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Overgeneral memory and suppression of trauma memories in post-traumatic stress disorder

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The study investigated the relationship between the suppression of trauma memories and overgeneral memory in 42 assault survivors with and without PTSD. Overgeneral memory (OGM) was assessed with a standard autobiographical memory test (AMT). Participants completed two further AMTs under the instructions to either suppress or not suppress assault memories, in counterbalanced order. Participants with PTSD retrieved fewer and more general memories when following the suppression instruction than participants without PTSD, but not under the control instruction. OGM correlated with PTSD symptom severity, and measures of cognitive avoidance. The results are discussed with reference to current theories of overgeneral memory and its possible relationship with PTSD

Overgeneral memory was first observed in suicidal and depressed individuals (Williams & Broadbent, 1986). These individuals show difficulties in retrieving specific autobiographical memories in response to cue words, and tend to reply with abstract or general memories (for an overview see Healy & Williams, 1999). For example, instead of retrieving a specific event to the cue *happy*, such as "*Visiting my brother last Sunday*", they may retrieve a memory of a category of events such as "*Always when I visit my brother*". This overgeneral memory (OGM) bias has also been found in people with a history of trauma (e.g., Dalgleish et al., 2003; De Decker, Hermans, Raes, & Eelen, 2003; Hermans et al., 2004; Kuyken & Brewin, 1995), and in trauma survivors with acute stress disorder or post-traumatic stress disorder (PTSD) (e.g., Harvey, Bryant, & Dang, 1998; McNally, Lasko, Macklin, & Pitman, 1995; McNally, Litz, Prassas, Shin, & Weathers, 1994). In contrast, patients with other anxiety disorders do not show OGM (e.g., Burke & Matthews, 1992; Wenzel, Jackson, Brendle, & Pinna, 2003; Wessel, Meeren, Peeters, Arntz, & Merckelbach, 2001; Wilhelm, McNally, Baer, & Florin, 1997).

This pattern of findings has led to the hypothesis that OGM may be a reaction to aversive life

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events in that individuals seek to avoid unpleasant memories of such events (*avoidance* or *affect regulation hypothesis*). Williams and colleagues (Healy & Williams, 1999) proposed that OGM is due to disrupted autobiographical memory retrieval. Autobiographical memory is thought to be organised hierarchically, and an intentional search for a specific episode in memory is thought to follow a top-down process (see also Conway & Pleydell-Pearce, 2000). If the end product of this search is a very distressing event, the individual may be motivated to stop the search prematurely at an abstract level. In the long term, repeated premature abortion of the search for specific autobiographical memories may result in an overgeneral retrieval style. A study by Raes et al. (Raes, Hermans, De Decker, Eelen, & Williams, 2003) found preliminary support for the avoidance/affect-regulation hypothesis. Participants who showed a stable tendency to retrieve few specific memories in an autobiographical memory test were less susceptible to negative mood following a frustrating task. Raes et al. (2003) argued that OGM may have immediate benefits for mood regulation but also have negative long-term side effects, such as impaired problem-solving abilities (Dritschel, Kogan, Burton, Burton, & Goddard, 1998). Watkins (Watkins & Teasdale, 2001; Watkins, Teasdale, & Williams, 2000) further showed that OGM was reduced in dysphoric participants when he induced a specific and concrete (rather than an abstract and avoidant) ruminative self-focus.

However, Philippot and colleagues (Philippot, Schaefer, & Herbette, 2003) have put forward a different view. They proposed that, in order to prevent disruption of ongoing goal-oriented behaviour, the intentional retrieval of specific autobiographical memories requires a concurrent inhibition of the emotional affect that accompanies the respective specific memory. They showed that priming overgeneral memory retrieval leads to an increased emotional reaction in a subsequent emotion induction. Thus, the initial experimental studies of the avoidance/affect regulation hypothesis do not yet show a consistent pattern of results.

Some preliminary correlational data, however, are in line with the avoidance/affect regulation hypothesis. Dissociation, which can be understood as reduced processing of the trauma, was related to OGM in a study by Jones et al. (1999). Similarly, OGM correlated with suppression of trauma memories, current dissociation, and rumination in a study of Schönfeld and Ehlers (in press). Rumination about the trauma and its consequences is thought to be an abstract thinking style, similar to worry, which prevents changes in the trauma memory and maintains problematic appraisals (Ehlers & Clark, 2000). The correlation of rumination and OGM in trauma survivors (Schönfeld & Ehlers, in press) parallels findings that abstract verbal processing enhances OGM (Watkins & Teasdale, 2001; Watkins et al., 2000).

Furthermore, Kuyken and Brewin (1995) found an association between OGM and intrusions and avoidance in survivors of childhood abuse. This led them to conclude that OGM may be due to a retrieval advantage of the trauma memory over other memories, or due to reduced working memory capacity resulting from intrusive trauma memories. However, other studies suggest it may be the presence of trauma rather than symptoms of stress or level of executive functioning that are related to OGM (Hermans et al., 2004) .

In the light of theories of depression, it appears plausible that autobiographical memories of childhood sexual abuse survivors are negatively toned, which may affect all autobiographical memory retrieval. In the case of recently and singularly traumatised individuals, it is less clear why these individuals show overgeneral memory retrieval of non-traumatic (including positive) memories from their past, why the OGM bias is mostly restrained to those with the PTSD diagnosis, and why it is often independent of the degree of depressive symptoms. One explanation may be that people with PTSD not only dwell on their trauma but also on positive events from the past in an abstract ruminative way, focusing on how their life has changed for the worse. In that case, general rumination or thought suppression tendencies would explain the OGM effect and its correlations with such measures.

Schönfeld and Ehlers (in press, 2007) found that OGM in PTSD extended to pictorial cues and involuntary memory retrieval. The latter result is not easily accounted for by explanations that focus on the reduced mental capacity due to trauma memories and the individual's avoidant coping responses. The authors therefore suggested that other (additional) inhibitory processes might take place, which are not yet fully understood (Schönfeld & Ehlers, in press). One possible explanation is that lack of trauma memory integration and its disruptiveness to current goals

might motivate the ''self-memory system'' (Conway & Pleydell-Pearce, 2000) to inhibit the formation of spontaneous memories in general, but without being effective in inhibiting the not-integrated trauma memory, as intended. This would then lead to a vicious cycle of unintentional remembering and unintentional suppression. *Intentional* suppression of the trauma memory might impede emotional processing and trauma memory integration (Ehlers & Steil, 1995), might make the memory more available (Wegner, Schneider, Carter, & White, 1987) and, potentially, might give additional feedback to the self-memory system to continue or even enhance inhibition of both generic and spontaneous memory formation. Thus, OGM in PTSD might partly be the result of a ''misguided suppression effect''. Disrupted access to the autobiographical memory base may in turn hamper the integration of the trauma memory into the autobiographical memory base, which may lead to poor inhibition of cue-driven retrieval of these trauma memories (Conway & Pleydell-Pearce, 2000; Ehlers & Clark, 2000). Thus, there may be a vicious circle between intrusive memories, thought suppression, OGM, and the inadequate integration of the trauma memory into the autobiographical memory base. Preliminary correlational data by Schönfeld and Ehlers (in press) are in line with this hypothesis.

AQ1

The present study built on the vicious cycle hypothesis. As a first step we directly manipulated trauma memory suppression experimentally and tested its effect on OGM in traumatised people with and without PTSD. The literature suggests that thought suppression may have paradoxical effects on the accessibility of trauma memories in two ways (Abramowitz, Tolin, & Street, 2001; Wegner et al., 1987). First, there may be an *enhancement* effect, where the to-be-suppressed thought may become more frequent during the attempted suppression itself. This appears to happen particularly under conditions of high mental load (Wegner & Erber, 1992). Second, there may be a *rebound* effect, where the increase occurs after suppression ceases. In PTSD, rebound of trauma-related thoughts after thought suppression appears to be more common than immediate enhancement (e.g., Harvey & Bryant, 1998; Shipherd & Beck, 1999).

In the present experiment, we combined a thought suppression instruction with the Autobiographical Memory Test (AMT) instruction. We hypothesised that suppression of the trauma memory while doing the AMT will lead to diminished recall of specific memories, and that this reduction in specific recall will be particularly pronounced in people with PTSD compared to those without PTSD. Additionally we hypothesised that OGM would be correlated with measures of cognitive avoidance of the trauma memory, including rumination and abstract thinking about the trauma and suppression of intrusive memories. We further explored whether OGM is associated with general thought suppression tendencies, intelligence, and measures of reduced executive functioning.

METHOD

Participants

The sample comprised 42 assault survivors who had attended King's College Hospital's Accident and Emergency Department, London, 3 to 15 months prior to the study. Participants had replied to a letter that had been sent to all survivors of assault admitted to this unit during this period of time, informing them about the purposes of the study, and had given permission to be contacted via telephone. Participants were asked for their most severe assault and answered all questions with respect to this assault. Exclusion criteria were severe head injury during the assault or unconsciousness longer than 15 minutes, psychosis, and substance dependence (past or present) for more than 3 years. Presence of PTSD and major depressive disorder was assessed with the Structured Clinical Interview for DSM-IV (First, Spitzer, Gibbons, & Williams, 1996). A total of 14 participants met the diagnostic criteria for PTSD. Four participants (28.6%) in the PTSD group, but none in the no-PTSD group, met criteria for major depression, $p = .009$. Table 1 shows demographic characteristics of the PTSD and no-PTSD groups. The groups did not differ in respect to their ethnic group, age, or education. However, there was a higher percentage of women in the PTSD group. The groups did not differ on most trauma characteristics, including a combined assault severity score, which considered the duration of trauma, injuries, number of assailants, and presence of or threat by a weapon (see Dunmore, Clark, & Ehlers, 1999, 2001). The only differences were that the assailant was more likely to

TABLE 1
Demographic and trauma characteristics of the PTSD and No-PTSD groups

Demographics	*PTSD (n =14)*	*No-PTSD (n =28)*	*Statistic*	*p value*
Measure				
Age in years M (SD)	33.79 (13.40)	32.64 (9.52)	t(40) =0.32	.75
Sex *n* (%)				
Female	10 (71.43)	10 (35.41)	$\chi^2(1, 42) = 4.77$	.05
Ethnic affiliation N (%)				
Afro-Caribbean	6 (42.96)	11 (39.29)	FI =0.58	1.00
Caucasian	8 (57.14)	16 (57.14)		
Other		1 (3.57)		
Qualification in year M (SD)	11.93 (2.02)	13.73 (4.06)	t(37.88) =1.87	.068
Trauma characteristics				
Type of trauma N (%)				
Physical assault	13 (92.83)	28 (100)	FI	.33
Sexual assault	1 (7.17)	0 (0)		
Time elapsed since trauma (in months)	16.33 (10.75)[a]	16.67 (7.99)[a]	t(37) =0.11	.92
Place of assault N (%)				
At home	4 (28.57)	9 (32.14)	FI =0.50	.82
Public place	7 (50)	15 (53.57)		
Other	3 (21.43)	4 (14.29)		
Number of assailants N (%)				
One	10 (7.14)	16 (57.14)	$\chi^2(1, 42) = 0.81$	.51
More than one	4 (2.86)	12 (43.86)		
Relation to assailant N (%)				
Unknown	8 (57.14)	17 (60.71)	FI =6.50	.03
Ex-partner	5 (35.71)	2 (7.14)		
Other	1 (7.14)	9 (32.14)		
Duration of assault N (%)				
5 min. or less	6 (42.86)	16 (57.14)	FI =1.30	.55
6 to 30 min.	5 (35.71)	9 (32.14)		
More than 30 min.	3 (21.43)	3 (10.71)		
Threatened N (%)				
To be harmed	8 (57.14)	15 (53.71)	$\chi^2(1,42) = 0.05$	1.00
With weapon	4 (28.57)	16 (57.14)	$\chi^2(1,42) = 3.06$	.11
Injuries (more than one possible) N (%)				
None	0 (0)	1 (3.57)	All ns	
Small cuts and bruises	1 (7.14)	3 (10.71)		
Severe cuts and bruises	11 (78.57)	23 (82.14)		
Broken bones	4 (28.57)	4 (14.29)		
Head injury (not internal)	1 (7.14)	3 (10.71)		
Other	2 (14.29)	0 (0)		
Perceived likelihood M (SD)				
To be injured	86.07 (15.71)	61.25 (28.08)	t(39.35) = −3.67	.00
To be killed	64.29 (36.53)	38.75 (36.58)	t(40) = −2.13	.04
Severity combined score M(SD)	6.29 (1.27)	6.14 (1.11)	t(40) = −0.38	.71

[a]n =27.

be the participant's ex-partner in the PTSD group, and the PTSD group believed to a greater extent that they would be seriously injured or killed during the assault than the no-PTSD group.

Measures

Clinical symptoms. Severity of post-traumatic stress symptoms was assessed with the *Post-traumatic Diagnostic Scale* (PDS). The PDS

(Foa, Cashman, Jaycox, & Perry, 1997) is a standardised and validated self-report measure of PTSD symptom severity that has been widely used with clinical and non-clinical samples of traumatised individuals. The PDS asks participants to rate how much they were bothered by each of the PTSD symptoms specified in DSM-IV (American Psychiatric Association, 1994) ranging from 0 "never" to 3 "five times per week or more/very severe/nearly always". Severity of depression and anxiety were assessed with the Beck Depression Inventory (BDI) (Beck & Steer, 1987) and Beck Anxiety Inventory (BAI) (Beck, Epstein, Brown, & Steer, 1988), respectively, standard measures of established reliability and validity.

Measures of cognitive avoidance in relation to the trauma. Two measures of thought suppression were administered. First, *Suppression of thoughts and memories about the assault* was measured with the thought suppression scale of the *Response to Intrusions Questionnaire* (RIQ) (Clohessy & Ehlers, 1999). The questionnaire asks participants to rate how often they use a range of cognitive strategies when they have unwanted memories of the assault. It contains six thought suppression items, e.g., "I try to push them out of my mind", $\alpha = .92$ in this sample. *Rumination* about the trauma was assessed with the *Rumination Scale* developed by Murray, Ehlers, and Mayou (2002). It contains nine items (e.g., "I dwell on how the event could have been prevented"), $\alpha = .91$.

Second, *General strategies to deal with unwanted thoughts* were assessed with the *Thought Control Questionnaire* (TCQ) (Wells & Davies, 1994). It consists of five different scales: distraction, social, worry, punishment, and reappraisal. Only the worry, punishment, and reappraisal scales were of interest to the present study (internal consistencies $\alpha = .75$, $\alpha = .76$, and $\alpha = .72$, respectively).

Abstractness of worries about the trauma and about another problem. Borkovec and colleagues (e.g., Borkovec & Lyonfields, 1993) suggested that worrying is a verbal-analytic and abstract way of thinking and a potential avoidance strategy. Stöber and Borkovec (2002) found lower concreteness for topics that people worry about frequently than for topics they worried about less. We therefore assessed the abstractness of the participant's worries with an adapted version of Stöber's problem elaboration procedure (e.g., Stöber & Borkovec, 2002).

The experimenter asked the participant to choose two problems they currently worried about, one of which was assault related and the other unrelated. These problems were written on two different sheets, and for each problem the participant wrote down three possible consequences (e.g., for the assault-related worry: "*I might be assaulted again*", a possible consequence would be: "*I will die and leave my children motherless*"). Two independent raters subsequently gave a global concreteness rating for the three consequences of each of the problems, as well as for the problem itself on a scale from 1 (abstract) to 5 (concrete) following the guidelines by Stöber and Borkovec (2002). Inter-rater reliability was $r = .79$ (Intraclass correlation).

Some further cognitive and clinical measures were obtained in this sample but will be reported elsewhere.

Cognitive abilities. Verbal intelligence and working memory capacity were assessed to determine to what extent OGM is a function of general cognitive ability. To measure verbal intelligence we administered the *Mill Hill Vocabulary Scale* (MHV) (Raven, Court, & Raven, 1994). The MHV is a standard measure of verbal intelligence and asks participants to detect the correct synonym in a group of words. We administered set A of the multiple-choice version of the senior form. Working memory capacity was assessed using the digit span tasks (backward and forward) from the *Wechsler Intelligence and Memory Scales* (Wechsler, 1997).

Demographic variables and trauma characteristics. An adapted version of the *Trauma Interview* used by Dunmore et al. (1999, 2001) assessed trauma characteristics and demographic information.

Autobiographical Memory Test. This test (AMT, Williams & Broadbent, 1986) followed the standard procedure outlined by Williams (1986) and consisted of 12 words (6 positive and 6 negative), which were given in pseudo-randomised order and with a maximal reaction time of 30 seconds until the next word was given. The words were printed on cards and the participants were asked to read them out aloud and to recall a specific memory in response to each of these words. AQ3

The words were chosen from a word pool of non-trauma-related words that had been created for a previous study (Schönfeld & Ehlers, in press). It included the words used by Brittlebank, Scott, Williams, and Ferrier (1993) and the words from John's word norms for emotionality ratings (John, 1988). These words were rated for imagery, by using the scale and instructions of Paivio, Yuille, and Madigan (1968), and pleasantness by 27 college students and university staff. Three final sets[1] were constructed, and the subsets were matched in terms of emotionality (John, 1988), frequency (Kucera & Francis, 1967), imagery, and pleasantness, with positive and negative words being significantly different from each other in terms of their pleasantness. The three sets were given in counterbalanced order in respect to the three test conditions. The first test was always preceded by three neutral practice words and the two following tests were preceded by a single practice word. If the participant failed to retrieve a specific memory, he/she was prompted with "Can you think of a particular time?" or "Is there a specific event the word reminds you of?".

The first AMT used the standard instructions developed by Williams and Broadbent (1986, see above). Participants then completed two further AMTs under experimental instructions, a thought suppression (TS) instruction, and a mentioned control (MC) instruction, in counterbalanced order.

Experimental instructions

Thought suppression (TS). The TS condition combined the standard AMT instruction with a thought suppression instruction. After the standard AMT instruction participants were told:

> However, now we would like you to do something else at the same time. Please try as hard as you can to suppress any thoughts about the assault. It is important that you suppress any thought about the assault for the full time of this task. Let us try with one word for practice.

After the practice word the experimenter said:

> Do you have any questions? Please remember to try as hard as you can to suppress any thoughts about the assault. It is important that you suppress any thought about the assault for the full time of this task.

After every three words the participants were reminded of the particular task instructions with the prompt "Please remember, try as hard as you can to suppress any thoughts about the assault."

Mentioned control (MC). In the MC condition, the standard AMT was combined with the mentioned control instruction as in Salkovskis and Campbell (1994). This instruction is parallel to the thought suppression instruction in the degree of priming of assault memories, as the word assault is mentioned equally often, while allowing any memory. After the standard AMT instruction participants were told:

> During this task it is OK to think about absolutely anything, including your assault. It doesn't matter, whether a thought about the assault or any other event pops into your mind. During the full time of this task you can remember any event from your life. Let us try with one word for practice.

After the practice word, the experimenter said:

> Do you have any questions? . . . Please remember that during this task it is OK to think about absolutely anything, including your assault. It doesn't matter, whether a thought about the assault or any other event pops into your mind. During the full time of this task you can remember any event from your life.

After every three words the participants were reminded of the particular task instructions with the prompt "Please remember, it doesn't matter, whether a thought about the assault or any other event pops into your mind. You can remember any event from your life."

Manipulation checks. After six words, and at the end of each experimental condition (TS and MC), the experimenter asked participants how often they had trauma-related thoughts during the respective phase of the AMT (*assault-related thoughts – reported frequency during task*). Furthermore, after each AMT condition (standard, TS, MC), participants completed four visual analogue scales. They indicated how often they thought about the assault (0 "not at all" to 100 "all the time"), (*assault-related thoughts – global rating*) and how anxious (0 "not at all" to 100

[1] The list of words and ratings is available from the first author.

''totally''), happy (0 ''not at all'' to 100 ''extremely''), and despondent (0 ''not at all'' to 100 ''extremely'') they felt.

Rebound was tested in two monitoring periods, before and after the first experimental AMT condition. Here the participants were given a counter and were instructed as follows:

> Now we will just be sitting here for the next five minutes. During this time, please record occurrences of thoughts about the assault by pressing the button of this counter. It doesn't matter whether a thought about the assault occurs or not; just record the thought if it occurs. It is important that you continue in the same way for the full five minutes. Please leave your eyes open. I will let you know when the time is over.

Procedure

After participants had given informed consent, they received a questionnaire package in the post and completed it on the day prior to the experimental session. The session started with the Trauma Interview, which was followed by two other questionnaires (results of which will be reported elsewhere), the State Dissociation and Self-referent Processing Questionnaires. The experimenter then asked questions regarding general mental health status and general demographic information. After this, the standard AMT was given, followed by the manipulation check ratings and the first monitoring phase. The first experimental AMT (TS/MC) and manipulation check ratings followed. The MHV was administered, followed by the second monitoring phase. Participants then did the second experimental AMT (MC/TS) and manipulation check ratings. The session continued with the Digit Span Tasks and the SCID. Finally the participants were debriefed about the purpose of this study and reimbursed for their time and travel expenses (on average £25). The sessions were conducted by graduate psychologists. Figure 1 depicts the exact procedure of the experimental part of the study.

Data analysis

AMT. According to Williams and Broadbent, a memory was defined as specific if it was about ''an event lasting a day or less, which occurred at a certain place and time even if the subject could not remember when''; as extended if it was about ''an event lasting longer than a day''; and as general or categorical if the memory ''reflected repeated activities'' or if they were general memories about people or places (Williams & Broadbent, 1986, p. ??). If no memory was given after 30 seconds, this was scored as an ''omission''. The rater was blind to the diagnosis. For the standard AMT, the main variable of interest was the number of first answers that were general (categorical), which is a commonly used score in OGM research. However, the number of general answers may constitute a somewhat problematic index of OGM in trauma research, as participants may remember the trauma in response to some of the cue words and trauma memories are by definition specific (if the trauma lasted for less than a day as in the present sample). Therefore, for the main group comparisons, trauma memories were excluded and the ratio of general memories of all non-trauma memories was used as the dependent variable. The results were analysed by analysis of variance (ANOVA) with group (PTSD versus no-PTSD) as the between-subject factor. Pearson correlations were calculated to test the association of performance in the standard AMT (number of categorical answers) and the symptom and avoidance measures. If the variables were not normally distributed, Spearman's Rho was calculated.

The impact of the experimental manipulation on performance in the AMT was analysed with a repeated measures ANOVA with group (PTSD versus no-PTSD) as the between-subjects factor and experimental condition (TS versus MC) as the within factor. The sum of the general memories *and* the omissions was used as the variable of interest in this analysis because it is possible that, in order to comply with the instructions, some participants who could not retrieve a

Session order	1	2	3	4	5	6	7	8	9	10
A	Standard AMT	Ratings mood and frequency	5 minutes monitoring	Ratings mood and frequency	TSAMT	Ratings mood and frequency	MHV	5 minutes monitoring	MCAMT	Ratings mood and frequency
B					MCAMT				TSAMT	

Figure 1. Experimental procedure. The autobiographical memory test (AMT) was conducted three times; the standard version at baseline was followed by thought suppression (TSAMT) and mentioned control instructions (MCAMT) in counterbalanced order.

specific memory other than the trauma may have given no answer rather than a general answer. Parallel to the standard AMT, this analysis was done using the proportion of non-trauma answers that were general or omissions, to correct for the possible influence of differential naming of trauma memories in the experimental conditions.

A further ANOVA included order of experimental conditions (TS versus MC first) as a second between-subjects factor to check for order effects. Finally, analyses were repeated with valence as an additional within-subject factor.

Manipulation checks. Manipulation check variables were analysed with repeated measures ANOVAs with group (PTSD versus no-PTSD) as the between-subjects factor and experimental phase (Standard, TS, MC) as the within-subject factor. Possible rebound effects were analysed by comparing the number of assault memories in the monitoring phases with repeated measures ANOVAs with group (PTSD versus no-PTSD) and experimental condition (TS, MC) as the between-subjects factors and experimental phase (standard, post-manipulation) as the within-subject factor. Results for the rebound check are missing for one participant who aborted the monitoring task because he became too distressed.

An alpha-level of .05 was used for all statistical tests and post hoc tests were Bonferroni-adjusted.

RESULTS

Manipulation checks

The results of the manipulation checks are shown in Table 2. There was no significant group × condition interaction for any of the ANOVAs. The PTSD group reported more assault-related thoughts than the no-PTSD group, for both the number of thoughts during the experimental conditions and the visual analogue ratings completed after each of the three AMT tests. For both measures of assault-related thoughts, there was also a main effect for experimental condition. Participants reported fewer thoughts about the trauma in the TS condition than in the MC condition and the standard instruction, all *p*s = .001.

TABLE 2
Manipulation checks and mood ratings, means (SD)

			ANOVA		
Manipulation checks	*PTSD (n = 14)*	*No-PTSD (n = 28)*	*Group*	*Condition*	*G × C*
Assault-related thoughts: reported frequency during task			F(1, 37) = 6.62, p = .01	F(1, 37) = 25.43, p < .001	ns
TS	4.00 (4.37)	1.63 (1.96)			
MC	10.07 (9.41)	4.06 (4.43)			
Assault-related thoughts: Global ratings			F(1, 39) = 12.44, p < .001	F(2, 78) = 19.90, p < .001	ns
S	65.00 (25.98)	30.00 (32.52)			
TS	35.77 (26.76)	16.43 (22.10)			
MC	58.07 (25.62)	27.32 (31.02)			
Mood ratings			n.s.	F(2, 78) = 5.61, p = .01	ns
Despondent					
S	58.08 (29.97)	34.82 (32.93)			
TS	39.62 (27.72)	22.14 (27.16)			
MC	48.46 (29.18)	23.21 (27.53)			
Anxious			F(1, 39) = 17.15, p < .001	F(2, 78) = 7.41, p = .001	ns
S	60.77 (24.99)	31.79 (28.19)			
TS	42.31 (27.13)	16.43 (23.72)			
MC	50.77 (26.68)	19.11 (24.80)			
Happy			ns	ns	ns
S	45.77 (33.84)	51.25 (27.68)			
TS	63.08 (26.26)	49.12 (30.31)			
MC	47.31 (31.66)	46.61 (28.25)			

S = standard; TS = thought suppression; MC = mentioned control; *ns* = nonsignificant.

TABLE 3
Results of the Autobiographical Memory Test (AMT)

Standard AMT	*PTSD*	*No-PTSD*
Categorical memories		
Negative (total number)	2.50 (1.51)	1.50 (1.48)
Positive (total number)	2.57 (1.65)	2.00 (1.61)
Ratio (positive and negative combined)[1]	0.45 (0.22)	0.30 (0.23)
AMT with experimental manipulation of thought suppression		
Categorical memories and omissions (ratio)[1]		
Thought suppression	0.55 (0.21)	0.29 (0.29)
Mention control	0.47 (0.24)	0.35 (0.28)
Categorical memories (ratio)[1]		
Thought suppression	0.38 (0.25)	0.21 (0.24)
Mention control	0.36 (0.27)	0.24 (0.25)
Omissions (ratio)[1]		
Thought suppression	0.17 (0.14)	0.08 (0.08)
Mention control	0.11 (0.13)	0.11 (0.12)

[1]Proportion of all non-trauma answers.

The PTSD group reported greater anxiety than the no-PTSD group. There was also an effect of experimental condition on anxiety and despondency ratings. During the standard AMT, participants reported greater anxiety compared to the TS condition, $p = .005$, and greater despondency compared to both the TS, $p = .007$, and the MC conditions, $p = .046$.

The rebound analysis, using the number of assault memories recorded in the monitoring phases after the standard and the first experimental AMTs, showed a trend for an effect of experimental condition (standard versus post-manipulation), $F(1, 37) = 8.29$, $p = .052$, no main group or experimental condition (TS versus MC) effects, but a trend for a three-way interaction, $F(1, 19) = 3.99$, $p = .060$. After the MC condition, but not after the TS condition, participants recorded fewer trauma memories compared to the standard AMT condition, and this decrease tended to be more pronounced in the PTSD group.

Standard Autobiographical Memory Test

The results of the standard AMT are presented in Table 3. For the number of categorical memories, the ANOVA showed a trend for a group effect, $F(1, 40) = 3.22$, $p = .08$. The PTSD group retrieved more general memories than the no-PTSD group. When trauma memories were excluded from the analysis and the ratio of general memories of all non-trauma memories was considered, the ANOVA showed a group effect, $F(1, 40) = 7.81$, $p = .049$ (more general memories in the PTSD group).

Table 4 shows the correlations of the number of general memories in the standard AMT with symptom, cognitive avoidance, and executive functioning measures. The table also depicts the group differences on these variables. Overgeneral memories correlated with PTSD symptom severity (total score, reliving, avoidance, and hyperarousal clusters), depression, and anxiety, but not with assault severity. It correlated with verbal intelligence (MHV), but not significantly with working memory capacity as measured by the digit span test. It further correlated with aspects of trauma-related cognitive avoidance, i.e., thought suppression, rumination; and with two of the Thought Control Questionnaire scales, worry and punishment, but not with reappraisal. Overgeneral memory was associated with abstractness (lower concreteness) of worries about the trauma (and consequences), but not of worries about another problem (or consequences).

AMT with and without thought suppression

Table 3 shows the AMT results for the experimental manipulation of thought suppression. The ANOVA showed a significant group effect, $F(1, 40) = 5.50$, $p = .024$, and a group $\times$ condition interaction, $F(1, 40) = 6.38$, $p = .016$. The PTSD group gave a higher proportion of non-trauma

TABLE 4
Symptom and cognitive measures in the PTSD versus No-PTSD groups, and their correlation with OGM in the standard AMT

Measure	*PTSD (n = 14)*	*Control (n = 28)*	*Statistic*	*Corr. (r/rho)*
Combined assault severity score	6.29 (1.27)	6.14 (1.11)	$t(40) = 0.38$	.02
Clinical symptoms				
PTSD				
PDS-total	27.21 (11.40)	16.71 (14.41)	$t(40) = 2.38$*	.47**
Re-experiencing	6.62 (3.39)	4.93 (4.31)[a]	$t(39) = 1.29$	.45**
Avoidance	10.79 (6.47)	5.36 (5.88)	$t(40) = 2.73$**	.43**
Hyperarousal	9.79 (3.47)	6.46 (5.17)	$t(36.36) = 2.47$**	.44**
Depression				
BDI	16.64 (11.25)	8.07 (9.25)	$t(40) = 2.63$*	.32*
Anxiety				
BAI	19.07 (14.22)	8.07 (9.16)	$t(18.57) = 2.63$*	.31*
Cognitive avoidance measures				
RIQ-thought suppression	13.14 (5.02)	7.36 (13.14)	$t(40) = 3.52$***	.49**
Rumination	15.67 (7.46)	7.25 (5.13)	$t(40) = 4.30$***	.36*
Worry				
Abstractness				
Assault problem	3.09 (1.22)	3.71 (0.92)	$U = 66.5$	−.45*
Assault consequences	3.64 (0.81)	3.47 (1.06))	$t(24) = .44$	−.45*
Neutral problem	3.27 (0.65)	2.52 (1.25)	$t(30) = 2.23$*	−.03
Neutral consequences	2.91 (0.83)	3.29 (1.26)	$t(26) = 0.89$	−.36
General strategies				
TCQ Worry	12.11 (2.00)	9.57 (2.71)	t(40) = 2.77**	.30
TCQ Punishment	11.17 (3.94)	8.86 (2.77)	t(40) = 2.21*	.43**
TCQ Reappraisal	11.00 (2.53)[b]	12.53 (3.90)[a]	t(40) = 1.29	−.15
Cognitive ability				
MHV	12.77 (3.83)[b]	17.11 (5.91)[a]	t(38) = 2.41*	−.48**
Digit span forward	9.71 (2.27)	9.61 (2.71)	t(40) = 0.13	−.23
Digit span backward	5.79 (2.39)	6.07 (2.84)	t(40) = 0.32	−.30

[a] $n = 27$; [b] $n = 13$; [c] $n = 12$; [d] $n = 25$; [e] $n = 26$; [f] $n = 24$; *** $p < .001$, ** $p < .01$; * $p < .05$ (*) $p < .10$.

answers that were general memories/omissions than the no-PTSD group in the TS condition ($p = .034$), but not in the MC condition ($p = .162$). There was also a trend ($p = .076$) for the no-PTSD group to have fewer general memories/omissions in the TS compared to the MC condition, with a non-significant difference in the opposite direction for the PTSD group ($p = .108$). Planned comparisons tested whether these group differences were due to general answers or omissions. There was a trend for the PTSD group to have more omissions in the TS than in the MC condition ($W = 1.90$, $p = .059$, no other effects). In the TS condition, but not in the MC condition, the PTSD group had more general memories ($U = 117$, $p = .033$) and omissions ($U = 120$, $p = .036$) than the no-PTSD group. Figure 2 depicts the mean number of omissions and general memories for all test conditions.

Additional ANOVAs showed that the order of the TS and MC conditions did not interact with the experimental condition factor,[2] and that cue valence showed no main effects or interactions with group and experimental condition.

DISCUSSION

The present study investigated the effects of the suppression of trauma memories on autobiographical memory retrieval in trauma survivors with and without PTSD, and explored correlates of overgeneral autobiographical memory retrieval (OGM). The results of the Autobiographical Memory Test (AMT) were largely in line with previous findings that people with PTSD show a bias to retrieve overgeneral memories compared to traumatised people without PTSD (McNally

[2] When order was included as a factor in the ANOVA, there were no main effects of order nor any interactions with order for both the number of categorical memories and the ratio of categorical memories as a proportion of non-trauma memories.

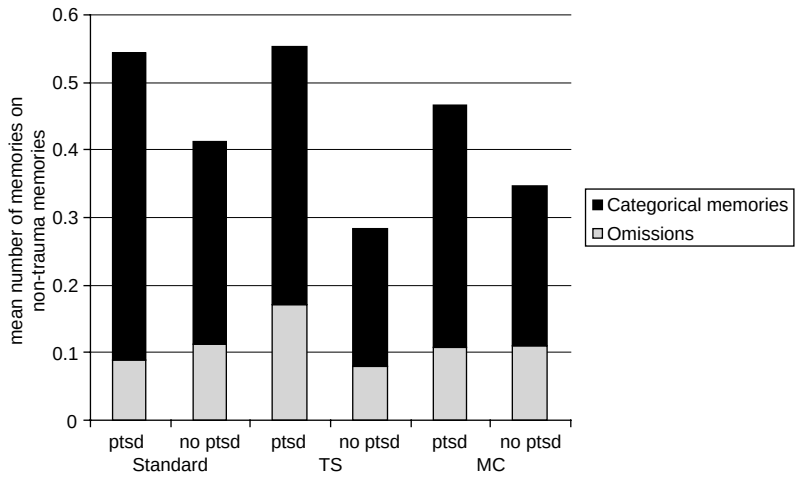

Figure 2. Mean number of omissions and general memories (as a proportion of the total number of non-trauma memories) in the three test conditions of the autobiographical memory test (AMT) (Standard, TS = thought suppression, MC = mentioned control) for the PTSD and no-PTSD groups

et al., 1994, 1995). PTSD symptom severity was also significantly correlated with OGM.

When participants were instructed to suppress any assault-related thoughts during the AMT, the group differences became more pronounced. Participants with PTSD retrieved more general memories and had more omissions than participants without PTSD. In contrast, when suppression was not required (MC instruction), there was no longer a significant group difference. Within the PTSD group, differences between the TS and MC condition were mainly due to more omissions in the TS condition. This difference suggests that participants followed the instructions because they seemed to prefer not to give an answer than to report the trauma memory, which is specific.

One explanation for the present pattern of findings is that the extent of OGM in PTSD depends on the degree of effortful suppression of trauma-related memories. Degree of thought suppression (RIQ) correlated with OGM. When the experimental task demanded suppression, participants with PTSD clearly had greater difficulties retrieving specific memories than those without PTSD. Overall, the results in the PTSD group are in line with the avoidance hypothesis of OGM (Raes et al., 2003). The trend for fewer general memories/omissions in the TS compared to the MS condition in the no-PTSD group, together with the decrease in anxiety during TS, is in line with Philippot et al.'s (2003) inhibition facilitation hypothesis. This hypothesis may mainly apply to people without psychopathology. Generally, the susceptibility of OGM to cognitive manipulation is in line with Watkins' findings (e.g., Watkins & Teasdale, 2001).

Thought suppression has been hypothesised to be partly an effortful process (e.g., Rosen & Engle, 1998; Wegner & Erber, 1992). An alternative explanation for the effects of the experimental manipulation is therefore that the thought suppression instruction created a greater task demand for the PTSD group than the no-PTSD group. This may have interfered with the retrieval of specific memories, as people with PTSD generally experience frequent trauma-related thoughts. It is thus possible that they needed more effort to suppress assault memories in the TS condition than the no-PTSD group. We cannot rule out this possibility, as the two experimental conditions were not matched in terms of mental load. The fact that the differences between the TS and MC conditions in the PTSD group were more pronounced with respect to the omissions suggests that the mental load of the TS condition may have played an important role in OGM in this condition. Future studies are needed to clarify the specific task demands and their potential interaction, by carefully considering an adequate comparison task as an additional control condition. Nevertheless, this possibility does not make the results less relevant for everyday life situations, where efforts to suppress trauma-related thoughts and memories may also interfere with the retrieval of specific autobiographical memories in people with PTSD. Digit span as a measure for working memory capacity was not

significantly associated with OGM as in previous studies (De Decker et al., 2003), which shows that the connection between different task needs in respect to working memory capacity and concurrent autobiographical memory retrieval may be complex (Williams, personal communication).

The measures of assault-related thoughts during the autobiographical memory tasks that served as manipulation checks suggested that the thought suppression manipulation was successful in both groups. During the TS condition, both groups reported fewer assault-related thoughts than during the MC condition. In line with fewer trauma-related thoughts, they also reported less anxiety in the TS than in the MC condition. Although the PTSD group had more trauma-related thoughts during both experimental tasks, there was no interaction between group and experimental condition; thus the manipulation did not have differential effects on participants with and without PTSD.

The monitoring phases after the AMT tests did not show an increase in assault-related thoughts after suppression compared to baseline levels after the standard AMT. However, after the MC condition, but not after the TS condition, there was a decrease in assault-related thoughts compared to baseline. This can be interpreted as indirect evidence of a rebound effect. If participants engaged in trauma memory suppression, they did not experience the natural decline of assault memories in the course of the session. However, the small sample sizes in the respective cells warrant only very careful interpretation of these results. Our results are in line with the general finding that immediate enhancement is generally rare or absent in PTSD (Abramowitz et al., 2001), but did not support the hypothesis that a concurrent task can lead to enhancement during thought suppression (Wegner & Erber, 1992).

The study further investigated correlates of OGM in traumatised individuals. In contrast to Henderson, Hargreaves, Gregory, and Williams (2002), De Decker et al. (2003), and Hermans et al. (2004), but in line with Kuyken and Brewin (1995), we found OGM to be associated with symptoms of PTSD, depression, and anxiety, but not with trauma severity. However, trauma severity of a single event may not be comparable to repeated abuse in childhood, which may account for the lack of association in this study.

Verbal intelligence correlated with OGM; however working memory capacity was not significantly associated with OGM, as in De Decker et al.'s study (2003). In respect to executive functioning, the picture seems more complex, particularly given that in the present study the correlation between OGM and digit span was not trivial. Possibly here, deficits in relation to PTSD are more specific and affect only certain tasks, such as the AMT (see above with respect to the role of mental load).

OGM correlated with cognitive strategies that avoid processing of the trauma, such as thought suppression, rumination, and punishment as a thought control style. In line with a role of rumination in OGM, lower concreteness scores of worry about the assault were also associated with overgeneral memory retrieval (see also Borkovec & Lyonfields, 1993; Stöber & Borkovec, 2002). Only the concreteness of the assault worries, but not of other worries, was related to OGM. It is possible that this effect was mediated by PTSD severity. However, it may also show that it is specifically the avoidance of past events or problems that is associated with OGM, and not so much a general abstract thinking style.

To summarise, this experiment is a preliminary step to support the hypothesis that thought suppression of trauma memories plays a role in PTSD and OGM. At this stage we cannot be certain about the specific mechanisms that are involved in the interplay between thought suppression, PTSD, and OGM. We had hypothesised OGM to be at least partly a side product of thought suppression, which may (1) in the short term increase general inhibition of autobiographical memory formation via the self-memory system (Conway & Pleydell-Pearce, 2000), and (2) in the long term prevent trauma memory processing. If the first explanation is supported in future studies, it could be useful to include OGM in cognitive models of PTSD that explain the persistence of symptoms by the lack of integration of the trauma memory into the autobiographical memory base, and emphasise the importance of maladaptive coping strategies (e.g., Ehlers & Clark, 2000)

The study had several limitations. First, due to the mode of recruitment it is possible that the population in this study was biased towards those who were very motivated or very distressed. Second, the PTSD group was relatively small, and the no-PTSD group reported significant PTSD symptoms of moderate severity. This may have reduced the power of the group comparisons. Third, the study did not include

non-traumatised or other clinical groups. Future studies including these groups may help to increase understanding of the precise mechanisms between trauma, psychopathology, and OGM. Fourth, as outlined earlier, it would be advisable to repeat the experiment with a control condition that demands comparable amounts of mental load as in the TS condition. Fifth, the correlational data need to be interpreted with caution because they were calculated across groups. It would be advisable to replicate the results with a larger sample to allow more precise predictions about the associations between OGM and the respective measures.

Prospective longitudinal studies and experimental studies are needed to further elucidate the relationship between OGM and PTSD in traumatised populations.

REFERENCES

Abramowitz, J. S., Tolin, D. F., & Street, G. P. (2001). Paradoxical effects of thought suppression: A meta-analysis of controlled studies. *Clinical Psychology Review*, *21*, 683–703.

American Psychiatric Association. (1994). *Diagnostic and statistical manual of mental disorders* (4th ed.) Washington, DC: American Psychiatric Association.

AQ5 Beck, A. T., Emery, G. & Greenberg, R. L. (1985). *Anxiety disorders and phobias: A cognitive perspective*. New York: Basic Books.

Beck, A. T., Epstein, N., Brown, G., & Steer, R. A. (1988). An inventory for measuring clinical anxiety: Psychometric properties. *Journal of Consulting and Clinical Psychology*, *56*, 893–897.

Beck, A. T., & Steer, R. A. (1987). *Beck Depression Inventory: Manual*. San Antonio, TX: Psychological Corporation.

Borkovec, T. D., & Lyonfields, J. D. (1993). Worry: Thought suppression of emotional processing. In H. W. Krohne (Ed.), *Attention and avoidance: Strategies in coping with aversiveness* (pp. 101–118).

AQ6 ?????????????

Brittlebank, A. D., Scott, J., Williams, J. M. G., & Ferrier, I. N. (1993). Autobiographical memory in depression: State or trait marker? *British Journal of Psychiatry*, *162*, 118–121.

Burke, M., & Mathews, A. (1992). Autobiographical memory and clinical anxiety. *Cognition and Emotion*, *6*, 23–35.

Clohessy, S., & Ehlers, A. (1999). PTSD symptoms, response to intrusive memories and coping in ambulance service workers. *British Journal of Clinical Psychology*, *38*, 251–265.

Conway, M. A., & Pleydell-Pearce, C. W. (2000). The construction of autobiographical memories in the self-memory system. *Psychological Review*, *107*, 261–288.

Dalgleish, T., Yiend, J., Tchanturia, K., Serpell, L., Hems, S., De Silva, P., et al. (2003). Self-reported parental abuse relates to autobiographical memory style in patients with eating disorders. *Emotion*, *3*, 211–222.

De Decker, A., Hermans, D., Raes, F., & Eelen, P. (2003). Autobiographical memory specificity and trauma in inpatient adolescents. *Journal of Clinical Child and Adolescent Psychology*, *32*, 23–32.

Dritschel, B. H., Kogan, L., Burton, A., Burton, E., & Goddard, L. (1998). Everyday planning difficulties following traumatic brain injury: A role for autobiographical memory. *Brain Injury*, *12*, 875–886.

Dunmore, E., Clark, D. M., & Ehlers, A. (1999). Cognitive factors involved in the onset and maintenance of post-traumatic stress disorder (PTSD) after physical or sexual assault. *Behaviour Research and Therapy*, *37*, 809–829.

Dunmore, E., Clark, D. M., & Ehlers, A. (2001). A prospective investigation of the role of cognitive factors in persistent Post-traumatic Stress Disorder (PTSD) after physical or sexual assault. *Behaviour Research and Therapy*, *39*, 1063–1084.

Ehlers, A., & Clark, D. M. (2000). A cognitive model of post-traumatic stress disorder. *Behaviour Research and Therapy*, *38*, 319–345.

Ehlers, A., & Steil, R. (1995). Maintenance of intrusive memories in post-traumatic stress disorder: A cognitive approach. *Behavioural and Cognitive Psychotherapy*, *23*, 217–249.

First, M. B., Spitzer, R. L., Gibbon M., & Williams, J. B. W. (1996). *Structured clinical interview for DSM-IV axis I disorders*. Washington, DC: American Psychiatric Press.

Foa, E. B., Cashman, L., Jaycox, L., & Perry, K. (1997). The validation of a self-report measure of post-traumatic stress disorder: The Post-traumatic Diagnostic Scale. *Psychological Assessment*, *9*, 445–451.

Harvey, A. G., & Bryant, R. A. (1998). The effect of attempted thought suppression in acute stress disorder. *Behaviour Research and Therapy*, *36*, 583–590.

Harvey, A. G., Bryant, R. A., & Dang, S. T. (1998). Autobiographical memory in acute stress disorder. *Journal of Consulting and Clinical Psychology*, *66*, 500–506.

Healy, H., & Williams, J. M. G. (1999). Autobiographical memory. In T. Dalgleish & M. Powers (Eds.), *Handbook of cognition and emotion.* Chichester, UK: John Wiley & Sons.

Henderson, D., Hargreaves, I. R., Gregory, S., & Williams, J. M. G. (2002). Autobiographical memory and emotion in a non-clinical sample of women with and without a reported history of childhood sexual abuse. *British Journal of Clinical Psychology*, *41*, 129–141.

Hermans, D., Van den Broeck, K., Belis, G., Raes, F., Pieters, G., & Eelen, P. (2004). Trauma and autobiographical memory specificity in depressed inpatients. *Behaviour Research and Therapy*, *42*(7), 775–789.

John, C. H. (1988). Emotionality ratings and free-association of 240 emotional and non-emotional words. *Cognition and Emotion*, *2*, 49–70.

Jones, B., Heard, H., Startup, M., Swales, M., Williams, J. M. G., & Jones, R. S. P. (1999). Autobiographical memory and dissociation in borderline personality disorder. *Psychological Medicine*, *29*, 1397–1404.

Kucera, H., & Francis, W. N. (1967). *Computational analysis of present-day American English.* Providence, RI: Brown University Press.

Kuyken, W., & Brewin, C. R. (1995). Autobiographical memory functioning in depression and reports of early abuse. *Journal of Abnormal Psychology*, *104*, 585–591.

McNally, R. J., Lasko, N. B., Macklin, M. L., & Pitman, R. K. (1995). Autobiographical memory disturbance in combat-related post-traumatic stress disorder. *Behaviour Research & Therapy*, *33*, 619–630.

McNally, R. J., Litz, B. T., Prassas, A., Shin, L. M., & Weathers, F. W. (1994). Emotional priming of autobiographical memory in post-traumatic stress disorder. *Cognition and Emotion*, *8*, 351–367.

Murray, J., Ehlers, A., & Mayou, R. A. (2002). Dissociation and post-traumatic stress disorder: Two prospective studies of motor vehicle accident survivors. *British Journal of Psychiatry*, *180*, 363–368.

Paivio, A., Yuille, J. C., & Madigan, S. A. (1968). Concreteness, imagery, and meaningfulness values for 925 nouns. *Journal of Experimental Psychology*, *76*, 1–25.

Philippot, P., Schaefer, A., & Herbette, G. (2003). Consequences of specific processing of emotional information: Impact of general versus specific autobiographical memory priming on emotion elicitation. *Emotion*, *3*, 270–283.

Raes, F., Hermans, D., De Decker, A., Eelen, P., & Williams, J. M. G. (2003). Autobiographical memory specificity and affect regulation: An experimental approach. *Emotion*, *3*, 201–206.

Raven, J. C., Court, J. H., & Raven, J. (1994). Mill Hill Vocabulary Scale. In *Manual for Raven's Progressive Matrices and Vocabulary Scales* (1994 ed.). Oxford, UK: Oxford Psychologists Press.

Rosen, V. M., & Engle, R. W. (1998). Working memory capacity and suppression. *Journal of Memory and Language*, *39*, 418–436.

Salkovskis, P. M., & Campbell, P. (1994). Thought suppression induces intrusion in naturally occuring intrusive thoughts. *Behaviour Research and Therapy*, *32*, 1–8.

Schönfeld, S., & Ehlers, A. (2007). *Autobiographical memories in everyday life in post-traumatic stress disorder.* Manuscript submitted for publication. **AQ2**

Schönfeld, S., & Ehlers, A. (in press). Overgeneral memory extends to pictorial retrieval cues and correlates with cognitive features in post-traumatic stress disorder. *Emotion.* **AQ1**

Shipherd, J. C., & Beck, J. G. (1999). The effects of suppressing trauma-related thoughts on women with rape-related post-traumatic stress disorder. *Behaviour Research & Therapy*, *37*, 99–112.

Stöber, J., & Borkovec, T. D. (2002). Reduced concreteness of worry in Generalised Anxiety Disorder: Findings from a therapy study. *Cognitive Therapy and Research*, *26*(1), 89–96.

Watkins, E., & Teasdale, J. D. (2001). Rumination and overgeneral memory in depression: Effects of self-focus and analytic thinking. *Journal of Abnormal Psychology*, *110*, 353–357.

Watkins, E., Teasdale, J. D., & Williams, R. M. (2000). Decentring and distraction reduce overgeneral autobiographical memory in depression. *Psychological Medicine*, *30*, 911–920.

Wechsler, D. (1997). *WAIS-III. Administration and scoring manual*. London: The Psychological Corporation.

Wegner, D. M., & Erber, R. (1992). The hyperaccessibility of suppressed thoughts. *Journal of Personality and Social Psychology*, *63*, 903–912.

Wegner, D. M., Schneider, D. J., Carter, S. R. III, & White, T. L. (1987). Paradoxical effects of thought suppression. *Journal of Personality and Social Psychology*, *53*, 5–13.

Wells, A., & Davies, M. I. (1994). The thought control questionnaire: A measure of individual differences in the control of unwanted thoughts. *Behaviour Research and Therapy*, *32*, 871–878.

Wenzel, A., Jackson, L. C., Brendle, J. R., & Pinna, K. (2003). Autobiographical memories associated with feared stimuli in fearful and nonfearful individuals. *Anxiety, Stress and Coping*, *16*, 1–15.

Wessel, I., Meeren, M., Peeters, F., Arntz, A., & Merckelbach, H. (2001). Correlates of autobiographical memory specificity: The role of depression, anxiety and childhood trauma. *Behaviour Research & Therapy*, *39*(4), 409–421.

Wilhelm, S., McNally, R. J., Baer, L., & Florin, I. (1997). Autobiographical memory in obsessive-compulsive disorder. *British Journal of Clinical Psychology*, *36*, 21–31.

Williams, J. M. G., & Broadbent, K. (1986). Autobiographical memory in suicide attempters. *Journal of Abnormal Psychology*, *95*, 144–149.