse experienced, the variable of gender was controlled for in all analyses.

Results

Descriptive analyses

The means and standard deviations of the variables of interest are presented in Table 2. As can be seen, a majority of the responses provided on the AMT-U were specific autobiographical memories, a little less than a third were overgeneral, and the remaining 8% were coded as no memory (not a personal memory or omission). The participants reported a wide range of depressive symptoms; not surprisingly given the association between depression and trauma exposure, 30 participants met the clinical cutoff.
(i.e., a score of 16 or higher) for potential depressive disorder (e.g., Barnes & Prosen, 1984; Mojarrad & Lennings, 2002). We were interested in whether participants, on average, demonstrated a tendency towards subliminal or supraliminal disengagement from trauma on the Cognitive Attentional Bias Task. However, neither the subliminal attentional bias score, $t(79) = -0.15, p = .88$, nor the supraliminal score, $t(79) = -0.10, p = .92$, was significantly different from zero, suggesting that, on average, participants did not differentially attend to the trauma versus neutral stimuli in either condition.

### Inferential analyses

Our inferential analyses addressed three main questions: (1) Does autobiographical memory specificity on the AMT-U differ as a function of abuse exposure? (2) Do post-traumatic or depressive symptoms explain abuse effects if they are observed? and (3) Do subliminal or supraliminal attentional biases predict memory specificity? A series of repeated measures general linear models (GLMs), with cue valence (positive, negative or neutral) as the repeated measure, were conducted to address these questions in a hierarchical fashion, each predicting the percentage of specific memories produced. We treated cue valence as a repeated or within-participants measure so that we could test whether the between-participants variables were predictive across cues, as indicated by main effects across cues, or varied by cue valence, as indicated by interactions between a predictor and cue valence.

Model 1 predicted memory specificity on positive, negative, and neutral cues from child abuse severity, recent abuse severity, and working memory scores, controlling for gender. In Model 2, to look at the contributions of psychopathology over and above the effects of abuse and working memory, we added the continuous measure of depressive symptoms and the dichotomous measure of PTSD to the predictors from Model 1. We looked for changes in the predictive values (e.g., in the standardised parameter estimates) of the abuse variables to indicate whether psychopathology helped explain abuse-related differences. Finally, in Model 3 we added the subliminal and supraliminal attentional biases scores to examine their relation to memory specificity, looking for reductions in the predictive values of the abuse and PTSD indicators to reveal whether attentional biases accounted for abuse-related specificity differences. In all models we initially tested interactions between recent and childhood abuse severity and between these two variables and the other predictors; however, none of the interactions involving the abuse severity scores was significant and they were therefore removed from the final models. Table 3 presents the standardised parameter estimates for each model.

**Model 1:** Predicting memory specificity from abuse severity. The repeated-measures analysis predicting the percentage of specific memories from child and recent abuse severity, working memory, and gender found an interaction between recent abuse severity and cue type, $F(2, 74) = 4.32, p = .02$, such that recent abuse severity was positively related to specific memory production in response to positive cues, $F(1, 75) = 5.31, p = .03$, and unrelated to specific memories for negative cues, $F(1, 75) = 0.24, p = .63$, and neutral cues, $F(1, 75) = 0.06, p = .81$. There was a significant main effect of gender, $F(1, 75) = 6.57, p = .01$; females produced more specific memories across cues than males. Finally, there was a main effect of working memory, $F(1, 75) = 5.82, p = .02$, indicating that working memory was positively related to memory specificity for all cue types. It is also worth noting that preliminary analyses revealed that the inclusion of working memory did not change the contributions of the other variables.
Model 2: Predicting specificity from abuse severity and psychopathology. In Model 2 we added PTSD and depressive symptoms to the predictors in Model 1. The analyses revealed a marginal main effect of PTSD, \( F(1, 73) = 3.21, p = .08 \), such that individuals who met the clinical cutoff for PTSD were more specific across cues than individuals without PTSD. All other results were similar to those observed with Model 1. Recent abuse severity interacted with cue type, \( F(2, 72) = 4.97, p = .01 \); recent abuse severity predicted greater memory specificity only in response to positive cues, \( F(1, 73) = 3.80, p = .06 \), although this effect did not quite reach significance. As in Model 1, female participants produced more specific memories across cues, \( F(1, 73) = 5.29, p = .02 \), and working memory was positively related to memory specificity across cues, \( F(1, 73) = 4.84, p = .03 \).

Model 3: Predicting specificity from abuse severity, psychopathology and attentional biases. Model 3 added subliminal and supraliminal attentional biases to the set of predictors included in Model 2, but neither measure was a significant predictor of memory specificity. The interaction between recent abuse severity and cue type remained significant, \( F(2, 70) = 4.53, p = .01 \), again with the univariate analyses indicating a marginal, positive association between recent abuse and specificity on positive cues, \( F(1, 73) = 5.29, p = .02 \), and working memory was positively related to memory specificity across cues, \( F(1, 73) = 4.84, p = .03 \).

Follow-up analysis of memory latency. Because previously observed trauma-related memory patterns were not observed when we used the AMT-U, we conducted a follow-up analysis to examine retrieval latency: perhaps individuals with abuse histories simply take longer to retrieve specific memories so that the untimed task masks previously observed group differences? Thus we calculated the amount of time that passed between the presentation of the cue word and the beginning of the participant’s memory responses. However, this analysis found that there were no abuse-related differences in retrieval latency.

Discussion

The results of Study 1 indicate that when we used the AMT-U to evaluate autobiographical memory specificity, we did not replicate previously observed patterns related to either abuse history or psychopathology. In fact the positive relationship between memory specificity and abuse severity that was observed in Study 1 is the opposite of what previous research would predict (e.g., Dalgleish et al., 2007; de Decker et al., 2003; Henderson et al., 2002; Kuyken & Brewin, 1995); this work has repeatedly found reduced memory specificity in the traditional (timed) AMT in individuals with trauma histories or trauma-related psychopathology. Of course, this increased specificity was limited to positive cues, and the reasons for this pattern are unclear. Most research and theory on this topic suggest that
reduced specificity in trauma victims applies across cues of different valence (see Williams et al., 2007 for a recent review); as Williams et al. (2007) suggest, even non-negative memory cues can trigger negative memory fragments, therefore the truncation of a memory search will only be a successful avoidance strategy if it is broadly applied. If the untimed condition eliminates the avoidance strategy, enhanced specificity to positive cues could possibly reflect other attempts at emotion regulation in this retrieval context.

More broadly, the fact that we did not replicate previous findings of reduced specificity in abuse victims using a non-traditional, untimed AMT suggests that the psychological context (e.g., a cognitively demanding task) created by a timed retrieval task may play a critical role in eliciting reduced memory specificity in samples with trauma histories or trauma-related psychopathology. Importantly, our follow-up analyses of the latency to retrieve specific memories also revealed no effects of abuse exposure; thus it does not seem to be the case that abuse-related overgenerality simply reflects slower retrieval of specific memories that was masked by our untimed procedures. Nevertheless, it is possible that the differences between our findings and those of previous studies are attributable to other factors such as sample characteristics; therefore we conducted a second study in which we replicated the sample recruitment methods and procedures from Study 1, except that we employed the traditional (timed) AMT rather than the untimed AMT, to determine whether we could replicate previous work by using the timed version.

We did find that working memory scores were a consistent predictor of poorer memory specificity regardless of the other variables included in the model. Thus individuals with fewer available processing resources were less successful in retrieving specific memories even when they had unlimited time to do so. Furthermore, the measure of attentional biases used as an index of disengagement coping in Study 1 was not fruitful in elucidating the factors that contribute to memory specificity. One obvious explanation is that low memory specificity, at least when elicited in the untimed AMT paradigm, does not actually reflect functional avoidance as proposed by the affect regulation model. An alternative explanation is that the attentional bias task and autobiographical memory specificity measure different types of avoidant responses. For instance, individuals who apply functional avoidance during memory retrieval may not necessarily apply avoidance during encoding. That said, our measure of recall bias from the CABT, which should capture retrieval biases, was also not systematically related to abuse exposure, psychopathology, or memory specificity. Another possibility is that the computerised task may not be a sensitive measure of avoidance of personally relevant stimuli. Thus in Study 2, to further explore the role of avoidance of or disengagement from negative stimuli in poor memory specificity on the traditional AMT, we included the computerised task of conscious and automatic attentional disengagement as well as a measure of self-reported coping strategies and responses to situations that involve personally experienced social stress.

STUDY 2

The goal of Study 2 was to determine whether abuse-related memory impairments would be observed when we used the traditional AMT, and if observed, whether they could be explained by post-traumatic symptoms and/or avoidant tendencies as measured by the CABT or self-reporting coping strategies. For this study we adopted an AMT procedure that has been used in previous research (McNally et al., 1995) in which the participants were given 60 seconds to retrieve specific memories in response to cue words. The participants were again college students with self-reported histories of abuse. Thus, except for the change to the AMT procedure and the addition of the coping questionnaire, all procedures were identical to those used in Study 1. We looked at the degree to which memory performance was related to the severity of abuse exposure, to symptoms of depression and post-traumatic stress, to measures of conscious and automatic avoidance of abuse-related stimuli, and to measures of self-reported avoidance, as indicated by self-reports of coping strategies and involuntary responses to stress.

Method

Participants

Participants were 78 college-aged individuals ($M_{age} = 19.01$, $SD = 1.24$), who were recruited in the same manner as described for Study 1.
types of abuse exposure reported by individuals in the abuse group (based on their responses to the demographic questionnaire) are summarised in Table 4. In this study no participants were excluded on the basis of discrepancies between responses to the prescreening items and the demographic questionnaire, but one participant in the original recruitment sample was excluded from the final sample for bringing a child with him/her to the data collection session.

**TABLE 4**

Participants in Study 2 reporting various forms of childhood and recent abuse, according to gender

<table>
<thead>
<tr>
<th>Type of abuse reported</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Childhood exposure to family aggression</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pushed/Grabbed/Shoved</td>
<td>14</td>
<td>9</td>
</tr>
<tr>
<td>Slapped/Spanked</td>
<td>38</td>
<td>27</td>
</tr>
<tr>
<td>Childhood exposure to physical abuse</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hit with an object</td>
<td>9</td>
<td>10</td>
</tr>
<tr>
<td>Kicked/Punched</td>
<td>7</td>
<td>2</td>
</tr>
<tr>
<td>Burned</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Choked</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>Threatened to hurt/kill you</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Childhood sexual abuse</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Touched you in a sexual way avoiding</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>genitals</td>
<td></td>
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</tr>
<tr>
<td>Touched you in a sexual way including</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>genitals</td>
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<td></td>
</tr>
<tr>
<td>Sexual intercourse</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Recent exposure to family aggression</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pushed/Grabbed/Shoved</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>Slapped/Spanked</td>
<td>7</td>
<td>3</td>
</tr>
<tr>
<td>Recent exposure to physical abuse</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hit with an object</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Kicked/Punched</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>Burned</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Choked</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Threatened to hurt/kill you</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Recent sexual abuse</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Touched you in a sexual way avoiding</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>genitals</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Touched you in a sexual way including</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>genitals</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sexual intercourse</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

All reported acts were directed at the participant.

Materials and measures

**Autobiographical memory task.** Participants’ autobiographical memories were elicited using the traditional timed AMT procedures, in which participants were given 60 seconds to provide each of their memories in response to 15 cue words. The cue words were the same as those used by McNally et al. (1995), consisting of five positive, five negative, and five neutral cues. A stopwatch was used to record the 60-second time periods. Responses were coded as specific, overgeneral, or no memory using the same procedures as in Study 1. Also as Study 1 we focused our analyses on the proportion of specific memories, calculated out of the total number of specific, overgeneral, and no memory codes. As a reminder, reliability was calculated across the entire sample (K = .91).

**Self-reported avoidance and coping.** To provide an additional measure of avoidant tendencies, participants completed the Social Stress version of the Responses to Stress Questionnaire (RSQ; Connor-Smith, Compas, Wadsworth, Thomsen, & Saltzman, 2000). This measure asks individuals to report on how they typically respond to stressful experiences involving interpersonal conflict, both in terms of their deliberate coping strategies and their involuntary responses (i.e., engagement with and disengagement from) to such stressors. Responses on this questionnaire yield scores on five dimensions of coping: primary control engagement coping (e.g., problem solving, emotional expression), secondary control engagement coping (e.g., positive thinking, acceptance), disengagement coping (e.g., avoidance, denial), involuntary engagement (intrusive thoughts, rumination), and involuntary disengagement (e.g., emotional numbing, inaction). The five scores are calculated as proportions of total responses on the RSQ.

**Additional measures.** The following tasks were identical to those used in the first study: (1) The Cognitive Attentional Bias Task, adapted from Boyer et al. (2006), (2) the Reading Span Task (Daneman & Carpenter, 1980), (3) the Center for Epidemiologic Studies Depression Scale (CES-D; Radloff, 1977), (4) the UCLA Adolescent PTSD Index (Rodriguez et al., 1999), and (5) the Demographic and Background Questionnaire. In Study 2, 36 participants met the criteria for PTSD.

Results

**Descriptive analyses.** The means and standard deviations for all variables of interest in Study 2 are provided in Table 2. Participants provided a higher percentage of specific memories in Study 2 than participants
in Study 1, $t(79) = 1.62, p = .04$. About one fifth of the responses provided were overgeneral, and as in Study 1 the remaining 8% were scored as no memory. Participants in Study 2 reported similar levels of depressive symptoms as participants in Study 1; 29 participants in Study 2 met the clinical cut-off for depressive disorder. As in Study 1, neither the subliminal attentional bias scores, $t(77) = -.32, p = .75$, nor the supraliminal attentional bias scores, $t(77) = .98, p = .33$, were significantly different from zero, indicating that participants did not demonstrate an overall tendency to consciously or subconsciously avoid the trauma stimuli on the computerised task. Finally the proportions of coping responses on the RSQ indicated an approximately equal distribution of the five forms of coping, although individuals reported somewhat higher rates of involuntary engagement relative to the other four coping categories.

Inferential analyses

The analyses of Study 2 addressed three main questions, parallel to those addressed in Study 1: (1) Does autobiographical memory specificity on the traditional AMT differ as a function of abuse severity? (2) Do depressive or post-traumatic symptoms help explain abuse effects if they are observed? (3) Do measures of avoidant tendencies, including attentional biases and self-reported coping strategies, help explain links between abuse exposure and memory specificity? As in Study 1 a series of repeated measures GLMs were hierarchically tested to address these questions, where all models predicted the percentage of specific memories provided, and cue valence was the repeated measure or within-participants variable. The first GLM (Model 1) tested whether child abuse severity, recent abuse severity, gender, and working memory predicted the percent of specific memories for positive, negative, and neutral cues. Model 2 added depressive symptoms and PTSD to the set of predictors and we looked for changes in the predictive value of abuse severity as evidence that psychopathology accounts for abuse-related effects.

Because of the large number of avoidance indices in Study 2 we tested their contributions in three different models. As in Study 1, in Model 3 we added the measures of conscious and automatic attentional bias and examined changes to the parameter estimates for abuse severity and PTSD. Model 4 similarly tested the contributions of the Responses to Stress (RSQ) scales of involuntary engagement and involuntary disengagement, in addition to the predictors from Model 2 (i.e., the abuse variables, psychopathology, working memory, and gender). Model 5 tested the addition of the voluntary coping responses of primary coping, secondary coping, and disengagement coping, to the set of predictors in Model 2. All models initially tested interactions with recent and childhood abuse severity, but none was significant and they were removed from the final models presented here. The standardised parameter estimates corresponding to each model are reported in Table 5.

**Model 1: Predicting specificity from abuse**

Model 1 revealed a marginally significant main effect of child abuse severity across cues, $F(1, 73) = 3.24, p = .08$, where greater abuse severity predicted poorer memory specificity across cues. There was also an interaction between working memory and cue type, $F(2, 72) = 2.89, p = .05$, such that working memory was positively related to memory specificity for positive cues, $F(1, 73) = 4.68, p = .03$, but was unrelated to responses on negative cues, $F(1, 73) = .40, p = .53$, and neutral cues, $F(1, 73) = .11, p = .74$ (see Table 5).

**Model 2: Predicting specificity from abuse and psychopathology.** When psychopathological symptoms were included in the model there was also a significant main effect of PTSD, $F(1, 71) = 4.25, p = .04$, where individuals whose self report of symptoms met the clinical cutoff for PTSD produced fewer specific memories than individuals without PTSD, across cues. With these variables in the model, moreover, the relation between child abuse severity and memory specificity was no longer observed, $F(1, 71) = 1.05, p = .31$. As in Model 1 there was a significant interaction between working memory and cue type, $F(2, 70) = 4.00, p = .02$; working memory was a positive predictor of memory specificity, but only in response to positive cues, $F(1, 71) = 7.41, p = .008$.

To more closely examine the role of particular PTSD symptoms we conducted a post-hoc exploratory analysis using the three subscales of the PTSD inventory, which measure the phenomena of re-experiencing, avoidance, and arousal. This exploratory analysis found a main effect of avoidance cues, $F(1, 69) = 5.79, p = .02$, $\beta = -.21$, indicating that greater avoidance was related to decreased specificity across cues. In
contrast, re-experiencing symptoms were positively related to specificity across cues, $F(1, 69) = 5.06, p = .03, \beta = .019$.

Model 3: Predicting specificity from abuse, psychopathology, and attentional biases. Similar to the results of Study 1, neither the subliminal attentional bias scores, $F(1, 69) = 1.24, p = .27$, nor the supraliminal attentional bias scores, $F(1, 69) = .05, p = .83$, were significantly related to memory specificity. The parameter estimates for the remaining variables changed very little in this model. The interaction between working memory and cue type remained significant, $F(2, 68) = 5.08, p = .01$, with working memory predicting specificity for positive cues only, $F(1, 69) = 9.10, p = .004$. As in the previous models, individuals with PTSD were less specific than individuals without PTSD, $F(1, 69) = 3.95, p = .05$, across all cue valences.

Models 4 and 5: Predicting specificity from abuse, psychopathology, and measures of self-reported coping. Model 4, which tested the effects of involuntary engagement and disengagement in addition to abuse severity and psychopathological symptoms, revealed that neither involuntary engagement nor involuntary disengagement was a significant predictor of memory specificity. The main effect of PTSD across cues was still significant, $F(1, 69) = 4.42, p = .04$, where individuals with PTSD exhibited poorer memory specificity across cues. Finally the interaction between working memory and cue type remained significant, $F(2, 68) = 4.44, p = .02$, with working memory predicting specificity for positive cues only, $F(1, 69) = 7.36, p = .008$.

Model 5, which tested the effects of primary, secondary, and disengagement coping, yielded a significant interaction between disengagement coping and cue type, $F(2, 67) = 3.05, p = .05$, where disengagement coping predicted less memory specificity for negative cues only, $F(1, 68) = 3.94, p = .05$. The predictive values of the other variables were comparable to those in Model 2, suggesting that disengagement coping did not account for any of the other effects. Both the interaction between working memory and cue type, $F(2, 67) = 5.09, p = .009$, and the main effect of PTSD, $F(1, 68) = 4.73, p = .03$, remained significant.

### Discussion

Using the traditional timed AMT we were able to replicate the finding of abuse history as a predictor of reduced memory specificity. However, when PTSD was included in the model and depressive symptoms were controlled for, we found that the effect of abuse history was no longer significant and PTSD emerged as the significant predictor of poorer specificity. Further, the exploratory analysis of the PTSD subscales proved to be additionally informative, as it was the avoidance subscale in particular that was related to poorer memory specificity. These patterns suggest that it is post-traumatic

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**TABLE 5**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Model 1 $\beta$</th>
<th>Model 2 $\beta$</th>
<th>Model 3 $\beta$</th>
<th>Model 4 $\beta$</th>
<th>Model 5 $\beta$</th>
</tr>
</thead>
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<tr>
<td>Child abuse severity</td>
<td>-.18 $^*$</td>
<td>-.12</td>
<td>-.12</td>
<td>-.13</td>
<td>-.12</td>
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<td>Recent abuse severity</td>
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<td>.11</td>
<td>.12</td>
<td>.11</td>
<td>.11</td>
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<tr>
<td>Gender ($0_{\text{male}}, 1_{\text{female}}$)</td>
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<td>.08</td>
<td>.03</td>
<td>.08</td>
<td>.04</td>
</tr>
<tr>
<td>Working memory</td>
<td>.19 $^*$ (pos cues)</td>
<td>.23 $^*$ (pos cues)</td>
<td>.26 $^*$ (pos cues)</td>
<td>.23 $^*$ (pos cues)</td>
<td>.24 $^*$ (pos cues)</td>
</tr>
<tr>
<td>Depressive symptoms</td>
<td>.13</td>
<td>.13</td>
<td>.05</td>
<td>.06</td>
<td>.06</td>
</tr>
<tr>
<td>PTSD (0, 1)</td>
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<tr>
<td>Subliminal attentional bias</td>
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<tr>
<td>Supraliminal attentional bias</td>
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<td></td>
<td></td>
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<tr>
<td>Self-reported involuntary</td>
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<td></td>
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<tr>
<td>engagement</td>
<td></td>
<td></td>
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<td></td>
<td></td>
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<tr>
<td>Self-reported involuntary</td>
<td></td>
<td>.11</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>disengagement</td>
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</tr>
<tr>
<td>Self-reported primary</td>
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<td>.06</td>
<td>.07</td>
<td></td>
<td>.04</td>
</tr>
<tr>
<td>coping</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-reported secondary</td>
<td></td>
<td></td>
<td>.03</td>
<td>.05</td>
<td>.08</td>
</tr>
<tr>
<td>coping</td>
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</tr>
<tr>
<td>Self-reported disengagement</td>
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<td></td>
<td>.23 $^*$ (neg cues)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>coping</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

**$^*$p ≤ .01, $^*$p ≤ .05, $^*$p ≤ .08. Working memory and disengagement coping interacted with cue valence, therefore standardized betas are shown only for those cue valences with significant effects.**
Symptoms, particularly avoidance symptoms, rather than trauma per se, that account for the poor memory specificity observed in trauma victims.

In contrast, re-experiencing symptoms were related to greater memory specificity in the exploratory analyses. On the one hand, this pattern makes sense given the conceptual overlap between re-experiencing and having highly specific memories. On the other hand, it appears to contradict previous findings showing that intrusive thoughts predict poorer specificity (e.g., McNally et al., 1995; Park et al., 2002; Wessel et al., 2002). Although we cannot offer a clear-cut explanation for this contrast, one reason could be that re-experiencing indices capture a broader range of phenomena than intrusion indices. For instance, the intrusion scale of the Impact of Events scale focuses on reactivation of the cognitive aspects of the remembered event (i.e., thoughts and emotions) whereas the re-experiencing scale of the PTSD index used in this study also includes visceral responding (e.g., heart racing, sweating). We also note that it would be inappropriate to draw firm conclusions about the findings involving the PTSD subscales given their exploratory post-hoc nature. More generally, the findings related to PTSD and its subdimensions highlight the fact that not all individuals respond to stressful or traumatic events in the same way, and that the nature of their responses may be an important consideration in examining links to memory and cognitive functioning.

As we found in Study 1, the computer-based assessment of attentional biases was unrelated to memory performance and therefore did not help elucidate the mechanisms that underlie trauma-related memory patterns. In contrast, the findings related to the self-reported coping measures do implicate the role of avoidance in memory specificity impairments. Specifically we found that participants who reported using more disengagement coping, such as avoidance and denial, to cope with stressful experiences involving interpersonal conflicts produced fewer specific memories on the AMT, particularly in response to negative cues. As in Study 1, working memory was consistently positively related to memory specificity across all models. Furthermore the effect of working memory did not interact with abuse history or PTSD, indicating that processing resources have a broad effect on memory specificity, which may compound the effects of any other variables. As a whole, the results of Study 2 reveal that poor specificity in the timed AMT is associated with several conditions, including low processing resources, a tendency to disengage from potentially stressful stimuli, and high levels of post-traumatic symptoms.

**GENERAL DISCUSSION**

Taken together, these studies support the argument that poor memory specificity in victims of abuse may represent avoidant post-traumatic reactions, but the results also indicate that the activation of these avoidant responses during personal remembering depends on the remembering context. Consistent with past work in this area, we replicated the finding that a history of abuse during childhood is related to impaired memory specificity, but this relationship was only observed in the timed AMT context (Study 2). In contrast, childhood abuse severity was unrelated to memory specificity in the untimed context (Study 1), and recent abuse severity actually predicted greater memory specificity, suggesting that overgeneral memory in people with abuse or trauma histories is a highly context-specific phenomenon. Furthermore, PTSD appears to mediate the relationship between abuse severity and reduced memory specificity in the timed-recall context, indicating that it is people’s psychological responses to trauma, rather than the trauma per se, that account for abuse-related memory specificity impairments. These effects, moreover, were observed across cue valence, suggesting that this response applies to the retrieval of all sorts of memories in the AMT context, not just the traumatic memories (see Williams et al., 2007).

The results reported here are consistent with Williams and colleagues’ (2007) proposal that reduced memory specificity in people with depression and/or trauma histories reflects a functional avoidance of distressing memory details; in our work both disengagement coping on the RSQ, as well as the avoidance PTSD subscale, were associated with less specificity in personal remembering. The finding that reduced memory specificity was predicted by disengagement coping, but not the self-report measures of involuntary engagement and disengagement, suggests that these avoidant processes are strategically applied, rather than the result of unconscious or automatic mechanisms such as desensitisation. Furthermore, the fact that abuse- and PTSD-related overgeneral memory depended on the
retrieval context suggests that reduced memory specificity on the AMT reflects avoidant processes that are applied during the retrieval of autobiographical memories but that may not extend to encoding processes. In other words, participants with abuse histories and PTSD had no particular difficulty recollecting specific memories in the untimed context, indicating that they do encode specific memories but under some conditions they are unable or unwilling to recollect them. This conclusion may be further bolstered by the fact that the CABT was unrelated to memory performance in the AMT. Specifically, differential attention to and encoding of trauma-related versus neutral information did not relate to AMT performance. Of course, it is also possible that the CABT does not provide a sensitive enough measure of avoidance of personally relevant stimuli, but robust relationships between self-reported avoidance and coping on the RSQ and performance on the CABT have been demonstrated in prior investigations (e.g., Glinder, Beckjord, Kaiser, & Compas, 2007).

The fact that working memory was positively related to memory specificity across both AMT contexts suggests that the retrieval of specific memories in these paradigms is effortful and depends on sufficient executive function or processing resources (Dalglish et al., 2007; Williams et al., 2007). For instance, participants with more working memory capacity might have been better able to maintain the task instructions and the results of their memory searches in mind than those with lower capacity. Working memory, however, indexes only one component of executive function, and some recent work suggests that the central difficulty in overgeneral memory is the failure to inhibit irrelevant, categorical information, which increases the likelihood of “capture” at the general event level (Dalglish et al., 2007; Neshat-Doost, Dalglish, & Golden, 2008). Future studies examining a battery of executive function tasks could help to more precisely specify the cognitive mechanisms involved in overgeneral memory.

Working memory did not interact with abuse history or psychopathology, and the inclusion of working memory did not affect the predictive values of any of the other predictors in our models. Thus our results do not suggest that abuse- and PTSD-related memory patterns can be entirely explained by resource limitations. Rather, our findings suggest that the tendency to recollect specific personal memories when prompted is influenced by a range of factors, including basic cognitive abilities as well as avoidant tendencies, psychological symptoms, and retrieval context. It is not clear why the effect of working memory in Study 2 was limited to positive cues, but one possibility is that the negative and neutral cues used in Study 2 led to more involuntary, direct retrieval of specific memories than the positive cues. Because spontaneous retrieval is presumably less resource demanding than generative retrieval, conditions that increase the likelihood of spontaneous retrieval should attenuate the role of executive capacity (see Williams et al., 2007).

So what is it about the timed recall context that elicits reduced specificity in abuse victims? Perhaps strategic attempts to avoid specific details of the past can only be held together in a context that does not prompt deep thinking or autobiographical reflection. The untimed context, coupled with the request for participants to expand on their memories, might have encouraged participants to override their tendency towards an avoidant retrieval approach. A related explanation is that people with abuse histories and post-traumatic symptoms may only select avoidant remembering strategies when participating in a highly cognitively demanding task, like the timed AMT. Indeed, it is well established that both children and adults make strategy choices in other cognitive tasks according to the costs and benefits of the strategy in a particular context (e.g., Siegler, 2007). Thus the challenge or stress presented by the timed context may exacerbate the tendency to apply functional avoidance in the AMT. This explanation is also consistent with the finding that overgenerality is especially likely to be observed in combination with other facets of task difficulty, such as low-imageable cues and reduced executive capacity (e.g., Williams et al., 2006). Alternatively, poor specificity in the traditional AMT in individuals with abuse histories may reflect task neglect due to reduced executive control in abused persons, such that participants may have difficulty maintaining the instructions to recall specific events in memory, as has been shown in samples of individuals without trauma histories (Engle, Tuholski, Laughlin, & Conway, 1999). In contrast to the timed context, our untimed context provided prompts throughout the procedure, which may have served to re-instate the instruction set in participants’ memories, thus compensating for abuse-related differences in task neglect. Nevertheless, the fact that abuse
history and PTSD predicted poor memory specificity in the timed task even with a measure of working memory in the model argues against the explanation that inability to maintain task instructions is the sole explanation for the poor memory specificity observed in trauma victims.

Regardless of the mechanisms that underlie the context-dependent effects of memory specificity, these studies raise important questions about the generalisability of findings of impaired specificity in persons with abuse histories, and the remembering contexts that elicit avoidant responses in memory. Our illustration that the pattern of overgeneral memory in trauma victims may be highly context-specific suggests a possible resolution to some of the inconsistencies in the literature on memory and cognitive function in trauma victims. Specifically, the patterns observed in our two studies suggest that whether individuals with abuse histories and/or PTSD under-focus or over-focus on trauma-related information may depend on the context. Previous work documenting autobiographical memory problems in abuse and trauma victims has relied almost exclusively on the traditional, timed AMT, and the fact that simply removing the time limit reversed the effects challenges the notion of generality of these particular memory patterns. It is also worth noting that the untimed context, in which no abuse- or PTSD-related specificity problems were observed, may more closely resemble everyday remembering contexts than the traditional AMT. Additional work is needed to further elucidate the characteristics of recall contexts in which reduced memory specificity is observed, and when and why individuals with a history of trauma attempt to avoid the details of their past.

In conclusion, these findings of this investigation suggest that autobiographical memory functioning may not be fundamentally altered by traumatic experiences; individuals with abuse histories do have specific memories, and under some conditions they can retrieve and report them. But the specificity of people’s memories for their past may be jointly explained by their history of exposure to stressful events combined with avoidant post-traumatic reactions, as well as the constraints of the context in which they are asked to remember. Important questions remain, however, regarding the origins of avoidant strategies in remembering, and the experiences that reinforce the application of these disengagement mechanisms. The affect regulation hypothesis (Williams et al., 2007) argues that avoidant strategies are adopted to regulate negative emotion, but whether specific memories actually are more distressing than general memories has yet to be directly tested. Furthermore, although adults may initially benefit from the application of avoidant strategies, the literature suggests that such benefits are short-lived, and that the chronic employment of overgeneral recall is associated with a range of negative outcomes over time (e.g., Williams et al., 2007). Therefore future work should examine the developmental processes that give rise to avoidant processes in personal remembering, as well as their immediate and long-term implications for well-being. Our findings also have broader implications for models of trauma, calling attention to the fact that the consequences of trauma exposure depend in part on individual differences in post-traumatic reactions, as well as the context in which the consequences are being evaluated.

REFERENCES


