

Autobiographical Memory Specificity: Effects of trauma exposure, PTSD symptom profile,
coping strategies, and resilience

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ABSTRACT

Autobiographical memory is central to human functioning as it contributes to the development of a sense of self, guides social behaviour and facilitates the effective pursuit of goals. Early studies in this field speculated that individuals with a history of trauma exposure tended to display reduced autobiographical memory specificity (AMS). Recently, however, empirical research has demonstrated that posttraumatic symptomatology might make a greater contribution to reduced AMS than does mere trauma exposure. This study represents the first wave of data collection in a research program that will examine (a) which particular symptoms of posttraumatic stress disorder (PTSD) might predict reduced AMS, and (b) how individual differences in resilience and coping strategies play a role in reduced AMS. In this first phase of the program, 11 adults with a history of childhood trauma and 13 matched controls were administered an autobiographical memory test (AMT) and questionnaires assessing resilience and coping strategies. Between-group comparisons showed that a history of childhood trauma was not associated with poorer performance on the AMT (i.e., reduced AMS). Participants in the trauma group had a higher probability of responding with specific memories in response to negative AMT cues. AMT performance was not associated with level of resilience or with any particular coping strategy, although participants in the trauma group were significantly more likely to use avoidance as a coping strategy. In summary, the current results are consistent with the growing body of literature supporting the idea that mere exposure to a traumatic event does not make a unique contribution to reduced AMS. Against this empirical background, the second phase of this study will involve recruitment of a PTSD group to identify which particular symptoms of that disorder might predict reduced AMS.

Keywords: AMT; PTSD; autobiographical memory; avoidant coping; overgenerality; resilience; specificity; trauma.

It is an unfortunate reality that children are far more susceptible to adversity and victimisation than adults. Even though child victimisation such as sexual and physical abuse is a worldwide phenomenon, it is particularly prevalent and on the rise in South Africa. Recent reports suggest that 40% of South Africans have been victimised in either their childhood or adolescent years, and that child rape alone has increased by 400% in the last decade (Carey, 2007). Some traumatised children manage the stresses of these early adverse experiences with minimal or no impact on their daily functioning (Mancini & Bonnano, 2006). Those who are less resilient, however, suffer from immediate psychological, cognitive and behavioural difficulties, which may persist throughout their adolescence and adulthood.

Adult psychopathological correlates of childhood trauma include self-injurious behaviour (SIB), symptoms of posttraumatic stress disorder (PTSD) and other anxiety disorders, depressive symptomatology and a range of personality disorders (Caffo, Forresi, & Lievers, 2005).

Individuals with a history of early adversity are also more likely to use maladaptive coping strategies, such as cognitive and behavioural avoidance, to deal with both their trauma and other daily stressors. These may contribute to the development and maintenance of PTSD (Lawler, Ouimette, & Dahlstedt, 2005). This disorder is in turn associated with a range of cognitive impairments, including deficits in episodic memory (Isaac, Cushway, & Jones, 2006). The main aims of the research program of which this study is a part are to (a) identify which distinct symptoms of PTSD are closely related to impairments in the autobiographical aspect of episodic memory, and (b) explore the relationship between resilience, coping strategies and autobiographical memory functioning.

THEORETICAL BACKGROUND

PTSD and Trauma Resilience

A number of psychiatric disorders can develop in response to traumatic experiences; the current study will focus only on PTSD, however. The Diagnostic and Statistical Manual for Mental Disorders (DSM-IV; American Psychiatric Association, 1994) categorises the defining symptoms of this disorder into three distinct clusters: re-experiencing, avoidance and hyperarousal. Re-experiencing symptoms include recurrent and involuntary recollection of the trauma in the form of intrusive thoughts, nightmares, and sensory-laden flashbacks. Instead of remembering the traumatic event as an episode from their past, PTSD sufferers often re-

experience the worst moments of the trauma with all of their original emotional intensity (McNally, 2006). Symptoms in the avoidance cluster include active suppression of intrusive thoughts and memories, persistent avoidance of stimuli that are associated with the trauma (e.g., conversations, people and places) and emotional numbing. The hyperarousal cluster is characterised by symptoms of heightened physiological responsiveness such as hypervigilance, exaggerated startle responses, irritability and difficulties in concentrating and falling asleep (Isaac et al., 2006).

For a PTSD diagnosis to be warranted, the individual must report having experienced a traumatic event (as defined by the DSM-IV), and, in response to that event, must have experienced those three clusters of symptoms for at least 1 month. An event is considered as traumatic only if it involves both the objective criteria of “actual or threatened death or serious injury, or a threat to the physical integrity of self or others” and the subjective criteria of “intense fear, helplessness, or horror” (American Psychiatric Association, 1994, p. 428).

Despite the frequency with which such events occur, only a relatively small subset of people typically experience trauma reactions that are severe enough to justify a PTSD diagnosis. Exposure to traumatic events often results in transient trauma symptoms (e.g., difficulty sleeping or intrusive memories of the event), but most people appear to fully recover from them and return to their former levels of functioning within a relatively short period of time (Bonnano, Galea, Bucciarelli, & Vlahov, 2007). Wide variations in the prevalence of PTSD across traumatised groups indicate that the mere exposure to traumatic events does not fully explain the development of PTSD. Individual predispositions, such as level of resilience, play a significant role in determining the type and severity of traumatic responses (Heller, Larrieu, D’Imperio, & Boris, 1999).

While many researchers conceptualise the absence of psychopathology or maladaptive behaviour as an indicator of resilience in traumatised individuals, others view resilience as the distinctive dispositional or personality characteristics that allow individuals to tolerate even high levels of adversity (Heller et al., 1999). These dispositional or personality characteristics include: 1) a sense of personal competence, 2) tolerance of negative affect, 3) positive acceptance of change, 4) the ability to seek social support, 5) spiritual faith, and 6) an action-oriented approach to problem solving (Campbell-Sills, Cohan, & Stein, 2006). Recent research suggests that greater resilience (as measured by these six factors) is predictive of greater likelihood of recovery in

patients with PTSD (Connor, 2006). This perspective on resilience is the one I will use in the current study.

Coping

Resilience and coping are related constructs. However, coping refers to the specific set of cognitive and behavioural strategies used to manage the demands of stressful situations, whereas resilience relates to predispositions that favour adaptive outcomes in the face of adversity (Mancini & Bonnano, 2006). Research has consistently demonstrated that coping is an important mediator between adverse events and emotional outcomes (e.g., Johnson & Kenkel, 1991). It is also well established that some coping strategies, particularly those that inhibit emotional processing, such as avoidance and distraction, are associated with less positive emotional outcomes (e.g., Coffrey, Leitenberg, Henning, Turner, & Bennett, 1996). On the other hand, coping strategies that can potentially manage or alter the stressful situation, such as active problem-solving and use of social support, tend to be more adaptive.

Bal and colleagues (2003), using a sample of adolescents, with and without a history of adversity, confirmed those conclusions. Their analyses revealed that avoidant coping is significantly associated with more stress-related symptoms such as fear, depression, dissociation and low emotional stability. In addition, this study replicated the finding from previous studies (e.g., Coffrey et al., 1996; Johnson & Kenkel, 1991) that avoidance coping is more commonly used by sexually abused adolescents, while active coping is more often used by healthy adolescents.

PTSD patients have also been found to rely excessively on avoidant coping. Because these coping strategies prevent the processing and resolution of the trauma, they contribute to the maintenance of the disorder (Lawler et al., 2005). Numerous studies have highlighted the positive association between avoidant coping and the severity of PTSD symptoms (Haden, Scarpa, Jones, & Ollendick, 2007). In fact, recent experimental findings have suggested that cognitive avoidance paradoxically stimulates intrusive thoughts. For instance, when traumatised individuals are asked to suppress thoughts relating to the trauma, these thoughts surprisingly increase in frequency (Sharp & Harvey, 2001).

Recent studies have also delineated a number of subtle strategies that are employed by traumatised individuals to manage their traumatic memories. First, these individuals have been

found to recall memories of the trauma in a fragmented and disorganised manner. This strategy is thought to assist the individual in minimising their awareness of the traumatic event. Second, it has been proposed that traumatised individuals adopt an overgeneral memory retrieval style as a strategy to block painful emotions and memories related to the trauma (Williams et al., 1996).

Overgeneral Autobiographical Memory: An avoidant coping strategy

Autobiographical memory

Researchers have used a wide variety of terms and definitions to describe autobiographical memory. However, the most comprehensive definitions are those that emphasise both its temporal-spatial aspect and its association with the self. Hence, in this study, autobiographical memory will refer to the recollection of personally experienced events that have both temporal and spatial dimensions. This index of memory is central to human functioning as it contributes to the development of a sense of self, guides social behaviour and facilitates the effective pursuit of goals (Williams et al., 2007).

Following widespread recognition of the importance of autobiographical memory, researchers have investigated its various aspects, including the processes that underlie the encoding and retrieval of events (e.g., Hertel & Gerstle, 2003); the relative contribution of different neural networks involved in this type of memory (e.g., Greenberg & Rubin, 2003); and the aspects that are affected by neurological impairments, such as those caused by severe traumatic brain injury (e.g., Piolino et al., 2007). The focus of the current study is on a particular pattern of autobiographical memory retrieval, termed overgenerality. This retrieval pattern is often displayed in individuals with a history of trauma.

Overgeneral autobiographical memory

Overgeneral autobiographical memory was first identified by Williams and Broadbent (1986) in their study of suicidal individuals. In addition to relatively slow retrieval of memories in response to positive cues, depressed suicidal patients consistently failed to retrieve a specific memory, irrespective of cue valence. Instead, they responded on about half the trials with a memory that summarised a category of similar events. On the other hand, a control group of non-suicidal hospital patients retrieved more specific memories on most of the trials. These findings suggested that autobiographical memories of suicidal patients, when compared to those of non-

suicidal controls, not only differed in terms of their relative accessibility, but also in their form and content.

The results of that study prompted further investigation of the varying degrees of specificity with which autobiographical memories are recollected. Most subsequent studies have indexed overgeneral autobiographical memory using a cued-recall procedure known as the Autobiographical Memory Test (AMT; Williams & Broadbent, 1986). In the AMT, participants are required to retrieve a specific memory in response to a series of visual or verbal cues, varying in emotional valence. Some studies use only positive and negative cues (e.g., Harvey, Bryant, & Dang, 1998), while others also include neutral cues (e.g., Jones et al., 1999). The time allowed to retrieve a specific memory in response to each cue word is usually either 30 or 60 seconds.

In the AMT, a specific autobiographical memory is defined as the recollection of a personal event that lasted less than a day and occurred at a particular time and place. For instance, a specific memory in response to the word “party” would be “I did not enjoy Jane’s birthday party last night”. General autobiographical memories, on the other hand, have minimal anchor in space and time. They usually summarise several individual events by reference to their common characteristics. So, an example of a general response would be “I never have fun at birthday parties”.

Mechanisms underlying overgeneral autobiographical memory retrieval

Recent attempts to account of the overgenerality effect in autobiographical memory include cognitive resource allocation theories (e.g., Brewin, Reynolds, & Tata, 1999; Kuyken & Brewin, 1995). This theoretical framework suggests that the experience of trauma may lead to overgeneral memory by indirectly reducing executive resources. Because both trauma-related intrusions and effortful attempts to control such experiences take up working memory capacity, fewer cognitive resources are available to perform concurrent tasks, such as the retrieval of specific autobiographical memories on the AMT.

However, a more prominent explanation of overgeneral memory comes from the functional avoidance hypothesis. This hypothesis suggests that the recollection of general descriptions may produce less negative affect than the recollection of specific episodic memories (Conway & Pleydell-Pearce, 2000). Remaining at the level of more general information might

thus be functional in diminishing the emotional impact of negative or traumatic events from the past.

This functional avoidance hypothesis is consistent with affect regulation theory (Williams et al., 1996). This theory suggests that children who experience early adversity tend, as a strategy to block painful emotions, to adopt a more generic style in retrieving autobiographical memories. Because memories emerging in the context of early adversity are typically associated with strong and unpleasant emotional arousal, truncated retrieval enables the child to halt autobiographical memory retrieval before a specific and potentially painful event is brought to consciousness (Kuyken, Howell, & Dalgleish, 2006). Being less specific thus reduces the risk of confrontation with painful memories concerning the traumatic experiences. Over time, this tendency generalises to all types of memories, irrespective of their nature, and results in a pervasive overgeneral memory retrieval style in the individual. In the short run, reduced specificity may act as a protective and functional coping mechanism. In the long run, however, it may prove to be maladaptive and to have unfavorable effects. For instance, various studies have shown that lack of memory specificity is associated with poor problem solving (e.g., Sutherland & Bryant, 2007) and with difficulties in imagining the future in a specific way (e.g., Williams et al., 1996). Overgenerality has also been found to contribute to the onset and maintenance of depression (e.g., van Minnen, Wessel, Verhaak, & Smeenk, 2005) and of PTSD (e.g., Harvey et al., 1998).

Identifying the etiology of the overgenerality effect in traumatised samples is therefore crucial for understanding the evolution of such disorders and for determining their prognosis (Dalgleish, Rolfe, Golden, Dunn, & Barnard, 2008). A preliminary association between overgeneral retrieval and poor treatment outcome was evidenced in a study by Brittlebank, Scott, Williams, and Ferrier (1993). Analyses revealed that patients with major depressive disorder (MDD) and greater overgenerality at initial assessment were less responsive to antidepressant treatment at 7 months follow-up.

Overgenerality in MDD and PTSD

Following the seminal work of Williams and Broadbent (1986), the phenomenon of overgenerality has been widely investigated in patients with MDD. Numerous studies have shown that overgeneral memory is consistently associated with depression or depressive

symptoms (e.g., Brittlebank et al., 1993; Wessel, Meeren, Peeters, Arntz, & Merckelbach, 2001), with depressed patients being more overgeneral in their recall of autobiographical memories than controls. In fact, failures to replicate the overgenerality effect in depressed samples are relatively rare. However, one such instance was reported by Dalgleish, Spinks, Yiend, and Kuyken (2001). Results of their study showed that patients with seasonal affective disorder (SAD) and a control group of healthy participants did not differ in their level of specificity. However, it can be argued that SAD differs from other forms of depression in that patients often do not have a history of adverse life events or chronic difficulties. These inconsistent findings therefore suggest that adverse experiences might be implicated in the development of overgenerality.

Kuyken and Brewin (1995) conducted one of the first studies that examined the role of early adversity in the etiology of overgeneral memory. They used a sample of depressed women with and without a history of childhood abuse and assessed their relative performance on the AMT. Analyses revealed that participants who reported a history of sexual abuse retrieved significantly more overgeneral memories than did participants with no history of abuse. In addition, the overgenerality effect was higher in participants reporting more intrusive memories relating to the trauma and more avoidance symptoms. Results also showed that overgenerality was not strongly associated with depression severity. These findings provided preliminary evidence that overgeneral memory might be more closely related to experiences of trauma and to avoidance of distressing memories than to depression severity.

Subsequent studies have examined the relationship between overgenerality, trauma exposure and posttraumatic symptoms in various clinical samples. These studies have lent further support to the relationship between overgenerality and PTSD-like symptoms of intrusion and avoidance. However, they have also shown that mere trauma exposure is not necessarily associated with overgenerality. For instance, McNally and colleagues (1995) showed that combat veterans with PTSD retrieved significantly fewer specific memories than did those without PTSD. Similarly, Harvey and colleagues (1998) found that survivors of road accidents with acute stress disorder (ASD) retrieved fewer specific memories to positive cues than did non-ASD participants, even when the influence of depression was controlled. These studies suggest that posttraumatic symptomatology is associated with overgenerality, beyond the effects of trauma exposure alone.

Furthermore, Brewin et al. (1999) confirmed that patients with depression typically experience intrusive memories, and that these memories are comparable to those experienced in PTSD, both in terms of their nature and frequency. They also found that greater levels of spontaneous intrusions in depressed patients were associated with increased overgenerality, even after controlling for depression severity.

Altogether, the three studies reviewed above (Brewin et al., 1999; Harvey et al., 1998; McNally et al., 1995) suggest that subclinical posttraumatic reactions make a greater contribution to overgenerality than do depression severity and trauma exposure. However, because no controls for trauma exposure and depression were included in those studies, the effects of event exposure alone and the extent to which depression mediates the relationship between posttraumatic symptoms and overgenerality were not established. These gaps were bridged by a well-controlled study conducted by Brewin and colleagues (1998). They compared overgenerality in matched samples of depressed and non-depressed cancer patients. Consistent with earlier predictions, depressed patients reported significantly more intrusive memories than did controls and were also more overgeneral in their AMT responses. More intrusion was associated with greater avoidance and overgenerality. Therefore, this study replicated the finding that avoidance of distressing memories was associated with overgenerality, and confirmed that this association was mediated by depression and was independent of exposure to potentially traumatic events.

Interestingly, however, Moradi and colleagues (2008) failed to replicate the well-established association between intrusion/avoidance and overgenerality. Their study explored, for the first time, the relationship between reduced autobiographical memory specificity (AMS) and individual PTSD symptoms. They found, in a sample of refugees with PTSD, that frequency and severity of flashbacks were negatively associated with AMS. More flashbacks were associated with more overgeneral responses on the AMT. However, effortful avoidance was positively associated with AMS, with more avoidance associated with fewer overgeneral responses. These effects were maintained even after controlling for depression severity. In addition, this study did not find evidence for a significant association between intrusive memories and overgenerality.

Method variance may account for the failure to replicate a positive association between intrusion/avoidance and overgenerality. While Moradi et al. (2008) used the Posttraumatic

Diagnostic Scale (PDS; Foa, Cashman, Jaycox, & Perry, 1997) to assess each symptom cluster in PTSD, previous studies (Brewin et al., 1998, 1999; Kuyken & Brewin, 1995) measured broader constructs of intrusion and avoidance using the Impact of Events Scale (IES; Horowitz, Wilner, & Alvarez, 1979). Unlike the PDS, not all items on the IES map closely onto the distinct PTSD symptom clusters. Some items therefore assess experiences that are not in DSM-IV diagnostic criteria for PTSD. In addition, the IES is a measure of symptom frequency, whereas the PDS assesses both symptom frequency and severity. This difference may also account for the discrepant findings.

Methodological limitations of previous studies

Although the studies reviewed above represent some of the best controlled quasi-experimental studies examining overgenerality in depression and PTSD, one limitation across many studies (e.g., McNally, 1995; Harvey et al., 1998; Moradi et al., 2008) is the absence of a comparison group without a history of trauma exposure. This control group is needed to conclusively implicate posttraumatic symptoms in overgenerality. Another limitation is the overreliance on, and the inconsistent use of, the IES in many studies (e.g., de Decker, Hermans, Raes, & Eelen, 2003; Hermans et al., 2004; Wessel, Merckelbach, & Dekkers, 2002). Because these studies used the IES to assess posttraumatic symptoms without explicitly connecting those symptoms to a particular event, their applicability is largely limited. Without this crucial link, the IES may no longer be a solid assessment of posttraumatic reactions but may instead simply be a measure of the general tendency to experience avoidance and intrusive thoughts.

Another methodological limitation of previous studies in this field relates to the fact that, because MDD patients continue to be overgeneral between depressive episodes, depression diagnostic status rather than severity appears to account for the relationship between overgenerality and depression (Moore & Zoellner, 2007). However, many studies (Brewin et al., 1999; Harvey et al., 1998; McNally et al., 1995) controlled for depression severity rather than MDD diagnosis in their analyses.

Another common limitation of many studies (e.g., de Decker et al., 2003; Hermans et al., 2004; McNally et al., 1995) is the verbal presentation of AMT cues. By interpreting the cues for the participant, the experimenter may alter their emotionality (van Vreeswijk & de Wilde, 2004).

Altogether, these limitations point to the need for more well-controlled studies investigating the association between trauma or posttraumatic reactions and overgenerality.

SPECIFIC AIMS AND HYPOTHESES

The research program of which this study is a part aims to explore the relationship between individual PTSD symptoms and AMS in individuals meeting the DSM-IV diagnostic criteria for PTSD. Only Moradi et al. (2008) have previously conducted such an investigation, and they reported results that are highly inconsistent with those of previous studies. Our research program therefore aims to clarify the validity of these discrepant findings. Given the time constraints associated with this particular project, it was not possible to recruit enough participants meeting both the DSM-IV diagnostic criteria for PTSD and the inclusion criteria of this study. Hence, only the first phase of the research program is reported here.

This first wave of data collection aimed to examine (a) the extent to which childhood trauma is implicated in reduced AMS, (b) whether overgenerality of autobiographical memory is associated with other avoidant coping strategies, and (c) whether lack of resilience predicts an overgeneral retrieval style.

In summary, the specific hypotheses of this study, the first phase of the larger research program, were:

1. A control group of healthy participants with no history of childhood trauma would retrieve more specific memories on the AMT than would participants who had experienced a childhood trauma but who did not meet DSM-IV criteria for PTSD.
2. Participants who were less specific in their responses on the AMT would rely more on avoidant coping strategies, while participants who were more specific in their AMT responses would rely more on active problem solving and social support.
3. Participants who scored high on a measure of resilience would display less overgenerality in their AMT responses.

METHODS

Research Design and Setting

This study is part of a larger research project investigating the impact of trauma on different memory systems. I used a single-blind quasi-experimental design. The group status of the participants (Trauma or Control) was not known prior to testing. All experimental procedures were conducted in research laboratory within the UCT Department of Psychology.

Sample

Forty-five participants between the ages of 18-28 were recruited from the UCT community. Of those 45, 21 were excluded from the study based on the following criteria.

Exclusion criteria

Because this study focused only on individuals with a history of childhood trauma, those who had faced a number of distressing and potentially traumatic events in the last six months were excluded from the study. In addition, individuals diagnosed with any psychiatric disorder, as assessed by the Mini International Neuropsychiatric Interview (*MINI*; English version 5.0.0; Sheehan et al., 1998), were excluded. Potential participants were thoroughly screened for co-morbid depression, with those scoring above 19 (the cut-off score between mild and moderate depression) on the Beck Depression Inventory-Second Edition (*BDI-II*; Beck, Steer, & Brown, 1996) or carrying an MDD diagnosis being excluded from the study. Finally, participants with inconsistent scores on the two administrations of the Childhood Trauma Questionnaire-Short Form (*CTQ-SF*; Bernstein & Fink, 1998) were excluded from the study.

The main reasons for using such rigid exclusion criteria were:

1. It is unclear whether Major Depressive Disorder (MDD) accounts for the relationship between trauma exposure and reduced AMS. Hence, it was important to exclude individuals with MDD from the study to conclusively identify the contribution of childhood trauma in reduced specificity, over and above the effects of co-morbid depression
2. There is accumulating evidence that reduced AMS might be a clinical phenomenon limited to specific psychiatric diagnostic groups such as those with MDD or PTSD (e.g., Kremers, Spinhoven, & Van der Does, 2004; Renneberg, Theobald, Nobs, & Weisbrod, 2005). Hence, mixed psychiatric samples were not well suited for the purpose of this study.

3. Because the CTQ-SF was the only measure of childhood trauma used in this study, it was very important to exclude all questionable CTQ profiles.

The application of these criteria resulted in a final sample of 24 participants, 11 who reported having experienced some form of childhood trauma and 13 with no history of childhood trauma. The demographic and clinical profiles of these participants are presented in Table 1.

Table 1
Demographic and Clinical Characteristics of the Current Sample

	Trauma (<i>n</i> = 11)	Control (<i>n</i> = 13)	<i>F</i>	<i>p</i>	Cohen's <i>d</i>
Age ^a	20.73 (0.90)	20.00 (1.41)	2.154	0.156	0.61
Sex (M:F)	2:9	5:8	---	---	---
CTQ-SF					
SA	7.91 (2.98)	5.00 (0.00)	12.477	0.002**	1.45
PA	7.36 (3.14)	5.77 (0.93)	3.061	0.094	0.71
PN	7.64 (1.91)	5.54 (1.13)	11.143	0.003**	0.07
EA	12.82 (4.40)	6.23 (1.24)	26.838	0.000**	2.12
EN	11.27 (3.00)	7.46 (1.98)	13.856	0.001**	1.53
BDI-II	8.18 (6.00)	5.69 (4.52)	1.344	0.259	---

Note. CTQ-SF = Childhood Trauma Questionnaire-Short Form; SA = Sexual Abuse; PA = Physical Abuse; PN = Physical Neglect; EA = Emotional Abuse; EN = Emotional Neglect; BDI-II = Beck Depression Inventory II.

^aData presented are means with standard deviations parentheses.

p* < .05; *p* < .001

As Table 1 shows, there were no statistically significant differences between the Trauma and the Control group in terms of age, BDI-II score, and the CTQ-SF measure of Physical Abuse. Similarly, a chi-squared analysis revealed that the two groups did not differ in terms of male-to-female ratio, $\chi^2 = 1.925$, *p* = 0.165. There were, however, significant between-group differences on CTQ-SF Sexual Abuse, Physical Neglect, Emotional Abuse, and Emotional Neglect sub-scales. A closer inspection of the Trauma group's CTQ profiles revealed that 6 participants' self-reported scores fell in the range conventionally described as "severe to extreme" (Bernstein & Fink, 1998) on at least one of the sub-scales. The other 5 Trauma group

participants reported scores that fell in the “moderate to severe” range on at least one of the CTQ subscales. This pattern of data indicates that the levels of trauma in the present study varied sufficiently to detect a difference in AMT performance, if such a difference was in fact present.

Instruments

The *MINI* was chosen to screen out participants with any psychiatric disorder, on the basis of its psychometric properties, conciseness and ease of administration. It is a well-established structured diagnostic interview that assesses the major Axis I psychiatric disorders of the DSM-IV, including depression, substance abuse and PTSD. The MINI has good psychometric properties and has been used extensively in psychological research in South Africa (e.g., Kaminer, Stein, Mbanga, & Zungu-Dirwayi, 2001; Van der Ryst et al., 2002). Because of the precise nature of the questions and its dichotomous response format, it can be administered within approximately 20 minutes. The interview can also be easily administered by a lay interviewer who has undergone the appropriate training (Sheehan et al., 1998).

The *BDI-II* (Beck et al., 1996) was chosen to assess current presence and severity of depressive symptoms in the participant groups. The instrument adheres closely to the DSM-IV diagnostic criteria for MDD and could be reliably used in the target sample as it has been particularly designed to assess depression severity in adults and adolescents of or above the age of 13 years (Whisman, Perez, & Ramel, 2000). Each of the 21 inventory items of the BDI-II corresponds to a specific category of depressive symptom and/or attitude and consists of a graded series of four self-evaluative statements. Participants are required to consider how each statement relates to the way they have felt in the past 2 weeks. The BDI-II has achieved adequate reliability and validity for use in both clinical and research settings (Beck et al., 1996; Whisman et al., 2000). It is regularly used in South African research studies (e.g., Ward, Flisher, Zissis, Muller, & Lombard, 2001).

The *CTQ-SF* (Bernstein & Fink, 1998) is a retrospective self-report instrument developed to screen for histories of childhood abuse or neglect. The CTQ-SF contains five subscales, three assessing abuse (Emotional, Physical and Sexual) and two assessing neglect (Emotional and Physical). Each subscale consists of 5 items; participants have to respond to each of them on a 5-point Likert-type scale, ranging from “never true” to “very often true”. The minimum score of 5 on a particular subscale indicates no history of abuse or neglect, while the maximum score of 25

indicates an extreme history of abuse or neglect. The instrument also contains a three-item Minimization-Denial subscale to help detect false-negative trauma reports. The CTQ-SF has demonstrated excellent test-retest reliability, convergent validity, and discriminant validity with therapists' independent ratings of child abuse (Bernstein et al., 2003). It is suitable for the purpose of the current study as it is brief (can be administered in only 5 minutes), reliable and appropriate for the target sample. The CTQ-SF has been frequently used in trauma research in South Africa (e.g., Lochner et al., 2004).

The *List of Threatening Experiences (LTE)* (Brugha & Cragg, 1990) is a self-report measure designed to identify the presence of stressful life experiences. The 12 items on the instrument relate to events such as serious illness, death of close friends or family members, and major financial crises. Participants were required to highlight the events that they had experienced in the past 6 months. For the purposes of this study, the LTE was adapted to assess the potential impact, ranging from "None" to "Significant", of each stressful event on the participants. It also investigated whether they had experienced any of the listed events more than 6 months ago. Participants who had experienced a number of recent and severe life crises were excluded from the study. The LTE was chosen because it is relatively quick to administer, requiring only 5-10 minutes to complete. It has also demonstrated good test-retest reliability and concurrent validity (Humke & Radnitz, 2005).

The *Connor-Davidson Resilience Scale (CD-RISC)* (Connor & Davidson, 2003) is a brief self-rated assessment of resilience. It contains 25 items, each rated on a 5-point scale. Participants were required to respond to each item based on how they had felt over the previous month. The total score on this instrument ranges from 0-100, with higher scores reflecting greater resilience. The CD-RISC possesses sound psychometric properties, with good internal consistency and test-retest reliability (Connor & Davidson, 2003). It also displays high convergent validity when compared to other measures of hardiness, and accurately distinguishes between populations known to have different degrees of resilience (e.g., healthy controls versus clinical samples, such as patients with anxiety disorders). Because the CD-RISC has been previously used to collect resiliency data from the South African population (Davidson et al., 2006), it could be reliably used in the current study.

The *Coping Strategy Indicator (CSI)* (Amirkhan, 1990) is a self-report questionnaire assessing the relative use of three different coping strategies (Avoidance, Seeking Support, and

Problem Solving) in response to a specific stressor. It was selected for practical, theoretical and psychometric reasons. First, this instrument is a relatively brief coping inventory that can be administered within 10 minutes (Amirkhan & Auyeung, 2007). Responses are indicated on a 3-point scale, with higher scores on any one of the three subscales reflecting greater reliance on that particular strategy (Desmond, Shevlin, & MacLachlan, 2006). Second, the items on the CSI were empirically derived to assess only those strategies that are most often employed by adolescents and adults. Third, the CSI has demonstrated psychometric robustness within adult populations (Amirkhan & Auyeung, 2007). Its factor structure has also been replicated in a variety of contexts and populations, suggesting that the instrument can be reliably used with different cultural groups.

The *Autobiographical Memory Test* (AMT; Williams & Broadbent, 1986) is a cued recall task that assesses the ability to retrieve specific autobiographical memories in response to a series of cue words with different emotional valences. This instrument was chosen primarily because most studies investigating the overgenerality effect have used some version of the AMT. Following the recommendations of Moore and Zoellner (2007), the version used in this study drew mainly on the original AMT paradigm in terms of the number and type of words used, the presentation of cues, and the maximum time allocated to retrieve each memory. A total of 20 cue-words (10 positively toned words and 10 negatively toned words) were used in this study. These words were selected from a sample used by Brittlebank et al., (1993) and were matched for frequency of occurrence using Kucera-Francis frequency ratings. The words were also chosen on basis of their high emotionality ratings. The cue-words that were used in this study are these:

Positive words: *happy, relieved, proud, devoted, hopeful, amazed, tender, excited, safe, surprised.*

Negative words: *guilty, hopeless, failure, grief, rejected, helpless, sad, ashamed, tragic, hurt*

Each cue word was printed in black capital letters, 3.5 cm high, on a 12.5cm x 7.5 cm white flashcard. The cards were shuffled and presented in a separate random order for each participant, with positive and negative words alternating. A maximum of 30 seconds was allocated to retrieve a specific memory in response to each cue word. Preliminary coding was done by the experimenter during the testing session. Blind to group membership and

experimental hypotheses, a trained rater independently scored the audio-taped responses of 8 randomly selected participants (4 from the control group and 4 from trauma Non-PTSD group) for 1) latency to retrieve a specific memory in seconds and 2) the specificity of the memory. Consistent with previous research, the first memory retrieved was coded in terms of its specificity: Studies have shown that the first memory retrieved best discriminates between clinical and non-clinical groups (McNally et al., 1995; Moradi et al., 2008).

Procedure

The UCT community was invited to participate in the study through posters placed around campus and in residences. Interested individuals were directed to an online database, where they were required to enter their contact details and, as a requirement of the larger study, complete some online questionnaires, including the CTQ-SF and LTE. An independent researcher went through the database and identified individuals who were eligible for the study. Those individuals were then contacted and requested to come for an individual screening and testing session at the UCT Psychology Department. Prior to each session, participants were briefed about the procedures and emphasis was placed on the anonymity and confidentiality of their participation. They were then required to give their written informed consent (See Appendix for consent form).

Each session began with administration of the MINI. The AMT was then administered. Participants were instructed to retrieve a specific personal memory in response to each cue word presented. They were told that the memory could be recent or distant, important or trivial. The researcher emphasised the need for specificity and provided examples of expected responses. Prior to commencement of the actual test, two practice words (*tired* and *winter*) were presented. Where non-specific responses were given, sufficient prompts were provided until the participant understood the requirements of the task.

In the actual test, if participants did not retrieve a specific memory immediately, they were given a single verbal prompt (“Can you think of a specific time, one particular event?”). If they then managed to recall a specific memory, the cumulative time to retrieve that memory was recorded. If participants did not retrieve a specific memory within the allocated time, a conservative time of 30 seconds was recorded and the next word was presented. Failure to retrieve any memory was recorded as an omission.

After the AMT, all participants were required to complete the CD-RISC, CSI, BDI-II and a paper and pencil version of CTQ-SF. The screening and testing procedures lasted approximately 60 minutes.

DATA ANALYSIS

The main statistical procedures were performed using STATISTICA version 8.0 (StatSoft Inc., 2007). Descriptive statistics were derived to describe the characteristics of the participants, to ascertain the mean scores for key variables, and to get an initial picture of the hypothesised differences between the two groups.

Before analysing the AMT data, a Kappa coefficient of reliability was computed to assess the level of inter-rater agreement with regards to AMT scoring. In line with other studies (e.g., Moradi et al., 2008) the AMT responses were coded, on both occasions (during the AMT administration and during an independent coding session), on an utterance-by-utterance basis. The following types of response utterances were distinguished:

1. Specific: utterances that referred to particular events that lasted less than a day and occurred at a particular time and place.
2. Generic-Categoric: utterances that summarised a number of events on the basis of a common feature.
3. Generic-Extended: utterances that summarised a number of events that happened over a period of time longer than a day.
4. Semantic Associate: utterances that did not represent true autobiographical memories
5. Omission: no responses within the allocated 30s.

Comparison with the second rater showed that these response utterances could be reliably distinguished. Inter-rater agreement on a sample of 160 response utterances indicated good reliability, $\kappa = 0.75$, comparable with previous studies (e.g., Dalgleish et al., 2008).

Assumptions of normality and homogeneity of variances were tested before any further statistical analyses were conducted on the AMT data. Between-group comparisons were then performed using a one-way ANOVA, with group status entered as the independent variable and AMT responses as the dependent variable. Power analyses were performed using G-Power

Statistical tool version 3.0.10 (Faul, Erdfelder, Lang, & Buchner, 2007). Finally, I used correlational analyses to explore the hypothesised association between resilience, coping strategies and autobiographical memory.

RESULTS

AMT Performance: Descriptive statistics

As a preliminary exploration of the variation within and between measures, relevant descriptive statistics were obtained for all independent variables and for the dependent variable. Means and standard deviations for two separate AMT specificity scores (one based on the total number of AMT trials, and the other based on the total number of participant responses) were calculated to identify any variation between these two measures (see Table 2). For example, if a participant retrieved 15 specific memories out of the 20 trials (positive cues and negative cues combined) his overall specificity score based on the total number of trials would be 0.75 (15/20). If, however, three omissions (instances when no memory was reported within the allocated 30 s) were noted and removed from the scoring, his specificity score based on the total number of responses would be 0.88 (15/17). I also calculated separate specificity scores for the sets of positive and negative cue words. Table 2 presents descriptive statistics derived from those calculations.

As can be seen in Table 2, there are larger average between-group differences when the specificity score is derived from the total number of responses. In order to ascertain if this specificity score best describes the pattern of memory retrieval distinct to each participant group, I calculated the percentage of omissions for each group. Table 3 presents descriptive statistics derived from those calculations.

According to Williams et al. (1996), omissions may represent an extremely early truncation of memory retrieval and are best considered as overgeneral. If omissions are in fact indicative of overgenerality, one would expect that participants in the Trauma group would have a higher omission rate than would those in the Control group. However, this was not the case in my sample. Because the Control group had a higher rate of omissions, it is clear that failure to retrieve any memory within the allocated 30 seconds is unrelated to overgenerality, and hence failure to remove omissions from scoring would lead to an extraneous reduction in specificity

(Moore & Zoellner, 2007). All subsequent analyses were thus conducted on the specificity score derived from the total number of responses (total number of trials less the number of omissions).

Table 2
AMT Performance

AMT Specificity Score	Trauma (<i>n</i> = 11)	Control (<i>n</i> = 13)
	Mean	Mean
Total Score		
# of specific responses / 20 cue words	0.72 (0.15)	0.76 (0.13)
# of specific responses / # of responses	0.76 (0.14)	0.84 (0.12)
Score on Positive Cue Items		
# of specific responses to positive cue words / 10 positive cue words	0.70 (0.16)	0.79 (0.12)
# of specific responses to positive cue words / # of responses to positive cue words	0.76 (0.13)	0.86 (0.13)
Score on Negative Cue Items		
# of specific responses negative positive cue words / 10 negative cue words	0.74 (0.19)	0.72 (0.17)
# of specific responses to negative cue words / # of responses to negative cue words	0.77 (0.20)	0.82 (0.15)
Latency		
All specific responses	7.98 (2.34)	9.16 (2.68)
Positive cues	7.50 (2.95)	9.08 (3.20)
Negative cues	8.40 (2.57)	9.13 (2.96)

^aValues for retrieval latency are approximate. No conclusive assumptions can be made based on these values.

Table 3

Type of Memory Retrieved over Total Number of Trials

	Trauma (n = 11)	Control (n = 13)
Total trials	220	260
Retrieval Type		
Specific		
Positive	70.0%	79.2%
Negative	73.6%	72.3%
Overall	71.8%	75.8%
Extended	5.0%	5.0%
Categoric	9.6%	4.6%
Semantic Associate	7.7%	5.0%
Omission	5.9%	9.6%

Table 3 also shows that the Control group retrieved more specific memories in response to positive cues than to negative cues. Participants in the Trauma group, on the other hand, retrieved more specific memories in response to negative cues than to positive cues. Figure 1 illustrates this AMT performance difference more clearly.

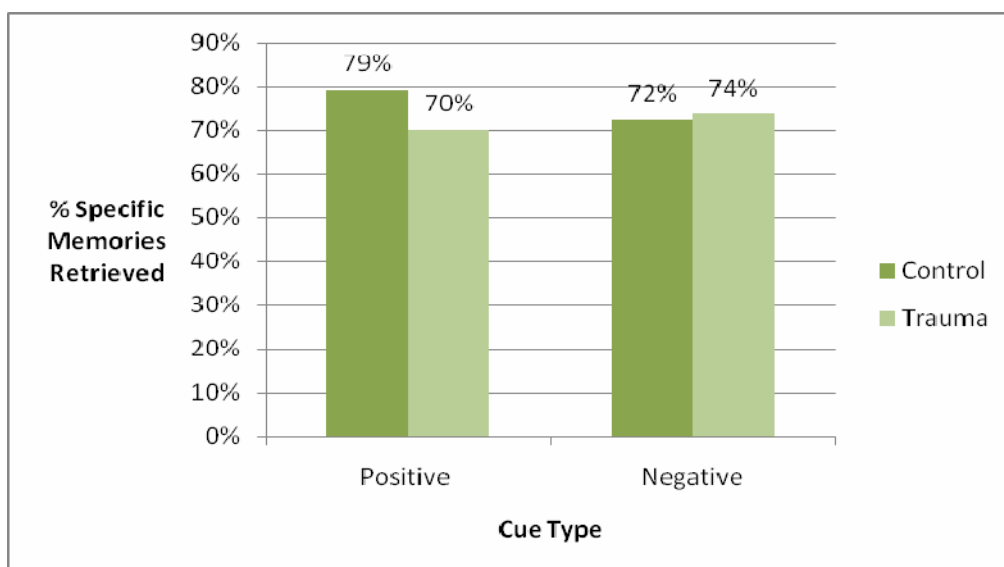


Figure 1. Percentage of specific memories retrieved during the AMT as a function of cue type

AMT Performance: Between-group differences

Three separate one-way ANOVAs were conducted to explore if there was any significant difference between the Trauma group and the Control group in terms of (a) overall specificity of memories, (b) specificity in response to positive cues, and (c) specificity in response to negative cues. Before proceeding with each of these analyses, Levene's test was conducted to check for homogeneity of variances between the groups and p-plots were obtained to check if the distributions of data were skewed. Assumptions about homogeneity of variances and normality of data were both upheld (see Appendix B, Table B1 and Appendix C, Figure C5).

As shown in Table 4, the ANOVAs revealed no statistically significant between-group differences.

Table 4
Between-group Differences in AMT Performance

AMT Specificity Score	<i>df</i>	<i>F</i> (1, 22)	<i>p</i>	Cohen's <i>d</i>
Total Score		2.256	0.147	0.62
Score on Positive Cue Items		2.820	0.107	0.77
Score on Negative Cue Items		0.582	0.454	0.29

A post-hoc analysis of achieved power using $\alpha = 0.05$ revealed that the power of this study to detect a real difference between the two groups in terms of their overall specificity score, specificity score for positive cues and specificity scores for negative cues was 83%, 95% and 27%, respectively. Hence, even with a small size ($n = 24$) achieved power is high enough to detect a real difference between the two groups in terms of their overall specificity and specificity for positive cues. However, at a small effect size of 0.29, the power to detect a significant difference between the negative specificity scores of the two groups was very low, thus increasing the chances of Type II error.

A 2 (Group Status: Trauma and Control) x 2 (Cue Type: Positive and Negative) factorial ANOVA was also performed to provide a more comprehensive understanding of AMT performance. The interaction effect (Group Status X Cue Type) was not statistically significant, $F(1, 44) = 0.175, p = 0.678$, although the graph of cell means reflected a possible interaction (see Figure 2). The main effect of Group Status was also not statistically significant, $F(1, 44) = 2.65, p = 0.111$, thus indicating that specificity scores (irrespective of cue type) were not affected by

whether or not participants had a history of childhood trauma.. The main effect of Cue Type was also not statistically significant, $F(1, 44) = 0.123, p = 0.728$, implying that specificity scores (irrespective of group status) were not affected by whether the presented AMT cue words were positive or negative in valence.

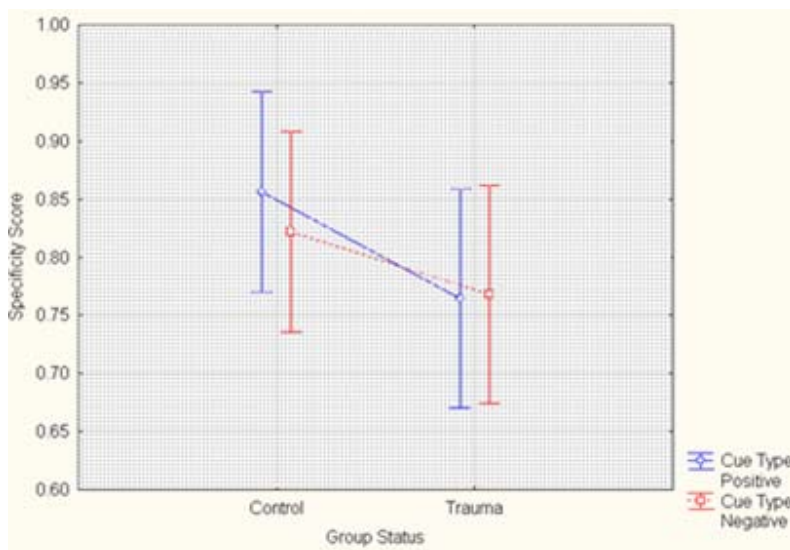


Figure 2. Graph of cell means

Measures of Coping and Resilience: Descriptive Statistics

I calculated measures of central tendency and variance for the measures of coping strategies and resilience. Table 5 shows that, on average and compared to participants in the Control group, participants in the Trauma group scored higher on all three subscales of the CSI and on the CD-RISC. Additionally, participants in the Control group appeared to rely almost equally on all three coping strategies, while the preferred coping strategy for participants in the Trauma group appears to have been avoidance.

Outliers

Before conducting any inferential statistical analyses, I obtained box plots for all the CSI and CD-RISC variables so as to detect the presence of outliers and possibly delete those that unnecessarily skewed the data. Those box plots are shown in Figures 3 to 6. As can be seen, there were no outliers present in the data set and hence all data were retained for further analysis.

Table 5

Means for Coping Strategy Indicator (CSI) subscales and resilience scores

Variable	Control (n = 13)	Trauma (n = 11)
CSI		
Problem Solving	23.62 (5.25)	25.55 (4.99)
Social Support	24.92 (4.59)	27.91 (6.64)
Avoidance	19.08 (2.75)	23.64 (5.68)
CD-RISC		
	70.46 (7.39)	71.45 (13.13)

Note. CD-RISC = Connor-Davidson Resilience Scale.

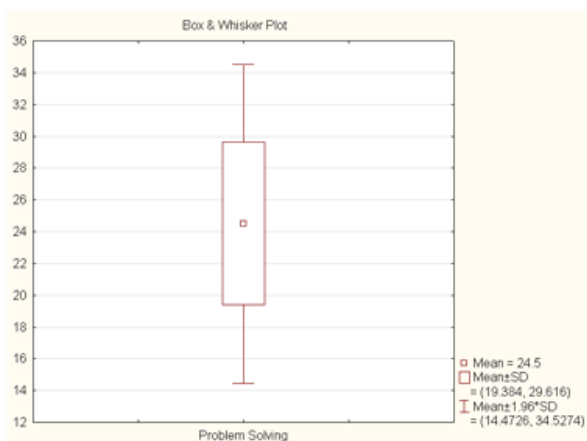


Figure 3. CSI-Problem Solving

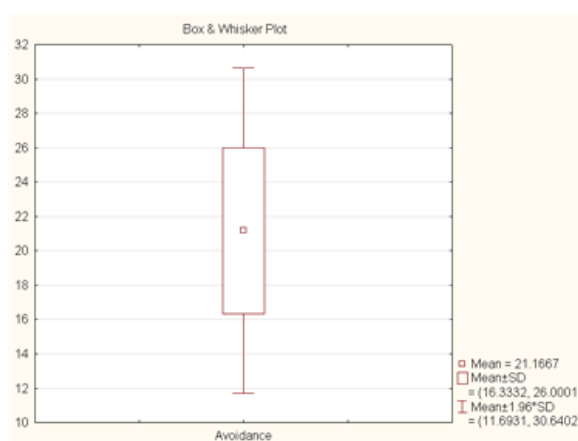


Figure 4. CSI-Avoidance

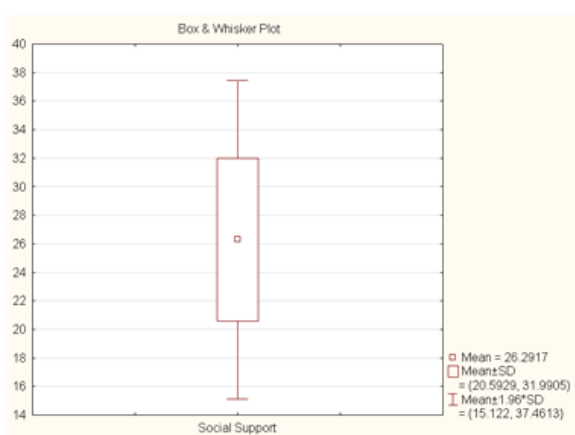


Figure 5. CSI-Seeking Social Support

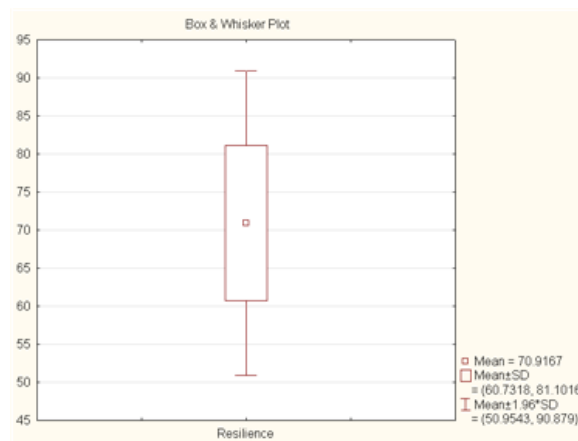


Figure 6. CD-RISC Scores

Measures of Coping and Resilience: Between-group differences

I conducted a one-way ANOVA to investigate whether there were any statistically significant differences between the two groups on measures of coping and resilience. Levene's test confirmed homogeneity of variances between the groups for all the CSI subscale scores and for the CD-RISC score (see Appendix B, Table B1). P-Plots for the two variables showed that most of the residuals were close enough to the regression line to assume normality of data (see Appendix C, Figure C1-C4).

Table 6 shows that, with regard to measures of coping and resilience, the only statistically significant between-group difference was on the CSI Avoidance subscale: As predicted, participants in the Trauma group reported more reliance on an avoidant coping strategy than did those in the Control group. Based on the norms for the CSI (Amirkhan, 1990), an average score of 23.64 on the Avoidance subscale suggests a high reliance on that particular coping strategy.

Table 6
Between-group Differences on Measures of Coping and Resilience

Variable	<i>F</i> (1,22)	<i>p</i>	Cohen's <i>d</i>
CSI			
Problem Solving	0.842	0.369	0.38
Social Support	1.685	0.208	0.53
Avoidance	6.591	0.018	1.05
CD-RISC	0.054	0.818	0.10

Note. CSI = Coping Strategy Indicator; CD-RISC = Connor-Davidson Resilience Scale.

Post-hoc analysis of achieved power revealed that the power of this study to detect a real difference between the two groups in terms of their reliance on problem-solving, seeking social support and avoidant coping strategies were 42.9%, 69.9% and 99.8 % respectively. Power to detect a real difference in the resilience predispositions of participants in the Control and trauma group was only 7.56%.

Associations between Coping and Resilience and AMT Performance

I used Pearson Product-Moment correlations to assess associations between the AMT outcome variables (Overall Specificity, Positive Specificity and Negative Specificity) and the coping and

resilience variables (CSI Problem Solving, CSI Seeking Social Support, CSI Avoidance, and CD-RISC). Table 7 shows that none of the associations were strong enough to reach statistical significance, thus disconfirming predictions that more active adaptive coping strategies (e.g., problem solving and seeking social support) would be positively associated with high autobiographical memory specificity, while maladaptive coping strategies (e.g., avoidance) would be strongly and negatively correlated with specificity scores. Nonetheless, some promising trends emerged from these data. For instance, the use of a problem-solving (active) coping strategy was associated with higher overall autobiographical memory specificity scores.

Table 7
Correlations between AMT, Coping, and Resilience Measures

	Total Score	AMT Specificity Score	
		Score on Positive Cue Items	Score on Negative Cue Items
CSI			
Problem Solving	0.22	0.23	0.14
Seeking Social Support	-0.02	-0.06	0.01
Avoidance	0.04	0.02	0.03
CD-RISC	0.11	-0.02	0.18

Note. CSI = Coping Strategy Indicator; CD-RISC = Connor-Davidson Resilience Scale.

DISCUSSION

This study reported on the first wave on data collection in a research program geared to (a) identify which distinct symptoms of PTSD are closely related to impairments in the autobiographical aspect of episodic memory, and (b) explore the relationship between resilience, coping strategies and autobiographical memory functioning. Specifically, this study examined the extent to which childhood trauma is implicated in reduced autobiographical memory specificity. The specific hypotheses addressed here were (a) healthy individuals with no history of childhood trauma would retrieve more specific memories on an autobiographical memory test than would individuals with a history of childhood trauma but no PTSD diagnosis, (b) preference for avoidance coping strategies would be positively associated with reduced autobiographical memory specificity, whereas preference for adaptive coping strategies would be negatively

associated with reduced specificity, and (c) the personality disposition of resilience would be negatively associated with reduced autobiographical memory specificity.

With regard to the first hypothesis, the obtained data did not confirm the prediction. There were no statistically significant between-group differences in terms of ability of participants to retrieve specific memories in response to both positive and negative cues. This piece of data indicates that self-reported childhood trauma does not predict reduced autobiographical memory specificity. In contrast to Kuyken and Brewin (1995) and de Decker et al. (2003) but in agreement with Wessel et al. (2001) and Wessel et al., (2002), the current results suggest that mere exposure to a traumatic event is not associated with overgeneral memories. Although childhood trauma might be one of the primary antecedents of overgeneral memories, it does not in itself make a unique contribution to reduced specificity.

There are a number of factors that might account for the discrepancy between the current findings and those of Kuyken and Brewin (1995) and de Decker et al. (2003). First, it may be that group differences other than trauma history (e.g., more severe depression, MDD diagnosis, suicide attempts in the trauma groups) were responsible for the results reported by Kuyken and Brewin (1995). Similarly, de Decker et al. (2003) used a mixed clinical sample and did not assess the MDD status of their participants. Because MDD has been found to be a strong correlate of reduced autobiographical memory specificity, the lack of such diagnostic information limits the conclusions one can draw from their study.

The present findings are difficult to reconcile with Williams et al. (1996) account of the origins of overgeneral memories. The latter hypothesised that an overgeneral retrieval style originates in the context of early adversity as a strategy to block painful emotions, and that over time this tendency generalises to all types of memories. Yet, at the very least, the present findings warrant the conclusion that childhood trauma is not the only pathway to overgeneral autobiographical memory. Thus, the explanatory power of theoretical accounts that emphasise the role of childhood trauma is of limited value.

The preliminary results reported here also indicate that participants with a history of childhood trauma had increased accessibility to negatively valenced specific memories relative to positive ones. In other words, for participants with a history of childhood trauma, the probability of recalling a specific memory was higher following presentation of a negative cue than following presentation of a positive cue. This finding is consistent with other studies that

report the tendency of trauma-exposed populations to retrieve overgeneral memories in response to negative cues (e.g. de Decker et al., 2003; McNally et al., 1995).

Because the emotional evocativeness of an autobiographical memory is related to its specificity (McNally et al., 1995), an inability to retrieve specific positive memories may blunt positive emotions. Previous studies have also shown that memory specificity in response to negative cues possesses predictive power in the development of depressive symptoms (e.g. van Minnen et al., 2005). It is also possible that deficits in retrieving specific positive memories limit the ability to problem-solve and to manage current stressors (Bryant, Sutherland, & Guthrie, 2007). Therefore, the present results have important clinical significance: They indicate that individuals with a history of childhood trauma will likely benefit from cognitive therapy that is geared towards helping them improve their ability to retrieve specific positive memories.

With regard to the second hypothesis, the obtained data did not confirm the prediction that preference for active adaptive coping strategies would be positively associated with high autobiographical memory specificity, while maladaptive coping strategies would be strongly and negatively correlated with specificity scores. In fact, analyses revealed only extremely weak and statistically non-significant correlations between these variables. However, between-group comparisons indicated that participants in the trauma group were significantly more likely to use avoidance as a coping strategy. Because the two groups were comparable on all other demographic and clinical characteristics, except trauma exposure, reliance on avoidance coping might indirectly account for the similarities in performance on the measure of autobiographical memory specificity. Reliance on avoidant coping strategies (e.g., daydreaming about better times, watching television or sleeping more than usual) might effectively facilitate cognitive control of intrusive thoughts and memories related to past distressing events; this cognitive control might provide at least a partial explanation of why participants with a history of childhood trauma scored no differently than did participants with no such history on measures of autobiographical memory specificity.

Such an account is in accord with the executive account of AMT performance, which attributes reduced autobiographical memory specificity to relative difficulty in inhibiting unwanted and automatically-generated distracting information. Because the AMT involves an effortful search of the autobiographical memory database for specific memories, non-specific memories and autobiographical mental representations (e.g., categorical and extended memories,

semantic associates) are inevitably activated (Moradi et al., 2008). These ‘distracters’ therefore need to be inhibited in order for the search to proceed successfully. However, difficulty inhibiting automatically-generated distracting information increases the likelihood that these AMT ‘distracters’ will be proffered as memory responses on the task, thus leading to fewer specific memories. Hence, individuals who are effective at exercising cognitive control would perform relatively well on the AMT. Higher scores on the CSI Avoidance subscale may thus represent greater ability to exert cognitive control in attempts to deal with both personal distressing information and AMT ‘distracters’; such greater ability, of course, would lead to more successful performance on tasks requiring the production of specific autobiographical memories.

With regard to the third hypothesis, the obtained data did not confirm the prediction that predisposition toward resiliency would be negatively associated with reduced autobiographical memory specificity. Failure to find this association can partly be attributed to the relatively small number of participants with low resiliency in the sample. In fact, participants with a history of childhood trauma and those with no such history scored equally high on measures of resilience. It is therefore also possible that resiliency is a mediator between trauma experience and autobiographical memory specificity. Hence, trauma experience combined with high resiliency might reduce the likelihood of displaying reduced autobiographical memory specificity. It will be possible to test this hypothesis by having a comparison group with trauma exposure but with low resiliency. Individuals carrying a PTSD diagnosis will potentially fit this profile.

Limitations and Directions for Future Research

At least two methodological limitations of the present study should be noted. First, classification of participants into either the trauma or the control group was based on self-reports as opposed to verified cases. This procedure introduces a number of potential difficulties. For instance, a number of reports were found to be inconsistent following the second CTQ-SF administration. Even though participants with inconsistent reports were excluded from analyses, there is no guarantee that those who were retained were correctly classified because there was only a single measure to assess the presence of childhood trauma.

A second methodological limitation of the study was that the subjective characteristics of the traumatic event reported by participants in the Trauma group (e.g., age at the onset of the

abuse or neglect, its duration, the subjective interpretation of the event) were not explored. The CTQ-SF only identifies the objective presence or absence of a potentially traumatic event. These distinctive event characteristics and, most importantly, individual differences in the way adversities are processed and interpreted might have confounded the results. For instance, Henderson et al. (2002) demonstrated reduced autobiographical memory specificity in a group of sexually abused undergraduate students and showed that this effect was more pronounced for those individuals who indicated that they had been abused by close relatives (either father, brother, or sister) as compared to participants who indicated that they had been abused by more distant relatives (e.g. stepfather, uncle, grandfather). Similarly, Hermans et al. (2004) showed that the earlier the onset of the sexual abuse, the more distressing the event was rated and the less autobiographical memory specificity was observed. Future studies should thus attempt to add predictive power to their investigations by using verified cases of childhood trauma and follow-up measures to assess the distinctive characteristics of the traumatic event.

The second phase of the research program of which this study was an initial part will involve recruiting individuals meeting the DSM-IV criteria for PTSD to test the following hypotheses, among others: First, participants with a clinical diagnosis of PTSD will retrieve fewer specific memories on an autobiographical memory test than will participants with a history of trauma but no PTSD diagnosis and participants with no trauma history. Second, PTSD symptoms that index automatic and intrusive recollection of the trauma will be negatively correlated with autobiographical memory specificity. On the other hand, PTSD symptoms that reflect controlled avoidance will be positively correlated with autobiographical memory specificity.

Conclusion

By showing that participants with a history of childhood trauma did not differ significantly from those with no such history in terms of their AMT performance, the results of the present study lend further support to the growing body of literature suggesting that mere exposure to a traumatic event does not make a unique contribution to overgeneral autobiographical memory/reduced autobiographical memory specificity. The current results can also be interpreted as indicating that lack of cognitive control (e.g., excessive intrusive memories, minimal controlled avoidance) and low resiliency might be potential mechanisms underlying the

connection between reduced autobiographical memory specificity and a clinical diagnosis of PTSD. Future waves of data collection in the research program of which this study was an initial part will test these hypothesized mechanisms by examining the relative contribution of resiliency, and of each PTSD symptom cluster, to reduced autobiographical memory specificity.

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APPENDIX A**CONSENT FORM*****Informed Consent to Participate in Research and Authorization for Collection, Use, and Disclosure of Mental Health and Other Personal Data***

You are being asked to take part in a research study. This form provides you with information about the study and seeks your authorization for the collection, use and disclosure of your mental health and other personal information necessary for the study. The principal investigator (the person in charge of this study) or a representative of the principal investigator will describe the study to you and answer all your questions. Your participation is entirely voluntary. Before you decide whether or not you want to take part, please read the information below and ask questions about anything you do not understand.

Name of Participant

Title of Research Study

Autobiographical memory, resilience, and coping strategies

Investigators and Telephone Number(s)

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Honours Student

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University of Cape Town

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What is the purpose of this research study?

The purpose of this research study is to investigate the relationship between autobiographical memory and resilience and coping strategies in different groups of people. It is part of a larger study exploring the effects of trauma on different memory/cognition systems.

What will be done if you participate in this study?

In this study, you will be asked to undergo a preliminary clinical interview during which a researcher will ask questions about your mental health. The interview will be conducted in the Department of Psychology at the University of Cape Town.

You will also be asked to take an autobiographical memory test (AMT), and assessed on a Coping Strategies Questionnaire (CSQ) and a Resilience Questionnaire (CD-RISC). In addition, if you were diagnosed with posttraumatic stress (PTSD) during the preliminary interview, you will be asked to complete the Posttraumatic Diagnostic Scale (PDS). Each testing session will be conducted by a postgraduate psychology student who has been trained in the use of the measures to be administered, and who is under the supervision of a clinical psychologist.

After the testing session you will have the opportunity to ask questions and thus learn more about psychological research.

How long will it take you to participate in the research?

The procedures described above will take approximately 60 minutes to complete.

If you find any of the procedures uncomfortable, you are free to discontinue participation, at any point during the study.

How many participants are expected to take part in this research?

What are the possible discomforts and risks?

There are no known risks associated with participation in this study. The only time you may experience discomfort is during the clinical interview, where you will be required to disclose personal information. The research team will make sure that confidentiality is maintained. Due to the nature of this study, you may also experience reminders or involuntary triggers that may cause psychological distress. Please note that you may withdraw from the study at time you want. If you are in any way distressed by the study procedures the possibility of being referred to a psychologist will be discussed.

If you wish to discuss the information above, you may ask questions now or call the Principal Investigator listed on the front page of this form.

If you have any questions regarding your rights as a research participant, you may phone the Psychology Department offices at 021-650-3430.

What are the possible benefits of participating in this research?

There will be no direct individual clinical benefits to you. The results of the study will, however, allow us to have a better understanding of the effects of trauma on memory and how it may be directly or indirectly impact on your social or professional functioning.

If you choose to take part in this research study, will it cost you anything?

Participating in this study will not cost you anything.

Once personal and performance information is collected, how will it be kept secret (confidential) in order to protect your privacy?

Information collected will be stored in locked filing cabinets or in computers with security passwords. Only certain people have the right to review these research records. These people include the researchers for this study and certain University of Cape Town officials. Your research records will not be released without your permission unless required by law or a court order.

What information about you may be shared with others?

The results of the research will be presented as part of an Honours research project for the University of Cape Town. Also, the results may be submitted for publication in a peer-reviewed journal. In both instances you will not be identified in any way.

Signatures

As a representative of this study, I have explained to the participant the purpose, the procedures, the possible benefits, and the risks of this research study; and how his/her performance and other data will be collected, used, and shared with others:

 Signature of Person Obtaining Consent and Authorization

 Date

You have been informed about this study's purpose, procedures, possible benefits, and risks; and how your mental health status and other data will be collected, used and shared with others. You have received a copy of this form. You have been given the opportunity to ask questions before you sign, and you have been told that you can ask other questions at any time.

You voluntarily consent to participate in this study. You hereby authorize the collection, use and sharing of your mental health status and memory related information and other data. By signing this form, you are not waiving any of your legal rights.

 Signature of Person Consenting and Authorizing

 Date

APPENDIX B**HOMOGENEITY OF VARIANCES**

Table B1

Homogeneity of Variances

	F	p
Overall Specificity	0.499083	0.487336
Positive Specificity	0.241477	0.628008
Negative Specificity	1.625084	0.215684
Problem Solving	0.000004	0.998512
Social Support	2.751525	0.111352
Avoidance	3.352337	0.080689
Resilience	1.993084	0.172007

APPENDIX C

NORMALITY STATISTICS

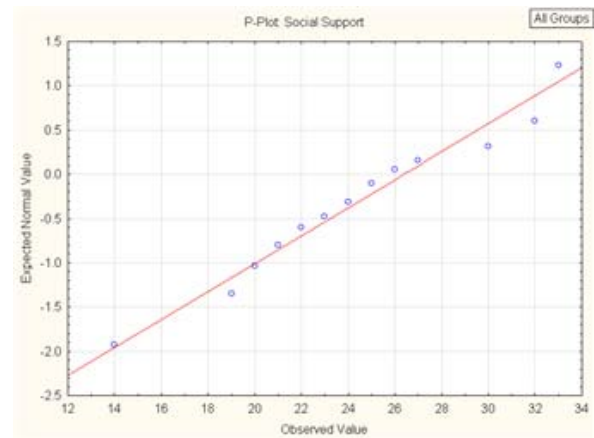
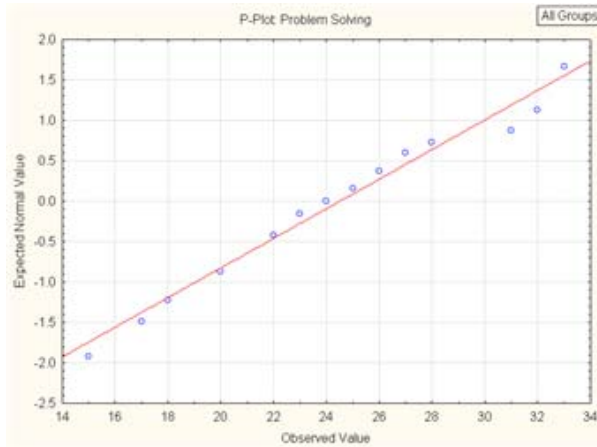


Figure C1. P-Plot for CSI-Problem Solving Figure C2. P-Plot for CSI-Seeking Social Support

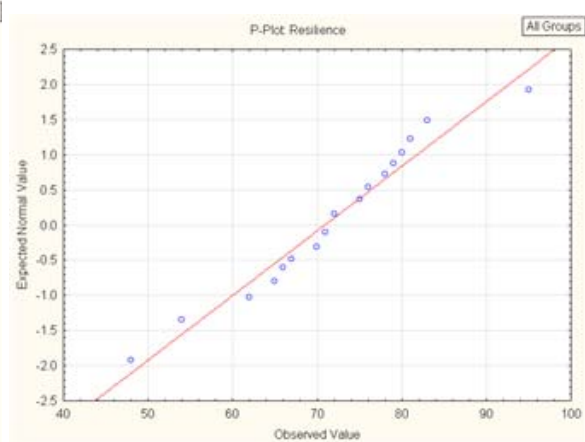
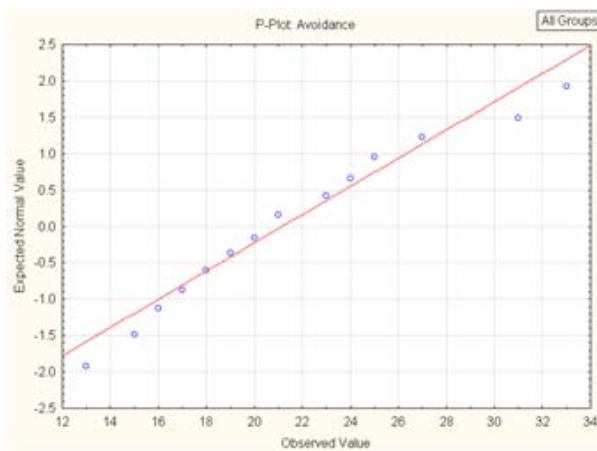


Figure C3. P-Plot for CSI-Avoidance

Figure C4. P-Plot for Resilience scores

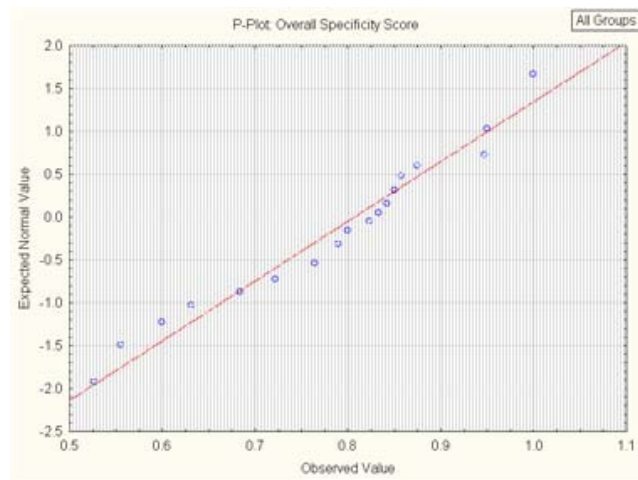


Figure C5. P-Plot for overall specificity scores

Compulsory Declaration:

I declare that this thesis *Autobiographical Memory Specificity: Effects of trauma exposure, PTSD symptom profile, coping strategies, and resilience* is my own work. I have used the South African Journal of Psychology (SAJP) as the convention for citation and referencing. All the sources I have used or quoted have been indicated and acknowledged as complete references. I acknowledge that copying someone else's work or part of it is wrong and declare that this own work.

Signature: _____

Date: _____