ASSOCIATIONS BETWEEN DEPRESSION, TRAUMA, AND EARLIEST AUTOBIOGRAPHICAL MEMORIES

by

Rebecca Ginsburg

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ABSTRACT

Overgeneral autobiographical memory bias refers to the tendency to recall general life events rather than specific life events. Previous research has demonstrated a higher prevalence of this bias among individuals with a lifetime history of depression and/or trauma symptoms compared to healthy controls. This association has been found across many age groups and cultural groups, most often by using the Autobiographical Memory Test (AMT). In the current study, two memory tasks designed to elicit *earliest* autobiographical memories (i.e., before the age of 6) were used in addition to the AMT to investigate whether an overgeneral memory bias could be detected in individuals' earliest childhood memories. University students ($N = 89$) were asked to complete a minimal instructions version of the AMT, the Memory Fluency Task, and a Detailed Memory Task in which participants generated their three earliest memories. Additionally, they were asked to complete measures of depression (Structured Clinical Interview for DSM-IV; Beck Depression Inventory-II), trauma (Childhood Trauma Questionnaire; Impact of Event Scale—Revised), and general psychopathology (Brief Symptom Inventory), in order to be classified as "clinical" versus control. The results showed that the AMT was the only memory task to yield significant differences between the "clinical" and control groups. Scores on the Childhood Trauma Questionnaire were predicted by qualities of participants' three earliest memories, while none of the other clinical measures were predicted by performance on any of the memory tasks. The implications of these findings are discussed.

Key words: Autobiographical Memory, Overgeneral Memory, Memory Specificity, Infantile Amnesia, Childhood Amnesia, Emotional Disorder, Depression, Trauma

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List of Abbreviations

AMT – Autobiographical Memory Test

BDI-II – Beck Depression Inventory—Second Edition

BSI – Brief Symptom Inventory

CTQ – Childhood Trauma Questionnaire

DMT – Detailed Memory Task

IES-R – Impact of Event Scale—Revised

MFT – Memory Fluency Task

OGM – Overgeneral Memory

SCID-I – Structured Clinical Interview for DSM-IV Axis I Disorders

UUI – Unique Units of Information

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Associations Between Depression, Trauma, and Earliest Autobiographical Memories

Autobiographical memory is how personally experienced events are remembered. It is a crucial aspect in the development of our sense of self. Autobiographical memories can be specific or general, and it is this aspect of specificity that has been associated with psychopathology, notably depression and trauma (Williams et al., 2007). Specific memories (sometimes called *unique* or *single*) have been defined as particular events lasting less than one day, for example, attending a specific concert. General memories have been defined as being extended (spanning more than one day in length) or categoric (events occurring more than one time; sometimes called *repeated*) (Williams & Dritschel, 1992). For example, remembering a 2-week holiday would be classified as an extended memory, and remembering time spent visiting with grandparents without specifying any one particular visit (e.g., "I used to visit my grandparents every Sunday") would be classified as a categoric memory.

Research has shown that lower specificity of autobiographical memories (e.g., high numbers of categoric and/or extended memories) is associated with a lifetime history of depression and trauma (Williams et al., 2007). Several negative consequences have been associated with overgeneral memory, including impaired problem solving, difficulty imagining the future, and slower recovery from depressive episodes (Anderson, Boland, & Garner, 2016; Jobson & Cheraghi, 2016; Ono, Devilly, & Shum, 2016). This is important from a clinical perspective because it may have implications for identifying individuals at risk for future depressive symptoms, as well as predicting prognostic outcomes. The associations between overgeneral memory and trauma might provide insight into optimal treatment planning with trauma clients (e.g., going over traumatic

memories in detail with individuals with Posttraumatic Stress Disorder (PTSD) may be more or less efficient than other methods).

Overgeneral autobiographical memory is the phenomenon whereby individuals tend to generate summaries of extended or recurring events (i.e., extended and categoric memories) instead of unique, one-time events (i.e., specific memories) when asked to provide memories from their own lives and experiences (Williams & Broadbent, 1986). Several studies have demonstrated an association between overgeneral memories (OGM) and depression (Raes, Verstraeten, Bijttebier, Vasey, & Dalgleish, 2010; Rawal & Rice, 2012; Ricarte et al., 2011) as well as trauma (Aglan, Williams, Pickles, & Hill, 2010; Kuyken & Brewin, 1995). This association has been shown across the lifespan with studies including children, adolescents, adults, and older adults. A review article by Williams and colleagues (2007) delineated that depression and trauma are the only psychopathologies consistently associated with overgeneral memory in research studies to date; other mental disorders (e.g., general anxiety disorder, social phobia, borderline personality disorder) are not typically associated with the phenomenon.

Measuring Autobiographical Memory

Most studies investigating overgeneral memory use the Autobiographical Memory Test (AMT) in testing autobiographical memory (Ono et al., 2016). The AMT is a cuing methodology based on the work of Williams and Broadbent (1986). The task involves presenting positive and negative cue words, with some researchers adding neutral cue words as well. Participants are asked to describe a remembered event in response to each cue word. There are no constraints on the importance or recency of the event. However, it is asked that each event be specific: lasting for less than one day and occurring at a

particular time and place. The interviewer conducts practice trials to ensure that participants understand what is meant by a specific event. Participants are often given 30 seconds to respond to each cue word. Failure to respond is scored as an omission. As mentioned earlier, nonspecific memories can be further classified as either categoric (events occurring multiple times) or extended (events lasting longer than one day).

Several variations of the Autobiographical Memory Test have been developed for use with various populations and to facilitate various methodologies (Griffith et al., 2012). For example, there are written versions of the AMT to facilitate administration to multiple participants at once (Raes, Hermans, Williams, & Eelen, 2007). Written versions generally allow 60 seconds for each cue word to give participants time to write down their memories. A minimal-instructions AMT was developed by Debeer, Hermans, and Raes (2009) for use with non-clinical samples. When used with high-functioning, non-clinical samples such as university students, the traditional AMT is not sensitive enough to show correlations between memory specificity and psychopathology. This is thought to be due to the capacity of high-functioning individuals to correctly follow the AMT's instructions to retrieve specific memories only (Debeer et al., 2009).

Debeer and her colleagues (2009) suggest that students who might tend to naturally retrieve overgeneral memories are nonetheless able to retrieve specific memories when explicitly asked to do so in a testing situation. Furthermore, students who initially retrieve overgeneral memories during the AMT may be more likely to omit answering altogether rather than to consciously answer "incorrectly" with a memory that is not specific. This was supported by the study's results: students given the traditional AMT had almost twice as many omissions as compared to students given the minimal-

instructions AMT (.63 compared to .37). Perhaps the students completing the traditional AMT were omitting responses because their retrieved memories did not qualify as specific memories; had they completed the minimal-instructions AMT they would have had no such qualms since specific memories are not required. Research has shown the minimal-instructions AMT to be sensitive enough to identify overgeneral memory bias in high-functioning samples that may have greater ability to generate specific memories when explicitly directed to do so (Debeer et al., 2009; Griffith et al., 2009).

As is apparent from the studies discussed above, there are many methodological differences in how the AMT has been conducted by various researchers. Methodological variations include how many words are presented, whether or not neutral words are presented in addition to positive words and negative words, which words are used and how they are chosen, time limit allotted for each word, written task versus oral task, and instructions given to participants (e.g., minimal-instructions versus traditional). The 46 studies reviewed in Williams and colleagues' (2007) work provides a clear picture of these differences: number of cue words presented ranges from 3 to 30; time limits include 30, 60, and 120 seconds per cue word, as well as self-paced studies without any time limit at all. In combination with the other methodological factors listed above, it is clear that comparing results across studies using the AMT is to be done cautiously.

Overgeneral Memory and Depression

There has been extensive study on OGM in both depressed adolescents and adults. Park, Goodyer, and Teasdale (2002) studied a diverse sample of adolescents aged 12 to 17 years who had been referred to mental health services in Cambridge: depressed cases (n = 96; 49 had current major depression, 38 were in partial remission, and 9 were in full

remission from a recent episode), non-depressed psychiatric cases (n = 26), and community controls (n = 33). The Mood and Feelings Questionnaire was included in the recruitment package mailed to adolescents who had been referred for mental health services. Individuals were recruited to the depressed cases sample if their scores indicated a high probability of major depressive disorder. The non-depressed psychiatric cases were clinically referred and currently met the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV; American Psychiatric Association [APA], 2000) criteria for at least one psychiatric disorder (these included behavioural disorders, obsessive-compulsive disorder, eating disorders, anxiety disorders, somatoform disorders, and substance abuse disorders), excluding any current or past depressive disorder. Community controls were recruited through screening of school children. Both the non-depressed psychiatric cases and the controls were matched to the depressed group on age and sex.

To confirm proper grouping, all participants were assessed on the Mood and Feelings Questionnaire and the Schedule for Affective Disorders and Schizophrenia for School-age Children. Depressed participants were additionally assessed using the Hamilton Depression Rating Scale to determine depression severity. Participants completed the Autobiographical Memory Test to assess autobiographical memories in response to positive and negative cue words; answers were scored as being specific (defined as lasting less than one day and including event specific time and place details), categoric (defined as a general class of repeated events), extended (defined as lasting longer than one day), or repeated (defined as using the same memory for multiple cue words). As expected, depressed participants demonstrated an OGM effect (more categoric memories) in comparison to controls. However, there were no such group differences

between the depressed adolescents and the non-depressed psychiatric adolescents, suggesting the effect may not be specific to depression.

The depressed group was further categorized into adolescents who were currently depressed (n = 49), partially in remission (n = 38), and fully recovered (n = 9). Analyses completed based on this classification led to the finding that even the adolescents fully in remission from depression reported more categorical memories in response to positive cues than did controls. The finding that an individual in remission from depression will have more general memories than controls is consistent with the findings of many previous studies (Mackinger, Loschin, & Leibetseder, 2000; Mackinger, Pachinger, Leibetseder, & Fartacek, 2000; Mitchell, 2015; Scott, Stanton, Garland, & Ferrier, 2000; Williams & Dritschel, 1988). This suggests that once an OGM effect has developed it might persist regardless of future recovery from depressive symptoms. An OGM bias can be found regardless of whether participants have *current* symptoms of depression versus a *previous history* of a depressive episode.

In a one-year longitudinal study, Rawal and Rice (2012) investigated OGM as a predictor of depression in high-risk adolescents (classified as high-risk because their parents suffered from recurrent unipolar depression). Participants (152 females, 103 males) ranged from 10 to 18 years of age (m_{age} = 13.71, SD = 2.02). Of the original sample, 242 (95%) were available for follow-up an average of 12.5 months later. The Child and Adolescent Psychiatric Assessment is a semi-structured interview assessing child psychopathology over the previous three months. Using this measure, participants were classified as having a depressive disorder, not having a depressive disorder, or having either an anxiety or externalizing disorder. Anxiety disorders included generalized

anxiety disorder, separation anxiety, social phobia, panic disorder, agoraphobia, and obsessive-compulsive disorder. Externalizing disorders included oppositional-defiant disorder, conduct disorder, disruptive disorder, and attention-deficit/hyperactivity disorder. The researchers assessed psychopathology at baseline and follow-up using the Child and Adolescent Psychiatric Assessment; inter-rater reliability was excellent. Intelligence (Wechsler Intelligence Scale for Children), rumination (Children's Response Styles Questionnaire), and negative life events (Life Events Checklist) were also assessed. Participants completed the Autobiographical Memory Test at baseline to assess for overgeneral memory.

It was found that the depressive-disorder group reported more OGM than both the no-disorder group and the groups with anxiety or externalizing disorders. In addition, more OGM in response to negative cues predicted depressive symptoms at follow-up in females without a disorder at baseline. The same was not true for males, suggesting that OGM as a predictor of future affective symptoms may be stronger for females than males. However, the majority of the baseline no-disorder participants who had depression at follow-up were female (10 of the 14 participants). The gender difference may not have been as stark with a larger, more equal sample. OGM at baseline did not predict anxiety or externalizing disorders at follow-up. This is consistent with previous findings that OGM is predictive of affective symptoms only (Williams et al., 2007). There were some participants (n = 14) who had recovered at follow-up from their baseline depressive symptoms. These participants differed in OGM from the no-disorder group, but did not differ in OGM from depressive-disorder participants who did not improve (i.e., showed depressive symptoms at both baseline and follow-up). Consistent with previous findings,

this study suggests that while OGM can predict the future development of depressive symptoms, it does not discriminate between depressed people who remain depressed and those who recover from depression.

Overgeneral memory has also been associated with depression in older populations. A Spanish study by Ricarte and colleagues (2011) investigated OGM in older adults with and without depression (n = 34 in each group). Depressed participants met DSM-IV criteria for major depressive disorder as determined by the Spanish validated version of the Mini-International Neuropsychiatric Interview, and were receiving antidepressant treatment. Participants were assessed on psychopathology (Mini-International Neuropsychiatric Interview), cognitive impairment (Mini Examen Cognitivo, the validated Spanish adaptation of the Mini-Mental State Examination), life satisfaction (Life Satisfaction Index), hopelessness (Beck Hopelessness Scale), and autobiographical memory (Autobiographical Memory Test). Memories were coded for specificity and valence (positive, negative, or neutral).

Depressed participants demonstrated an overgeneral memory effect by being less specific and producing more extended memories than controls. They also had more OGM in response to negative cues rather than positive cues, while there was no such difference as a function of valence amongst controls. As the authors mention, similar results have been found across a range of affective disorders: depressed younger adults, dysphoric adults, suicide attempters, and individuals with post-partum depression. The association between OGM and depression has been found repeatedly with different age groups and samples (e.g., clinical and community) (Mackinger, Loschin et al., 2000; Mackinger, Pachinger et al., 2000; Mitchell, 2015; Rawal & Rice, 2012; Ricarte et al., 2011; Scott et

al., 2000; Van Daele, Griffith, Van den Bergh, & Hermans, 2014; Williams & Dritschel, 1988).

Overgeneral Memory and Trauma

As noted in the review by Williams and his colleagues (2007), trauma has also been found to be associated with overgeneral memory. Kuyken and Brewin (1995) conducted one of the first studies examining overgeneral memory in individuals with a history of trauma as well as depression. The researchers interviewed 56 depressed women (m_{age} = 37.07, *SD* = 10.02) on childhood (before the age of 17) physical and sexual abuse, parental neglect, indifference, and antipathy. Based on this information participants were categorized into four different groups: 1) no abuse (*n* = 19), 2) child sexual abuse (CSA) only (*n* = 9), 3) child physical abuse (CPA) only (*n* = 10), and 4) both CSA and CPA (*n* = 18). All participants completed the Beck Depression Inventory; the mean score was 26.4 (scores ranging from 20 to 30 indicate moderate depression; Beck, Steer, & Brown, 1996). Additionally, participants who reported childhood abuse were assessed on intrusive memories (Impact of Event Scale) to ascertain the extent of subjective trauma. The Impact of Event Scale has two subscales: intrusion and avoidance. As is common in OGM research, the Autobiographical Memory Test was used to assess autobiographical memory.

Participants reporting child sexual abuse had more general memories to all cue words than did the other groups, and a significant association was found between overgeneral memories and higher scores on the Avoidance subscale of the Impact of Event Scale. Inclusion of the Impact of Event Scale in Kuyken and Brewin's (1995) study was essential because there are individual differences in reactions to traumatic events.

The occurrence of an event that is generally regarded as traumatic does not necessarily result in the subjective experience of trauma. Given individual differences in response to traumatic events, when investigating associations between OGM and trauma it is essential to ensure that participants are actually experiencing symptoms of trauma; it is not enough for the researchers to assess the occurrence of potentially traumatic events.

Research has demonstrated the distinction between potentially traumatic events and the subjective experience of trauma. Several studies that have investigated overgeneral memory in traumatized participants have also studied a control group of individuals who have experienced the same potentially traumatizing events without developing trauma symptoms from the experience (Harvey, Bryant, & Dang, 1998; Kangas, Henry, & Bryant, 2005; McNally, Litz, Prassas, Shin, & Weathers, 1994). For example, Kangas and colleagues (2005) studied 20 individuals with cancer-related Acute Stress Disorder and 20 matched cancer patients without Acute Stress Disorder. The participants with Acute Stress Disorder had more overgeneral memories than their matched counterparts. This suggests that trauma does not *necessarily* follow from a potentially traumatic experience such as a cancer diagnosis; it appears that OGM is related to the development of trauma symptoms rather than the experience of a potentially traumatic event. Therefore, researchers must assess subjective experiences of trauma in order to conduct valid research on autobiographical memory.

Aglan and colleagues (2010) investigated the associations between depression, trauma, and overgeneral memory in a community sample of adult women. One hundred and three women between the ages of 25 and 37 who were selected based on their responses to questionnaires that had been mailed to them assessing childhood abuse

experiences and adult mental health problems. Women who indicated exposure to aversive situations in childhood were invited to participate in the study. The researchers investigated childhood adversities (Parental Bonding Instrument), childhood depression (Retrospective Recall of Childhood Psychopathology), adult depression (Schedule for Affective Disorders and Schizophrenia), and autobiographical memory (Autobiographical Memory Test). Childhood adversities included child sexual abuse, child physical abuse, and neglect. Only child sexual abuse was associated with OGM, and this association existed independently of depression. It is important to note that the child sexual abuse group with no history of depression contained only 8 women, which limits generalizability. In contrast to previous findings, this study found no significant association between OGM and history of depression in women with no child sexual abuse but this was based on a small sample size, thus lowering confidence in this non-significant result. Despite this finding, many studies investigating OGM have been similar to those described earlier in the current document in that they have found depression history to be associated with this phenomenon.

The Self-Memory System

Conway and Pleydell-Pearce's (2000) self-memory system has suggested that individuals with emotional disorders have more overgeneral memories because they engage in *functional avoidance* of upsetting memories. Conway and Pleydell-Pearce identified a hierarchy of levels of representation of autobiographical memories (see Appendix A for a visual model): lifetime periods (prolonged periods with a distinct beginning and end, e.g., when I lived in St. John's), general event knowledge (abstract conceptual summaries, e.g., taking my dog for walks on a trail), and event-specific

knowledge (concrete sensory-perceptual details such as visual imagery, e.g., what the trail looked and smelled like).

Memories are accessed through two different activation processes: generative retrieval and direct retrieval (Conway & Pleydell-Pearce, 2000). Generative retrieval is a top-down search process in response to specific criteria (e.g., someone asking about your time in St. John's). Lifetime periods or general events are rapidly activated and event-specific knowledge is activated shortly thereafter. Throughout generative retrieval executive processes evaluate and refine the pattern of activation to ensure that the search criteria are being met (i.e., the memories being retrieved are indeed about St. John's) and that irrelevant information is being inhibited (i.e., memories about places other than St. John's). Direct retrieval, on the other hand, occurs in response to an internal or external cue, such as hearing someone mention your alma mater; that is, it is a spontaneous process. The internal or external cue immediately activates event-specific knowledge (e.g., the image of the school mascot, in the alma mater example). Direct retrieval is faster and less cognitively demanding than generative retrieval because it is a spontaneous process. There is less need for inhibitory control by executive processes since there are no search criteria to adhere to.

Conway and Pleydell-Pearce (2000) maintain that during generative retrieval individuals with depression and/or trauma consciously truncate their search prematurely to avoid potentially aversive sensory-perceptual details associated with event-specific knowledge of negative events; this truncation is called functional avoidance, or, dysfacilitation. In order to be effective, this dysfacilitation must be applied to neutral and positive search criteria as well as negative, since even seemingly innocuous stimuli may

lead to aversive details. For example, the neutral cue word "chair" may elicit a memory of falling off a chair and breaking one's arm. Since any search criteria can potentially lead to negative event-specific knowledge, dysfacilitation is a general strategy applied to all instances of memory retrieval.

Individuals with depression are more likely to remember negative memories rather than positive memories due to the cognitive biases associated with depression (Blaney, 1986; Watkins, Vache, Verney, & Mathews, 1996). Early research on the effect of mood on autobiographical memory recall supported this, demonstrating that participants in a sad mood generated negative events faster than positive events (Clark & Teasdale, 1982; Lloyd & Lishman, 1975; Teasdale & Fogarty, 1979). This phenomenon was found with participants who were naturally dysphoric, as well as participants whose mood had been experimentally manipulated. As depressed individuals recall autobiographical events, they may truncate their search at the levels of lifetime periods and general event knowledge so as to avoid negative affect associated with salient details (event-specific knowledge) related to past adversity (see for example Haque, Juliana, Khan, & Hasking, 2014). By truncating their search, specific details associated with any one negative memory remain unaccessed; as such, the retrieved memory would be classified as "categoric" (if the search were truncated at the level of general event knowledge) or "extended" (if the search were truncated at the level of lifetime periods) due to the individual's lack of specificity. This process of functional avoidance is one explanation of why individuals with a history of depression and trauma have more overgeneral memories than healthy controls.

The CaR-FA-X Model

Williams and colleagues (2007) built upon Conway and Pleydell-Pearce's (2000) hierarchical search model by adding two components in addition to functional avoidance (FA): capture and rumination (CaR) and impaired executive control (X). All three components together become the CaR-FA-X model. This model posits that its three processes affect overgeneral autobiographical memory, which in turn leads to negative consequences including impaired problem solving, difficulty imagining the future, and the persistence of affective symptoms (Williams et al., 2007).

Capture and rumination (CaR). Rumination is a common feature of depression. Rumination about one's failings leads to easily accessible negative self-schemas since they are so frequently thought about. These negative self-schemas, which are conceptual and abstract, may become activated when attempting to generate a memory in response to an emotional cue word (Williams et al., 2007). For example, in response to the cue word "happy," a depressed individual may begin accessing their negative self-schemas about their failure to be happy like everyone else. The individual's tendency to ruminate may lead to "capture" by these negative self-schemas (which exist at the abstract level), rendering them unable to continue with the task of searching their memory for event-specific knowledge. As such, the memory retrieval is halted at a more general level, and the individual is unable to retrieve a specific memory.

Functional avoidance (FA). This is the same as in Conway and Pleydell-Pearce's (2000) self-memory system described above.

Impaired executive control (X). The cognitive impacts associated with depression are widely recognized; for example, fatigue and difficulty concentrating are

two criteria for major depression in the Diagnostic and Statistical Manual of Mental Disorders—5th Edition (DSM-5; APA, 2013). As described above, generative retrieval (i.e., generating memories in response to search criteria) is an effortful process in which one must continuously ensure that what is being retrieved is in line with the search criteria, and that irrelevant information is being inhibited. Impaired executive control in terms of reduced ability to inhibit irrelevant information seems to be impacted in depressed individuals; while overall executive capacity does not have a clear and consistent association to overgeneral memory, errors on tasks necessitating the inhibition of irrelevant information (e.g., the Stroop Test) have significant correlations to retrieval of overgeneral memories (Williams et al., 2007).

Impaired executive control is also seen in individuals with trauma. Trauma can lead to diminished executive resources due to the impact of intrusive symptoms such as flashbacks. Individuals often make use of avoidant strategies in response to these intrusive symptoms, which in turn diminish executive resources even further. If executive control is focused on coping with intrusive symptoms, there are less resources to be allocated to the generative retrieval process (e.g., responding to cues on the Autobiographical Memory Test). Thus, the CaR-FA-X model is not unique to those with depression, but also encompasses the memory retrieval of individuals with a history of trauma.

Other Measures of Autobiographical Memory

Infantile amnesia refers to the concept that individuals have either no memories or very sparse ones from their early childhood. Although infantile amnesia is the inability to remember, it is assessed by asking individuals to recall the very earliest memories that

they are able to remember as well as their age at the time. Two measures of infantile amnesia are the Memory Fluency Task and a Detailed Memory Task.

Memory Fluency Task. A measure called the Memory Fluency Task (MFT; Wang, Conway, & Hou, 2004) elicits *earliest* autobiographical memories, assessing not only the age at the time of earliest memories, but also the accessibility of such memories. The MFT requires participants to recall as many memories as possible from their earliest years within a given time limit; this time limit is often around four minutes. Following this task, the researcher reviews each recalled memory with participants to determine the age at the time of the event as well as any additional information desired for scoring (e.g., social content versus introverted content). There are different ways to code the information obtained from the MFT. Peterson, Smorti, and Tani (2008) scored memories for age of earliest memory, valence (positive, negative, neutral), and episodic (unique) versus scripted (repeated) events. The number of memories recalled during the MFT demonstrates whether or not a participant can easily access their earliest memories. This task has been used effectively with different age groups but it has been found that elementary-school-aged children have access to more memories from earlier ages than do adults (Peterson, Noel, Kippenhuck, Harmundal, & Vincent, 2009).

As with the Autobiographical Memory Test, there are also methodological variations in the Memory Fluency Task literature. Most striking are the differences seen regarding time limits; while four minutes is common (Peterson, Baker-Ward, & Grovenstein, 2016; Peterson & Nguyen, 2010; Peterson, Wang, & Hou, 2009; Peterson, Warren, Nguyen, & Noel, 2010), researchers have also allotted three minutes (Peterson et al., 2008) and five minutes (Wang et al., 2004). As the MFT is a measure of memory

accessibility, the time limit is closely related to performance on the task. It is reasonable to assume that a time difference of up to 66% (i.e., the discrepancy between three minutes and five minutes) on the MFT might lead to different results and conclusions being reported in the literature.

Detailed Memory Task. A commonly used task in research on infantile amnesia (i.e., the inability to remember many memories from early childhood) is a Detailed Memory Task (DMT), in which participants are asked to choose and describe a handful of their earliest memories in as much detail as they possibly can (Peterson et al., 2016). The Memory Fluency Task is a measure of accessibility only, and participants are asked to avoid details and storytelling in the interest of time (Wang et al., 2004). In contrast, a Detailed Memory Task is able to provide information regarding the detail and content of participants' earliest memories. For example, scoring can include aspects such as nature of the event (e.g., trauma, transition, play), emotional tone, structure (e.g., plotted story, moment-in-time, repeated event), and social orientation (collective activities versus individual orientation) (Peterson, Grant, & Boland, 2005).

Operational Definitions

Traditionally, the literature on autobiographical memory has used the labels *specific, categoric,* and *extended.* Categoric memories (sometimes called *repeated* memories due to their reoccurring nature) refer to events that occurred more than one time, thereby violating the criteria for a specific memory (unique, one-time event). However, there is a growing body of literature suggesting that what have been traditionally coded as overgeneral memories may not truly represent lack of specificity, nor indicate a truncation of memory retrieval. Work by Peterson and colleagues (2015)

showed that when university-aged participants completed the Memory Fluency Task or provided detailed accounts of their early memories, there were no differences between unique (specific) memories and repeated (overgeneral) memories in terms of ratings of personal meaning. Despite being classified as overgeneral, repeated memories seem to be just as important in individuals' recollections of their early years. This echoes earlier findings by Singer and Moffitt (1992): asking university students for personally significant memories relevant to their self-understanding led to higher numbers of overgeneral narratives.

Other research has found that repeated and extended events serve some of the same functions as do unique events: self-definition, social connection, and directing future behavior (Waters, Bauer, & Fivush, 2014). Using both narrative and questionnaire methods, Waters and his colleagues (2014) found that while unique, repeated, and extended events differ in the *extent* to which they serve the three functions listed above, they are all implicated in these important aspects of an individual's identity and behavior. They hypothesize that extended memories are important for self-definition due to their representation of substantial periods in one's life, and that repeated memories are associated with traditions and rituals associated with social relationships, therefore playing a significant role in one's feelings of social connection.

The findings of these authors raise questions regarding the distinction of specific memories and overgeneral memories being based on the frequency (as in categoric memories) and duration (as in extended memories) of their occurrence. The above-cited research clearly demonstrates the significance that can be found in categoric and extended autobiographical memories despite their classification as overgeneral. However, this

research has not specifically examined these constructs in the context of individual differences such as symptoms of depression and trauma; while healthy controls may exhibit the functions listed above (e.g., self-definition, social connection) through traditionally overgeneral memories, this may not be the case for clinical samples. As such, it is possible that these findings may not have the same implications in research examining associations between memory specificity and clinical constructs.

The Current Study

Early memories are implicated in the development of the life story, or how an individual thinks about and tells others about their life (Habermas & Bluck, 2000). Autobiographical memories play an integral role in the life story by helping to define the self and develop an identity (McAdams, 2001). If earliest memories are associated with depression and trauma, there will be implications in regards to the life story. Individuals with overgeneral early memories will potentially have difficulty creating a strong sense of identity and a coherent life story, since they are drawing upon sparse autobiographical material. This may lead to trouble with self-esteem and depression. It is for this reason that the current study examined the associations between depressive and trauma symptoms and *earliest* memories using the Memory Fluency Task and a Detailed Memory Task.

The Memory Fluency Task has mostly been used in research investigating infantile amnesia. The present study looked at associations between overgeneral memory and symptoms of depression and trauma using the MFT; this was expected to show whether or not overgeneral memory can be associated specifically with earliest memories. The Autobiographical Memory Test has been the dominant methodology used in past

OGM research. In this study, the Memory Fluency Task was used in addition to the AMT in order to demonstrate whether earliest memories are also implicated in the association between overgeneral memory and symptoms of depression and trauma.

A minimal-instructions version of the Autobiographical Memory Test was administered. This version was chosen since the sample consisted of high-functioning university students. Use of the AMT attempted to replicate previous findings that overgeneral memory observed on this task is associated with symptoms of depression and trauma. In addition, by using this measure, the current study could compare scores on the Autobiographical Memory Test with scores on the Memory Fluency Task in order to observe the stability (or lack thereof) of memory specificity across assessment modalities. Analyses examined whether memory specificity remains constant when assessing cued autobiographical memories (AMT) versus spontaneous earliest autobiographical memories (MFT). Results from both memory tests were compared not only to each other but also to scores on measures of depression, trauma, and general psychopathology.

As the Memory Fluency Task is designed to measure accessibility of early memories, other means were necessary to investigate other qualities of these memories, such as length and level of detail. Following the MFT, participants completed a Detailed Memory Task in which they described their three earliest memories in as much detail as possible. This allowed for the investigation of word count as well as the amount and types of detail provided. Memories were coded based on the amount of unique information they contained (i.e., amount of novel information versus reiterated information; see description of UUI coding below in Methods).

The primary goal of the current study was to examine infantile amnesia in the context of depression and trauma. Thus, the current study investigated whether these clinical constructs were related not only to performance on the AMT, a cue-word task, but also to performance on the MFT, a measure of the accessibility of early memories. That is to say, is the OGM bias traditionally found on the Autobiographical Memory Test also found on the Memory Fluency Task? This was explored by measuring number of early memories (accessibility), structure of early memories (specificity), and the earliest age at which participants could recall autobiographical events on the MFT. Previous studies on infantile amnesia have collected data on these constructs, but depression and trauma have not yet been explored in regards to individual differences. The present study aimed to address this gap in the research.

The review article by Williams and colleagues (2007) highlights the need to work not only with currently depressed participants, but also participants with a history of depression due to its lasting effects on memory specificity (e.g., Park et al., 2002). All participants also needed to be assessed for trauma. Participants who identified a lifetime history of depression and/or endorsed experiencing trauma were compared on various memory characteristics to controls with no such lifetime history of either disorder. The Memory Fluency Task was used to explore the earliest memories of individuals who had ever met criteria for a major depressive episode and/or endorsed current trauma, and controls with no history of such symptoms. If earliest memories also demonstrate an overgeneral memory effect, then it is possible that these memories may be identified as risk factors for the future development of psychopathology, and prognostic indicators for time to recovery.

In addition to the investigation of whether the Memory Fluency Task and a Detailed Memory Task show the same overgeneral memory bias among individuals with a lifetime history of depression and/or trauma as does the Autobiographical Memory Test, the current study posed three other overarching questions. First, the current study attempted to replicate the associations between OGM on a minimal-instructions AMT and symptoms of depression and/or trauma. Second, it investigated whether factors measured by the three memory tasks, namely memory specificity, memory accessibility, age of earliest memories, and memory content (i.e., types of details used, such as emotion words), predicted symptoms of depression, trauma, or general psychopathology. Finally, the current study explored whether individuals' memory specificity was consistent across memory tasks.

To summarize, the research questions were as follows: 1) Do the data demonstrate an overgeneral memory bias among individuals with a lifetime history of depression and/or trauma on the Autobiographical Memory Test? 2) Is there an overgeneral memory bias in participants with a lifetime history of depression and/or trauma on the Memory Fluency Task? 3) Is there an overgeneral memory bias in participants with a lifetime history of depression and/or trauma on a Detailed Memory Task? 4) Does Autobiographical Memory Test performance predict clinical scores? 5) Does Memory Fluency Task performance predict clinical variables? 6) Does performance on a Detailed Memory Task predict clinical variables? 7) Is memory specificity consistent across the AMT and the MFT?

The main hypothesis for the current study was that individuals meeting diagnostic criteria for current or lifetime major depression and/or clinical levels of trauma symptoms

would have an overgeneral memory bias as compared to controls. It was predicted that this OGM bias would be evident from the Autobiographical Memory Test (memories from any time period), the Memory Fluency Task (early memory accessibility), and the Detailed Memory Task (detailed earliest memories). This hypothesis was threefold: as compared to controls, individuals with either current or lifetime depression and/or clinical levels of trauma symptoms would have: 1) fewer memories, 2) more general memories and, 3) their earliest memories would be later. Previous research has not compared scores on the Autobiographical Memory Test to scores on the Memory Fluency Task or a Detailed Memory Task. Administering all of these measures was meant to show whether individuals demonstrate consistent properties of autobiographical memory regardless of the methodology used (i.e., cued recall versus spontaneous recall) and time period being recalled. It was hypothesized that scores from the AMT and MFT would be parallel in regards to memory specificity; that is, individuals with overgeneral memories as measured by the Autobiographical Memory Test were expected to have overgeneral memories as measured by the Memory Fluency Task.

Methods

Participants

An a priori power analysis was conducted using the software package G*Power (Faul, Erdfelder, Lang, & Buchner, 2007) to estimate how many participants were needed for acceptable statistical power. As data were being collected it became clear that the originally proposed multivariate analyses used in the a priori power analysis would not be appropriate, as there were not enough participants to form the desired “clinical” subgroups (i.e., trauma only, depression only, both trauma and depression). Therefore,

data collection continued as long as possible until the principal investigator was required to stop in order to meet program deadlines. Data collection began in May 2013 and continued until August 2014.

A total of 112 university-aged participants were recruited from the St. John's campus of Memorial University of Newfoundland. There were two exclusionary criteria for the current study: language and age. Since the sessions were conducted in English it was essential that all participants were native English speakers. This is because of the enmeshment of memory and language. Memories are encoded verbally and they are often thought about and discussed. As such, individuals who had learned English as teenagers, for example, would have encoded their earliest memories in their native language, and would potentially find it more difficult to readily access and discuss these early memories as compared to native English speakers. This phenomenon is known as encoding specificity (Tulving & Thomson, 1973). A study by Matsumoto and Stanny (2006) demonstrated this effect with a sample of English monolinguals (n = 15) and Japanese-English bilinguals (n = 18). The findings demonstrated that, in response to English cue words, the English monolinguals retrieved memories that were 4.7 years earlier than those of their bilingual counterparts. Non-native English speakers were thus excluded from the current study to avoid potential differences that were due to language confounds rather than reflective of real trends. To address this issue, the demographic questionnaire (see Appendix B) prompted participants to list all languages that were routinely spoken at home before they began attending school. Additionally, participants were asked to estimate the percentage that each language was used. Participants reporting English use less than 75% were excluded from analyses (n = 4).

The second exclusionary criterion, age, was enforced due to potential differences in early memory accessibility (see Peterson, Noel, Kippenhuck, Harmundal, & Vincent, 2009). It was hypothesized that the accessibility of an undergraduate's earliest memories would be stronger than that of an older adult. Individuals in their 30s, 40s, 50s, and 60s participated in the current study; after examining this descriptive data, it was decided that the age cut-off would be 35 years, and seven individuals were eliminated for this reason.

Fifteen participants were excluded from analyses for a variety of reasons: one was eliminated due to methodological errors on the part of the interviewer; two were eliminated due to comprehension difficulties; four were eliminated due to language restrictions (see above); seven were eliminated due to age restrictions (see above); and one was eliminated due to an incomplete session (the interviewer ended the session due to illness). As such, the final sample size was 97 (69 females). The majority of the sample self-identified as Caucasian (77%) or Canadian (19%) with the remaining participants (4%) self-identifying as Asian or Aboriginal. Participants ranged in age from 18.1 to 35.7 years (M = 21.9, SD = 3.0).

Slightly more than half of the sample (54 people) participated in return for course credit in undergraduate psychology courses. This was done through the Participant Research Experience Pool (PREP), and the university ethics board approved the current project to participate in this program. Participants recruited through PREP were entitled to receive course credit regardless of whether or not they chose to withdraw their data from analysis; none of these participants chose to withdraw their data. The remaining participants were recruited through posters displayed on campus and class presentations by the principal investigator (see Appendix C for the poster). As an incentive, all

participants were given the option of being entered into a draw to win a $50 gift certificate to a local shopping mall.

While undergraduate students are typically referred to as a convenience sample, there are benefits to recruiting from this age group. Autobiographical memories are strongly implicated in the process of developing self-identity and creating a life story (Waters et al., 2014). This development begins in late adolescence and young adulthood as the individual gains the necessary cognitive and social skills to construct a coherent life story (Fivush, Habermas, Waters, & Zaman, 2011; McAdams, 2001). Recruiting individuals who had begun this development (older adolescents and young adults) ensured that participants had a strong sense of identity with accompanying autobiographical memories to draw upon in completing the various memory tasks.

One female graduate student, the principal investigator, conducted all of the assessments for the current study.

Measures

Autobiographical memory. Three memory tasks were chosen for the current study: a minimal-instructions version of the Autobiographical Memory Test, the Memory Fluency Task, and a Detailed Memory Task.

Autobiographical Memory Test. Participants completed the minimal-instructions Autobiographical Memory Test (MI-AMT; Debeer et al., 2009) to allow for comparisons to scores of earliest autobiographical memories. This version of the AMT was developed for use in high-functioning populations, such as university students. Whereas the traditional AMT assesses one's ability to generate specific autobiographical memories on demand, the minimal-instructions version assesses the type of autobiographical memories

one tends to retrieve organically (i.e., a person may tend to retrieve specific versus overgeneral memories). When used with university students, memory specificity on the MI-AMT has correlated with depressive symptoms and rumination (Debeer et al., 2009). Reliability has been reported as .64, compared to the traditional AMT's reliability point estimate of .79 (Griffith et al., 2012). Griffith and colleagues (2012) describe the difficulty of assessing the AMT's validity given that the measure itself is the gold standard in overgeneral memory research.

Memory Fluency Task. The Memory Fluency Task (Wang et al., 2004) was used to assess early autobiographical memories. The MFT is a common measure of early memory accessibility in infantile amnesia research. It assesses how many early memories an individual is able to retrieve in a set time limit, including information on age, vividness, and emotional valence of these memories. This task has been used both with children and adults.

Detailed Memory Task. It is common for researchers to follow up tasks such as the MFT with a Detailed Memory Task, in which participants are asked to generate several of their very earliest memories in as much detail as possible. While frequently seen in the literature, this task does not have a specific name or a particular protocol. It is used in memory research when information on participants' earliest autobiographical memories is desired: age, detail, vividness, emotional valence, and various linguistic and structural properties.

Psychopathology. Several measures assessing clinical variables were included in the current study: Brief Symptom Inventory (see Appendix D), Beck Depression Inventory—II (see Appendix E), Structured Clinical Interview for DSM-IV (see

Appendix F), Childhood Trauma Questionnaire (see Appendix G), and Impact of Event Scale—Revised (see Appendix H).

Brief Symptom Inventory. The Brief Symptom Inventory (BSI; Derogatis & Melisaratos, 1983) is a shortened version of the Symptom Checklist-90 (Derogatis, 1977). The BSI is a 53-item self-report measure assessing symptoms of psychopathology. Participants respond to each item (e.g., *trouble remembering things*; *feeling inferior to others*; *feeling tense or keyed-up*) on a 5-point scale (ranging from *not at all* to *extremely*) according to how pertinent the item has been over the past four weeks. The BSI was developed to assess the following nine dimensions: somatization, obsessive-compulsiveness, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation, and psychoticism. However, further research with various populations (e.g., psychiatric) has proposed different factor structures, such as a one-factor model (Boulet & Boss, 1991). Hayes' (1997) administration of the BSI to a sample of 2078 (m_{age} = 23.2 years, *SD* = 6.2, 1268 females, 171 did not report sex, 81% European American) college and university counseling center clients from 31 counseling centers across the United States yielded a six-factor model: depression, somatization, hostility, social comfort, obsessive-compulsiveness, and phobic anxiety. However, the manual currently maintains the nine dimensions listed above (Derogatis, 1993).

As reported in the manual, the BSI's subscales have internal consistency coefficients ranging from .71 to .85, and test-retest reliabilities ranging from .68 to .91. The current sample yielded an excellent internal consistency coefficient of .96. The BSI's concurrent validity is supported by correlations with scales on the Early Signs Scale (Birchwood et al., 1989), although its discriminant validity is poor, as correlated with the

Minnesota Multiphasic Personality Inventory (Morlan & Tan, 1998). The BSI is "highly sensitive" when used with student samples (Derogatis, 1993); Cochran and Hale (1985) found that a sample of 347 (204 female) college students at various points in their 4-year degrees endorsed significantly higher levels of distress as compared to the adult and adolescent norms reported by Derogatis. Cochran and Hale's (1985) work provides normative data for student samples.

Beck Depression Inventory-II. Participants completed the Beck Depression Inventory-II (BDI-II; Beck et al., 1996), a 21-item self-report measure assessing severity of depressive symptoms. Scores range from 0 to 63. Individuals scoring higher than 20 are commonly considered to be moderately depressed (Beck et al., 1996). Items include pessimism, irritability, crying, and indecisiveness, among others. Participants choose among four different answers for each item. For example, possible answers for the crying item are 0 (*I don't cry any more than I used to*), 1 (*I cry more than I used to*), 2 (*I cry over every little thing*), or 3 (*I feel like crying, but I can't*). Beck and colleagues (1996) reported the internal consistency of the BDI-II to have a coefficient alpha of .92 among outpatients and .93 among college students. It also has convergent validity with the Beck Hopelessness Scale (.68; Beck & Steer, 1988) and the Hamilton Psychiatric Rating Scale for Depression (.71; Hamilton, 1960). The current sample identified good internal consistency on the BDI-II (coefficient alpha of .88).

Structured Clinical Interview for DSM-IV. The researcher conducted the research version of the Structured Clinical Interview for DSM-IV Axis I Disorders (SCID-I; First, Spitzer, Gibbon, & Williams, 1996), which assesses major mental disorders. The portions of the interview assessing Current Major Depressive Episode and

Past Major Depressive Episode were conducted in addition to the BDI-II to assess for past depressive symptoms and to confirm current depressive symptoms among participants with elevated BDI-II scores. The BDI-II identifies individuals who are currently experiencing symptoms of depression, and the interview identifies individuals with a lifetime history and/or current symptoms of a major depressive episode. Since the SCID-I is not completely structured establishing reliability is difficult due to the need for clinical judgment. However, taking advantage of videotaped interviews and joint interviews First and colleagues (1996) reported kappas ranging from .7 to 1.

Childhood Trauma Questionnaire. Participants completed the Childhood Trauma Questionnaire (CTQ; Bernstein et al., 1994). The CTQ is a 28-item retrospective self-report questionnaire identifying history of childhood trauma among adolescents and adults. Items assess five different types of childhood trauma: emotional neglect, emotional abuse, physical neglect, physical abuse, and sexual abuse. Five items measure each of the five trauma subscales identified; each subscale's score ranges from 5 to 25. Three additional items assess the individual's minimization or denial of such experiences. Using a 5-point scale, participants rate the truth of each item in regards to when they were growing up. Responses range from *never true* to *very often true*. The five-factor structure (emotional neglect, emotional abuse, physical neglect, physical abuse, and sexual abuse) has been demonstrated repeatedly across both clinical (Bernstein & Fink, 1998) and community (Scher, Stein, Asmundson, McCreary, & Forde, 2001) samples. Paivio and Cramer (2004) studied the CTQ's factor structure in a Canadian sample of 429 undergraduate students (m_{age} = 19 years, *SD* = 3.2, 65% female, 89% Caucasian). Their findings support the five-factor model for this population, which is analogous to that of

the current study. Bernstein and colleagues (1994) describe the CTQ's psychometric properties: internal consistency ranging from .79 to .96; test-retest reliability ranging from .78 to .86; convergent validity with measures of PTSD, dissociation, alexithymia, and depression. The current sample exhibited poor internal consistency, with a coefficient alpha of .5.

Impact of Event Scale—Revised. The Impact of Event Scale—Revised (IES-R; Weiss & Marmar, 1997) is a 22-item self-report measure assessing current subjective distress in regards to a particular event. Scores range from 0 to 88; a cut-off score of 33 indicates current trauma in responders (as determined in Creamer, Bell, & Failla, 2003). The three subscales reflect DSM-IV criteria for Posttraumatic Stress Disorder. The subscales include intrusive thoughts (sample item: *pictures about it popped into my mind*), avoidance (sample item: *I tried not to think about it*), and physiological hyperarousal (sample item: *I was jumpy and easily startled*). Participants rate each item from 0 (*not at* all) to 4 (*extremely*) based on their experience of the particular item during the past seven days. High internal consistency ($\alpha = .96$) has been established in a sample of male Vietnam veterans with and without a diagnosis of PTSD (Creamer et al., 2003). A similarly excellent coefficient alpha was found in the current sample ($\alpha = .95$). Creamer and colleagues (2003) also established its construct validity; the IES-R correlated highly (.84) with the PTSD Checklist (Weathers, Litz, Herman, Huska, & Keane, 1993).

Coding

The principal investigator completed partial coding of certain variables (e.g., specificity, vividness) as participants retrieved memories on the Autobiographical Memory Test, Memory Fluency Task, and Detailed Memory Task. As such, this coding

was done while still blind to participants' clinical symptoms. An experienced research assistant was consulted with after participant interviews for memories that were ambiguous; this assistant did not have access to participants' scores on clinical measures. Additional coding (e.g., word count, proportions) was completed afterwards from transcripts.

Autobiographical Memory Test. Memories were coded for specificity (specific, categoric, extended, semantic associate, same memory used multiple times, or omission), age at the time of the memory, and associated emotion (positive, negative, or neutral). Specific, categoric, and extended memories were coded as described in the Introduction section. Memories were coded as semantic associates if participants provided an example of the cue word rather than a remembered life event (e.g., *The library on campus is gigantic*). Memories that were used for multiple cue words were scored as "same." If participants failed to retrieve a memory after 30 seconds it was scored as an omission. For memories that did not obviously fit into any of the above coding categories, coding was discussed and agreed upon between the principal investigator and an experienced research assistant familiar with overgeneral memory research.

Memory Fluency Task. Quantity of memories retrieved was coded to measure early memory accessibility. Memories were eliminated from analyses if the age at the time of the event indicated that the memories were not in fact from before the participant began school (as had been specified in the instructions to participants). Specific memories were eliminated if they occurred after the first day of school. Non-specific memories with age ranges (i.e., categoric and extended events) were eliminated if the upper age limit was later than 7 years 0 months or if the median age surpassed the first day of school. That is

to say, non-specific memories were retained for analyses as long as their median age occurred before the participant began school and the upper age range was 6 years 11 months or less. These eliminations resulted in number of "usable" memories retrieved on this task.

Each memory was coded as specific, non-specific (including both categoric and extended), or descriptive (similar to semantic associates on the AMT: *Our house was yellow*). Based on these categories, information on age, vividness, and emotional valence was calculated (e.g., average age for specific memories, average vividness for negative memories). Two raters (an undergraduate research assistant and the principal investigator) independently coded the data for 15% of the participants in order to establish inter-rater reliability. Agreement was nearly perfect, with instances of differing calculations varying almost exclusively by minimal amounts (e.g., less than 1).

Detailed Memory Task. Each of the three detailed memories was coded for age, vividness, and emotional valence as in the AMT and the MFT. In addition to calculating each memory's word count, a coding scheme known as Unique Units of Information (UUI) was applied to these detailed memories. This coding scheme was developed by Fivush (1991) and has since been used in the autobiographical memory literature (e.g., Peterson, 2011; Peterson & Roberts, 2003). Whereas a word count provides information on how much a person said, UUIs provide information on the amount of *unique content* said by a person. According to the UUI coding scheme, a referent is coded only once regardless of how many times a participant repeats it. Consider the following sample memory: "We had a dog. I loved the dog. The dog was brown." While the word count increases with each use of the word "dog," for the purposes of UUI coding it is only

coded once because it is no longer a unique unit of information after its initial use in the recollection. UUI coding organizes words into the following categories: person, object, location, activity, attribute, time, emotion, and cognition. Word count and UUIs were calculated for each of the three detailed memories; these figures were combined into total scores in the dataset rather than entering this information for each of the three memories separately. An experienced research assistant familiar with UUI coding checked each participant's scores, and all discrepancies were discussed and agreed upon with the principal investigator.

Brief Symptom Inventory. The Global Severity Index (GSI) was calculated for each participant by dividing the sum of their scores by the total number of items answered. The GSI is a global index indicating overall level of psychological distress. Based on a sample of 719 psychiatric outpatients, the BSI manual (Derogatis, 1993) reports the test-retest reliability of the GSI to be .90; this suggests that the GSI is stable over time, providing a consistent measurement of psychological distress.

Beck Depression Inventory-II. A total score was calculated by summing responses to each of the 21 items.

Structured Clinical Interview for DSM-IV. The principal investigator consulted with a registered clinical psychologist when, in reviewing participants' answers (from scoring sheets as well as audiotaped portions of the interview) afterwards, the presence of a major depressive episode was unclear. The investigator and the clinician were in agreement on all final coding decisions for the SCID-I. Based on DSM-IV criteria for a major depressive episode, participants were dichotomously coded as having a current

major depressive episode or not, and as having previously experienced a major depressive episode or not.

Childhood Trauma Questionnaire. Subscale scores were calculated for three of the CTQ's five subscales: physical abuse, sexual abuse, and emotional abuse. The physical neglect and emotional neglect subscales were not calculated due to the abstract nature of these constructs. Participants were considered to have experienced childhood trauma based on previously established moderate to severe cut-off scores: physical abuse = 10+, sexual abuse = 8+, emotional abuse = 13+ (Bernstein & Fink, 1998).

Impact of Event Scale—Revised. A total score was calculated for participants who completed this questionnaire by summing each item's response. Participants were dichotomously coded as having current symptoms of trauma if they reached the cut-off score of 33 (Creamer et al., 2003).

Procedure

Participants met individually with the researcher in a quiet room free of distractions on campus for approximately 45-60 minutes. The researcher explained the purpose of the study and obtained informed consent for participation in both the study (see Appendix I for the general consent form and Appendix J for the PREP-specific consent form) and the optional draw for the gift card (see Appendix K). Participants were told that the study was investigating how mood and past experiences affect their memories. As part of the informed consent process participants were told about the sensitive nature of the study. The researcher obtained consent to audiotape the memory tasks and the clinical interview for offline coding purposes. The study then began with participants completing a demographic form.

The memory tasks were conducted prior to the clinical measures to ensure that the interviewer remained blind to the participants' affective symptoms while conducting the memory tasks. All memory tasks were audiotaped for offline coding. The order of the Autobiographical Memory Test and the Memory Fluency Task was counterbalanced across participants. The Detailed Memory Task always immediately followed administration of the MFT. For the MFT the researcher explained to the participants that they should retrieve as many early memories as possible in the four-minute period, stressing that quantity of memories, not quantity of detail, was required. Early memories were defined as events occurring prior to participants attending school (around age five for children living in Newfoundland and Labrador). As participants retrieved their memories the researcher wrote down key terms of each one. After the four minutes the researcher reviewed each memory with participants to determine the age at the time of the event, the memory's vividness, and the emotion associated with the memory.

Age was determined as specifically as possible, with participants being asked to determine as close to the month as possible. For example, participants were prompted to consider whether a birthday or major holiday occurred around the time of the memory in order to provide the specific month, or, more broadly, the specific season in which the memory occurred. To rate each memory's vividness, participants were asked to choose from the following options: 1 – *very vague*, 2 – *a bit vague*, 3 – *fairly clear*, 4 – *quite clear*, and 5 – *vivid*. For emotional valence, participants were asked to label each memory retrieved as being positive, negative, or neutral.

On the Detailed Memory Task, participants were asked about three of their memories in greater detail to gather information regarding memory structure. The

researcher asked participants to determine their three earliest memories, regardless of whether they had been previously recalled in the four-minute task. Participants were instructed to tell the researcher as much as they could about each of the three memories, giving as many details as possible. Once participants stopped talking the researcher prompted them for any other details they may have left out. As in the Memory Fluency Task, following completion of the task participants provided age at the time of the events, vividness, and associated emotions.

Participants also completed the minimal-instructions Autobiographical Memory Test (hereafter simply referred to as the AMT). The researcher explained to participants that they were again charged with recalling autobiographical memories, but that these memories were to be in response to cue words. Participants were told that their responses were not required to be from any given time period, contrary to the Memory Fluency Task. Participants were given 30 seconds to recall a memory in response to each of 15 different cue words consisting of five positive (*happy, relaxed, successful, excited, proud*), five negative (*angry, lonely, sad, failure, guilty*), and five neutral (*grass, gigantic, wildlife, bread, search*). Cue words were presented in that order, but alternating between positive, negative, and neutral words. These words were chosen based on their frequency in the AMT literature. Participants were instructed to retrieve memories that were at least one week old, and to use each memory only once (see Appendix L for full instructions). The cue words were presented both aurally and visually; as the researcher pronounced each word, she flipped over a small card with the word printed in large font to ensure comprehension.

At times a participant recalled an upsetting event(s) during the memory task portion of the study. In these circumstances, the researcher assessed whether the participant would prefer to end the procedure, reminding them that they would not be penalized (in regards to course credit and the gift card draw) for doing so. There were no instances when a participant chose to end the session prematurely, and the researcher never judged a participant to be too distressed to continue with the procedure.

After the memory tasks, the researcher conducted the clinical interview (SCID-I). Following the interview, all participants completed the Childhood Trauma Questionnaire, the Beck Depression Inventory-II, and the Brief Symptom Inventory. Individuals who identified a history of physical and/or sexual abuse on the CTQ (responses of *sometimes true* or more often on the physical and sexual items: 9, 11, 12, 15, 17, 20, 21, 23, 24, and 27, see Appendix G) were asked to complete the Impact of Event Scale—Revised to determine current symptoms of trauma in regards to the identified event(s). Participants were instructed to answer the IES-R items in response to the relevant endorsed item(s) on the CTQ. While the other three types of childhood trauma (emotional neglect, emotional abuse, and physical neglect) are less concrete, participants who responded at least *sometimes true* to item 25 (*I believe that I was emotionally abused*) were also asked to complete the IES-R due to the explicit nature of this item (compared to more ambiguous items addressing neglect, such as: *People in my family felt close to each other*). While the CTQ determined *potentially traumatic experiences* from the participants' childhood, the IES-R assessed participants' *current experience of subjective trauma*.

Five participants indicated suicidality on the BDI-II item regarding suicidal thoughts and wishes by choosing responses 1, 2, or 3 (0 - *I don't criticize or blame myself*

more than usual, 1 – *I have thoughts of killing myself, but I would not carry them out,* 2 – *I would like to kill myself,* 3 – *I would kill myself if I had the chance*). In those instances, the researcher conducted an immediate risk assessment. Participants were asked about the nature of their suicidal thoughts, whether they had a plan to kill themselves, and if they had the means to do so. None of these participants indicated that they had such a plan or the intent to harm themselves. A clinical co-investigator (Dr. Jacqueline Carter-Major) was available to the researcher by telephone for assistance and direction throughout the procedure in case of a crisis situation.

Upon completion of the study participants were thanked and debriefed. The researcher said the investigation centered around the effect of different kinds of experiences (specifically trauma) and moods (specifically depression) on autobiographical memories. The researcher offered to send the study results to participants upon completion of the doctoral dissertation. All participants were provided with contact information for mental health resources on campus (i.e., the University Counseling Center), and several community mental health resources (e.g., crisis lines, mental health clinics).

Statistical Analyses

The research questions identified in the Introduction were as follows: 1) Do the data demonstrate an overgeneral memory bias among individuals with a lifetime history of depression and/or trauma on the Autobiographical Memory Test? 2) Is there an overgeneral memory bias in participants with a lifetime history of depression and/or trauma on the Memory Fluency Task? 3) Is there an overgeneral memory bias in participants with a lifetime history of depression and/or trauma on the Detailed Memory

Task? 4) Does Autobiographical Memory Test performance predict clinical variables? 5) Does Memory Fluency Task performance predict clinical variables? 6) Does performance on the Detailed Memory Task predict clinical variables? 7) Is memory specificity consistent across the AMT and the MFT?

The following statistical analyses were used to answer the above questions: independent samples t-tests were used to answer questions 1, 2, and 3 regarding an overgeneral memory bias. The sample was divided into two groups for these t-tests. Participants with current and/or past symptoms of depression as identified by the SCID-I, and/or current symptoms of trauma as identified by the Impact of Event Scale—Revised, were grouped together and called the "clinical" sample (while it was not a true clinical sample, this label is used throughout this document to facilitate the reader); participants without any such history formed the "control" sample. Questions 4, 5, and 6 made use of multiple regression analyses to determine what, if any, memory variables significantly predicted scores on the Beck Depression Inventory—II, Childhood Trauma Questionnaire, and Brief Symptom Inventory. Question 7 used bivariate correlation analyses to determine associations between performance on the Autobiographical Memory Test and performance on parallel constructs on the Memory Fluency Task.

Results

Descriptive data are presented first, and results are presented based on the research questions identified above.

Descriptive Data

Of the 97 participants, three were excluded due to ambiguous responses on the SCID-I. The investigator consulted with a clinical psychologist on all SCID-I interviews

whose results were unclear. In all but these three cases, the clinical psychologist and investigator were able to agree whether or not participants had met criteria for a major depressive episode. Therefore, three participants were excluded due to their ambiguous responses on the SCID-I, bringing the final sample size to 94.

Of these 94 participants, five more were excluded in order to avoid potentially confounding the "clinical" group. Most participants who endorsed a history of childhood trauma on the Childhood Trauma Questionnaire also endorsed current symptoms of trauma on the Impact of Event Scale—Revised and/or met criteria for a major depressive episode at some point in their lives as measured by the SCID-I (thus classifying them as a "clinical" participant). However, there were five participants who only endorsed trauma on the CTQ, with no endorsement of trauma on the IES-R or of depression on the SCID-I; the latter two measures were used to determine whether participants were classified as "clinical" or control. In this study, the CTQ was used to screen for the presence of potentially traumatic events, while the IES-R functioned as a measure of subjective trauma symptoms. As the literature demonstrates that it is the experience of subjective trauma, and not exclusively the experience of a potentially traumatic event that seems to impact autobiographical memory specificity (refer to the Introduction), these five participants were excluded from analyses to avoid the risk of being potentially incorrectly classified into the "clinical" or control groups.

Given these late-stage exclusions, the final sample size included for statistical analyses was 89. Of these 89 participants 29 of them (32%) met criteria for a past major depressive episode as measured by the SCID-I; four of these participants (5%) additionally met criteria for a current major depressive episode. Five people (6%) scored

above the clinical cut-off on the Impact of Event Scale—Revised to be considered as having current trauma symptoms related to experiences they endorsed on the Childhood Trauma Questionnaire. Three participants endorsed current symptoms of trauma and also met criteria for a past or current major depressive episode. For a visual summary of these numbers, refer to Figure 1 below: of the 89 participants, 29 met criteria for a past major depressive episode (four of whom also met criteria for a current episode), 5 endorsed current symptoms of trauma, and 3 fit in both categories, meaning that 31 participants (35%) experienced trauma and/or depression and 58 participants (65%) were healthy controls.

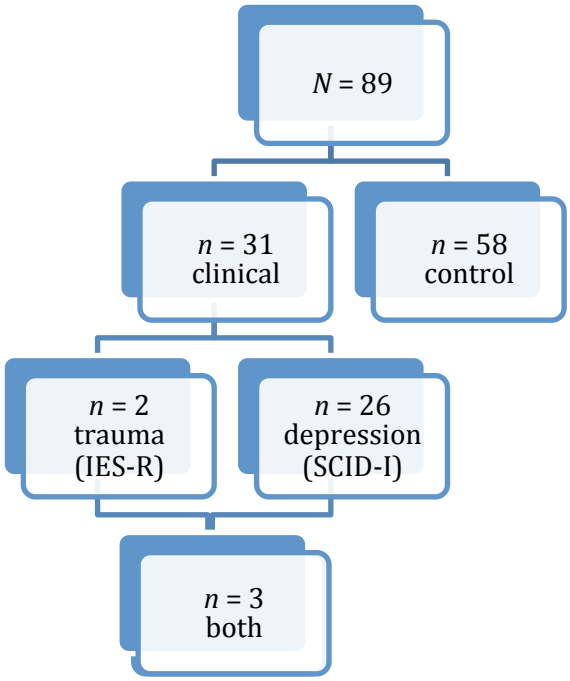


Figure 1. The breakdown of "clinical" versus control participants

Descriptive data for the full sample regarding scores on the clinical measures are presented in Table 1. The SCID-I is not included as it was scored dichotomously to

determine whether or not participants met criteria for a current or past major depressive episode (refer to Figure 1 for frequency data). The current study used total Childhood Trauma Questionnaire scores, rather than subscale scores, in its analyses to facilitate clarity and due to the small number of participants (n = 11) reaching clinical cut-offs on the various subscales ($n_{\text{physical abuse}}$ = 1; $n_{\text{sexual abuse}}$ = 4; $n_{\text{emotional abuse}}$ = 5; one additional participant endorsed all three of these subscales). Nevertheless, descriptive statistics are provided for the three abuse subscales on the CTQ in order to provide a more detailed depiction of the current sample. The Impact of Event Scale—Revised was only administered to participants who endorsed certain physical, sexual, and emotional abuse items on the CTQ (refer back to the Procedure for specific items). As such, there is IES-R data for only 17 participants rather than all 89.

Analyses were conducted to determine whether the "clinical" and control groups differed significantly on demographic variables. An independent samples t-test showed that there were no significant age differences between the "clinical" group (M = 21.69, SD = 2.78) and control group (M = 21.92, SD = 3.17); $t(87) = .33$, $p = .74$. Chi-square tests of independence were calculated comparing the frequency of nominal demographic variables in the "clinical" and control groups. No significant differences emerged in relation to sex, ethnicity, marital status, education, or participation in return for course credit through the PREP program (p values ranging from .44 to .91). Given these non-significant results, it seems as though demographic variables did not impact the study's findings.

Autobiographical Memory Test: OGM Bias

To address the first research question (is an overgeneral memory bias on the AMT replicated in the current study?), an independent samples t-test was used to compare participants in the "clinical" group (lifetime history of depression and/or trauma as determined by the SCID-I and the IES-R) with controls on the following AMT variables: mean proportion of specific memories recalled, mean proportion of categoric memories recalled, mean proportion of semantic memories recalled, and mean proportion of omissions (see Table 2).

There was a significant difference in the mean proportion of categoric memories recalled by "clinical" participants versus controls; $t(80) = 2.09$, $p = .04$. The effect size fell within the medium range (Cohen's $d = 0.48$). Specifically, participants with a history of depression and/or trauma tended to recall *fewer* categoric memories on the AMT than did their "non-clinical" counterparts, demonstrating an unexpected overgeneral memory bias in the control group. It had been hypothesized that this result would have been in the opposite direction, with fewer categoric memories being recalled by the *control* group.

Further analyses were conducted to investigate whether this overgeneral memory bias in the control group was related to the valence of the AMT's cue words. An independent samples t-test compared "clinical" participants with controls on mean proportion of categoric memories generated in response to negative cues, and mean proportion of categoric memories generated in response to positive cues (see Table 2). While the groups did not differ significantly in their rate of categoric responses on negative cues, the control group had significantly more categoric memories on positive cues than the "clinical" group; $t(80) = 2.41$, $p = .02$. This indicates that the overgeneral

memory bias seen in the control group was specific to positive cue words only. Levene's test indicated unequal variances ($F = 8.51$, $p = .005$), but the degrees of freedom were not affected: the adjusted degrees of freedom were 79.92, which were rounded up to 80, the original value. Once again, the effect size for this statistic fell within the medium range (Cohen's $d = 0.56$).

The moderate effect sizes of the two significant results in Table 2 lend confidence to these findings. However, the effect sizes of the non-significant results were relatively small (Cohen's $d = .06$ to $.30$). These small effect sizes suggest that there were likely no meaningful differences between the "clinical" and control groups in terms of mean proportion of specific memories recalled, mean proportion of semantic memories recalled, mean proportion of omissions, and mean proportion of categoric memories for negative cues. Lack of these differences implies that an overgeneral memory bias in "clinical" participants did not emerge on the Autobiographical Memory Test in this study.

Memory Fluency Task: OGM Bias

The second research question (is there an overgeneral memory bias on the MFT?) was addressed by using independent samples t-tests to compare controls and non-controls on the following MFT variables: mean number of memories recalled, mean proportion of specific memories recalled, mean proportion of negative memories recalled, mean age of earliest specific memory recalled, mean age for specific memories recalled, mean vividness of specific memories recalled, and mean vividness of repeated memories recalled (see Table 3). Contrary to expectations, there were no statistically significant differences on these variables between the "clinical" participants and the controls.

Performance on the MFT did not seem to differ based on participants' endorsement of lifetime history of depression and/or trauma.

It is interesting to note the variation within the sample in terms of performance on the MFT: number of memories recalled ranged from 0 to 18 (M = 8.71, SD = 3.81), with 30% of participants recalling 11+ memories, 34% recalling 8-10 memories, and 36% recalling 7 or fewer memories.

As in the AMT results above, the effect sizes for these non-significant results were fairly small (Cohen's d = .05 to .30). This indicates that there were likely no meaningful differences between "clinical" and control groups on the Memory Fluency Task variables analyzed for this research question in the present study.

Detailed Memory Task: OGM Bias

The third research question (is there an overgeneral memory bias on a Detailed Memory Task?) was addressed by using independent samples t-tests to compare controls and non-controls on the following detailed memory variables: word count, total UUIs (unique units of information), proportion of emotion UUIs, proportion of specific memories, and proportion of negative memories recalled (see Table 4). Contrary to the hypothesis, there were no significant differences on these variables between the "clinical" participants and controls, suggesting that a lifetime history of depression and/or trauma was not associated with length, detail, specificity, or valence of earliest memories.

The effect sizes for these non-significant results were even smaller than those of the AMT and MFT listed above (Cohen's d = .06 to .19). As appears to be fairly consistent across the three research questions investigating the overgeneral memory bias, there do not seem to be any meaningful differences between the "clinical" and control

groups on the memory variables analyzed in the current study. The findings indicate that the DMT did not identify an overgeneral memory bias among "clinical" participants.

Autobiographical Memory Test: Clinical Correlates

The fourth research question (does the AMT predict clinical scores?) was addressed using multiple regression analyses. The following AMT variables were included as independent variables: mean proportion of specific memories, mean proportion of categoric memories, mean proportion of semantic memories, and mean proportion of omissions. See Table 5 for the correlation matrix depicting correlations among the predictor variables and dependent variables.

Using the enter method, three multiple regressions were conducted, one for each of the following dependent variables: BDI-II, CTQ, and BSI. Sex was also included as an independent variable. None of these three regression analyses exhibited statistical significance, with effect sizes falling short of the medium range (f^2 = .07 to .11). Effect sizes within this range suggest that it is unlikely that there was a meaningful predictive relationship between the above AMT variables and the three clinical measures. The R^2 and F values for the BDI-II, CTQ, and BSI respectively were as follows: $F(5, 76) = 1.60$, $R^2 = .10$; $F(5, 76) = 1.18$, $R^2 = .07$; $F(5, 76) = 1.57$, $R^2 = .09$. This suggests that type of memories recalled on the AMT did not predict clinical scores of depression, childhood trauma, and psychological distress as measured by the BDI-II, CTQ, and BSI.

Refer to Table 6 for the unique contributions of each predictor in the regression models. Table 6 shows that in the regression analysis predicting CTQ scores, the proportion of semantic memories generated on the AMT had a significant t value (p = .02) despite the overall regression model not reaching statistical significance. Table 5

indicates that these two variables are significantly correlated, which may explain why the proportion of semantic memories yielded the aforementioned significant *t* value.

Memory Fluency Task: Clinical Correlates

As with the Autobiographical Memory Test, multiple regression analyses were conducted to determine whether the MFT significantly predicted scores on the BDI-II, CTQ, and BSI. The following MFT variables were included as independent variables in the analyses: number of memories recalled, mean proportion of specific memories recalled, mean proportion of negative memories recalled, mean age of earliest specific memory, mean age of specific memories, mean vividness of specific memories, and mean vividness of repeated memories. See Table 7 for the correlation matrix depicting correlations among the predictor variables and dependent variables. The enter method was used for these three multiple regression analyses, and sex was included as an additional independent variable.

None of these multiple regression analyses exhibited statistical significance. Effect sizes fell in the medium range (f^2 = .10 to .21), which suggests that a statistically significant regression model, albeit of a moderate effect, may have been detected with a larger sample size. The *F* and R^2 values for the BDI-II, CTQ, and BSI respectively were: $F(8, 76) = 1.96$, $R^2 = .17$; $F(8, 75) = .89$, $R^2 = .09$; $F(8, 76) = 1.64$, $R^2 = .15$. These findings suggest that the MFT did not predict clinical scores of depression, trauma, or psychological distress as measured by the BDI-II, CTQ, and BSI. Refer to Table 8 for the unique contributions of each predictor in the regression models. Once again, some of the predictor variables yielded significant *t* values despite the overall regression models failing to reach statistical significance. In this case, there were no significant correlations

between these predictor variables and the dependent variables (see Table 7), suggesting that these significant *t* values likely represent familywise type 1 error (Tukey, 1953).

Detailed Memory Task: Clinical Correlates

Three more regression analyses were conducted to determine whether scores on the BDI-II, CTQ, and BSI were predicted by variables from the Detailed Memory Task. The following DMT variables were included as independent variables: mean total UUIs (unique units of information), mean proportion of emotion UUIs, mean proportion of negative memories recalled, and mean proportion of specific memories recalled. See Table 9 for the correlation matrix depicting correlations among the predictor variables and dependent variables.

Word count was not entered as an independent variable to avoid multicollinearity: as word count and total UUIs are highly correlated (as UUIs increase, so does word count), the assumption of collinearity likely would have been violated if both variables had been included. For all analyses, sex was included as an additional independent variable.

Using the enter method, the first multiple regression analysis explored whether Detailed Memory Task variables predicted scores on the BDI-II. This analysis did not yield significant results: $F(5, 83) = 2.12$, $R^2 = .11$. The effect size fell just short of the medium range ($f^2 = .13$). This suggests that variables from the DMT did not predict depression scores on the BDI-II. See Table 10 for the unique contributions of each variable in the regression model. The significant correlation between total UUIs and BDI-II scores demonstrated in Table 9 may account for the statistically significant *t* value of the former variable (see Table 10).

The second multiple regression analysis explored whether DMT variables predicted scores on the CTQ. The standard residuals ranged from -2.40 to 4.17. As indicated by Tolerance and VIF values, multicollinearity was not a concern (VIF ranged from 1.01 to 1.26; Tolerance ranged from .80 to 1). The data met the assumption of independent errors (Durbin-Watson value = 2.02). Using the enter method, it was found that Detailed Memory Task variables explained a significant amount of the variance in CTQ scores, $F(5, 82) = 4.29$, $p = .002$, $R^2 = .15$. There was a medium to large effect size ($f^2 = .26$), highlighting the robustness of this finding. Sex, proportion of negative memories, and proportion of specific memories did not significantly predict CTQ scores, however these scores were significantly predicted by total UUIs and proportion of emotion UUIs (refer to Table 10 for these statistics). Higher use of details provided on the DMT, and emotion details specifically, predicted higher trauma scores on the CTQ.

Using the enter method, the third multiple regression analysis explored whether Detailed Memory Task variables predicted scores on the BSI. This analysis was not statistically significant, indicating that DMT variables did not predict levels of psychological distress as measured by the BSI. The effect size approached the medium range ($f^2 = .13$). See Table 10 for each independent variable's unique contribution to the regression model. Once again, the significant *t* value of the total UUIs variable may be explained by its significant correlation with BSI scores (see Table 9).

Memory Specificity Across Tasks

Initial bivariate correlations were calculated to determine associations between proportion of specific memories on the Autobiographical Memory Test, proportion of specific memories on the Memory Fluency Task, and number of memories recalled on the

MFT. No significant correlations were found (see Table 11), therefore no follow-up regression analyses were conducted. It was hypothesized that memory specificity would be consistent across memory tasks, but this was not demonstrated, as there was no significant correlation between specificity on the AMT and specificity on the MFT, nor did the ability to generate memories on the MFT have any significant correlations with specificity on the AMT. It is of note that the values presented in Table 11 represent quite small effect sizes, lending confidence to the finding that memory specificity was not meaningfully consistent across tasks.

Post-Hoc Follow-up Analyses

In order to compare the current study with that of a similar study by Debeer and her colleagues (2009), additional bivariate correlations were conducted between BDI-II scores and the AMT. Specifically, BDI-II scores were correlated with proportion of specific, categoric, extended, semantic, and omitted memories on the AMT. No significant correlations were identified between AMT variables and the BDI-II (see Table 12), failing to replicate the findings of Debeer and her colleagues. Table 12 demonstrates the small effect sizes associated with these correlations, supporting the absence of meaningful relationships between the BDI-II and the AMT variables.

Discussion

The aim of this study was to investigate whether the overgeneral memory bias previously seen on the Autobiographical Memory Test among individuals with symptoms of depression and/or trauma would also be seen on two memory tasks eliciting *earliest* autobiographical memories: the Memory Fluency Task and a Detailed Memory Task. As such, independent samples t-tests were used to compare the "clinical" group and control

group on their performance on the AMT, MFT, and DMT. These analyses demonstrated an overgeneral memory bias on the AMT exclusively; contrary to the hypothesis, the control group generated significantly more categoric memories on the AMT than did the "clinical" group. Follow-up analyses indicated that this bias was only found for memories generated in response to *positive* cue words, whereas there were no statistically significant differences between the two groups for categoric memories recalled in response to *negative* cue words. Implications of an overgeneral memory bias for clinical practice (namely prognosis and clinical interventions) will be presented below.

Another aim of the study was to explore associations between memory variables and clinical variables. Multiple regression analyses were used to investigate if memory variables predicted scores on the BDI-II (depression), CTQ (childhood trauma), and BSI (psychological distress). These analyses yielded one statistically significant regression model: variables from the Detailed Memory Task predicted CTQ scores. Specifically, total UUIs (unique units of information) and proportion of emotion UUIs were the two significant independent variables (predictors) in the regression model. Higher trauma scores on the CTQ were predicted by greater amounts of UUIs and emotion UUIs.

Finally, the study aimed to demonstrate whether memory specificity remained consistent across memory tasks. Bivariate correlations were used to investigate the relationship between memory specificity on the AMT and memory specificity on the MFT. In contrast to the hypothesis these correlations were not statistically significant, suggesting that memory specificity is not consistent across these two memory tasks.

Autobiographical Memory Test: OGM Bias

It was hypothesized that participants with a lifetime history of depression and/or trauma would have fewer memories overall (as measured by omissions) and more overgeneral memories (as measured by categoric memories) as compared to controls. This hypothesis was not supported: there was no significant difference between the two groups for proportion of omissions on the AMT, and the "clinical" group generated a *smaller* proportion of categoric memories than did the control group, indicating more overgeneral memories in the control group rather than the "clinical" group. The data did support an overgeneral memory bias, but in the opposite direction than was predicted: controls provided a greater proportion of categoric memories than the "clinical" group, specifically in response to the positive cue words presented.

The moderate effect size of the above result lends it confidence. The small effect sizes of the non-significant findings within this research question speak against the originally hypothesized relationship ("clinical" participants recall fewer memories and more overgeneral memories than controls). Thus, the current study did not find a significant relationship between "clinical" participants and overgeneral memory. The following paragraphs discuss the implications of the unsupported hypothesis.

The hypothesis was based on previous evidence of individuals with a lifetime history of depression and/or trauma tending to recall more overgeneral memories. However, this is not the first time that a study has failed to find a clear overgeneral memory bias in a clinical group compared to a control group. For example, one study by Kaney, Bowen-Jones, and Bentall (1999) failed to detect differences in autobiographical memory specificity between currently depressed patients and healthy controls. When

looking at the interaction between group and valence of cue words, results have been mixed. The review by Williams and colleagues (2007) concluded that some studies found an OGM bias in clinical groups for positive cues only (Moffitt, Singer, Nelligan, Carlson, & Vyse, 1994; Park et al., 2002; Williams & Dritschel, 1988; Williams & Scott, 1988), some found an OGM bias in clinical groups for negative cues only (Mackinger, Pachinger et al.,, 2000), some found an OGM bias in control groups for negative cues only (Burnside, Startup, Byatt, Rollinson, & Hill, 2004; Williams & Dritschel, 1988; Williams & Scott, 1988), some found no between-group differences for negative cues (Moffitt et al., 1994), and some found no between-group differences for positive cues (Burnside et al., 2004). The variability shown among these studies demonstrates that while there is some evidence for an OGM bias in individuals who have experienced symptoms of depression and/or trauma, results are inconsistent.

The impact of rumination and avoidant coping on higher rates of overgeneral memory retrieval has received increased attention in recent literature (Hamlat et al., 2015; Harris et al., 2016; Kong, He, Auerbach, McWhinnie, & Xiao, 2015). These constructs were not assessed in the current study; as such, there may have been individuals with high rumination and avoidance characteristics in the control group, thus explaining the OGM bias found in this group as compared to the "clinical" group. Additionally, depressed individuals have been found to generate higher proportions of specific negative memories due to negative cognitive biases commonly associated with depression (Ono et al., 2016). Trauma has also been shown to correlate with increased memory specificity, perhaps due to the effect of intrusive symptoms (Bunnell & Greenhoot, 2012; Harris et al., 2016).

These associations, too, would interfere with the originally proposed hypothesis (i.e., "clinical" group showing an OGM bias).

Methodological differences among studies may also partly explain the inconsistencies found in the literature. As discussed in the Introduction, there is a multitude of methodological variations seen in the Autobiographical Memory Test literature. These include time limits, number of cue words presented, and format (e.g., written versus oral). These variations make it challenging to compare and synthesize results across studies. In addition to these methodological differences, researchers have different ways of recruiting and assessing participants with a history of depression and/or trauma, and some are more reliable than others. For example, health records with a documented diagnosis that was given during an active episode of psychopathology can be assumed to be a better indicator of a disorder as compared to a score on a retrospective, self-report measure.

There are overgeneral memory studies where participants are known to have prior diagnoses of major depressive disorder or posttraumatic stress disorder, or to have experienced childhood abuse (see Aglan et al., 2010; Kuyken & Brewin, 1995; Park et al., 2002; all of these studies found an overgeneral memory bias). These studies might be able to classify their participants as having a history of certain clinical symptoms with more confidence as compared to studies using retrospective measures with participants recruited from the community (or a university). While reliable retrospective measures exist, and were used in the current study, it seems even more reliable to classify participants based on their recruitment from mental health services specifically designed to treat the disorder in question (e.g., recruiting a depressed sample from a mood

disorders clinic). As such, the current study's failure to detect the hypothesized overgeneral memory bias should be interpreted cautiously, given the differences in reliability discussed above.

Because the current study recruited self-selecting university students, it is unsurprising that the number of participants endorsing current symptoms of depression as measured by the SCID-I and the BDI-II was low; depressive symptoms such as fatigue, decreased concentration, and decreased motivation are likely barriers to participation. Personal health records were not available to the investigator. As such, retrospective and self-report measures (the SCID-I and the IES-R) were the ways in which participants were categorized into the "clinical" and control groups. While these measures have demonstrated adequate psychometric properties, they rely on the participant's self-report and the investigator's clinical judgment, which may have more potential for error as compared to a well-established previous diagnosis, for example. This issue calls into question whether the current study's failure to detect evidence for the hypothesized overgeneral memory bias is due to a genuine lack of bias in the "clinical" group, or whether categorization errors may have interfered with the results. Although the SCID-I has excellent psychometric properties (see Methods), it is always preferable to assess psychopathology in a current episode rather than retrospectively assessing symptoms. Retrospective measures run the risk of individuals' self-reports being less accurate due to the negative effects of time on one's memory accuracy.

Working with participants who are currently experiencing symptoms of depression allows for potentially more reliable categorization of participants, as current measures of depression (e.g., the BDI-II) are more reliable than retrospective measures of

depression (e.g., the SCID-I). Unfortunately, the current study had a marginal number of participants endorsing current symptoms of depression on the SCID-I and/or the BDI-II. Administering the IES-R did allow assessment of current symptoms of trauma, which was a strength of the current study for two reasons: current measures are often more psychometrically sound than retrospective measures, and it addressed subjective trauma rather than merely identifying potentially traumatic experiences, a meaningful distinction in the overgeneral memory literature (see Kangas et al., 2005).

The current study's methodology is quite similar to that of Debeer and her colleagues (2009). Both studies recruited university students, used the BDI-II, and the minimal-instructions AMT (although Debeer and colleagues allowed 60 seconds per cue, as the task was administered in written form). Debeer and colleagues ran correlations between the AMT and the BDI-II, finding that proportion of specific memories was negatively correlated with BDI-II scores (supporting an overgeneral memory bias amongst depressed students), while the positive correlation between proportion of categoric memories and BDI-II scores did not quite reach statistical significance (p = .056). Although it might be expected that the current study would find a similar OGM bias in its sample of university students, the clinical variables were treated differently. While Debeer and colleagues ran correlations among continuous variables (BDI-II scores and proportion of memory types), the current sample was dichotomized into "clinical" and control groups based on SCID-I and IES-R scores in order to compare these groups on various memory variables using t-tests. These comparisons identified proportion of categoric memories on positive cues as the only significant difference between the two

groups, and did not find any indication of the hypothesized OGM bias in the "clinical" group.

The current sample's BDI-II scores were quite low: 12 individuals (14%) met the cut-off score for having at least mild depression, and only 6 of these individuals (7%) met the cut-off score for either moderate or severe depression. Nonetheless, correlations were conducted in order to look at the current study's data the same way that Debeer and colleagues looked at theirs (see Results section). In contrast to Debeer and colleagues, no significant correlations were identified. It is difficult to have confidence in these non-significant results given how few participants endorsed symptoms of depression on the BDI-II in the current study. The descriptive statistics associated with the BDI-II were similar across the current study (M = 8.26; SD = 6.81; range: 0-42) and that of Debeer and colleagues (M = 8.81; SD = 6.84; range: 0-39). However, the current study had 89 participants, while Debeer and colleagues had 314; therefore, despite similar descriptive statistics, the larger sample size resulted in more participants endorsing depressive symptoms on the BDI-II. Follow-up research running these analyses in a sample with more endorsement of depressive symptoms on the BDI-II would show more clearly whether the overgeneral memory bias found by Debeer and colleagues is able to be replicated or not.

Memory Fluency Task: OGM Bias

As with the AMT, it was hypothesized that participants with a lifetime history of depression and/or trauma would have fewer memories, more overgeneral memories, and later memories as compared to controls. This hypothesis was not supported, as there were no statistically significant differences on these variables between the "clinical" and

control groups. The MFT has not been examined in this way before, and so the analyses were largely exploratory. These results suggest that the AMT (a specificity task) and MFT (a quantitative task) tap into different processes. Having a lifetime history of depression and/or trauma has been linked with overgeneral memory in the AMT literature, but it does not seem to relate to one's retrieval of earliest memories in the same way.

Given Conway and Pleydell-Pearce's (2000) self-memory system, it is hypothesized that people with a lifetime history of depression and/or trauma truncate their search to avoid potentially upsetting details from the level of event specific knowledge (see Appendix A); this results in overgeneral memories. Perhaps it is less threatening for people to freely search their earliest memories on the MFT compared to the more threatening task of searching their whole lives in an effort to generate memories on the AMT, where there are no age parameters given by the examiner. Of course, this would not be true of someone who has very negative earliest memories. For participants endorsing trauma histories, data regarding the participants' age at the time of abuse was not collected. Such information could be useful in determining if people in the "clinical" group do actually exhibit an overgeneral memory bias on the MFT if their trauma occurred as a very young child. This would render their earliest memories just as threatening (if not more so) as any other period in their life, presumably leading to truncation of memory retrieval and therefore an overgeneral memory bias.

The small effect sizes associated with this research question's non-significant findings indicate the likelihood that there is truly no meaningful statistically significant relationship between MFT performance and overgeneral memory in the present study.

The MFT did not seem able to detect an overgeneral memory bias between "clinical" and control participants.

Detailed Memory Task: OGM Bias

It was hypothesized that participants with a lifetime history of depression and/or trauma would have shorter memories and less detailed memories as compared to controls. This hypothesis was not supported, as there were no statistically significant differences between the "clinical" and control groups on word count, nor on UUI coding. Having a lifetime history of depression and/or trauma does not appear to be linked to performance on the DMT; participants in the "clinical" group had earliest memories that were just as long and just as detailed as did those in the control group.

Similarly to the MFT, it would seem as though the Detailed Memory Task activates a different process of recall than does the AMT. These processes may be impacted by differences such as time limit and retrieval instructions. Participants were given 30 seconds to generate memories on the AMT, whereas there was no time limit on the Detailed Memory Task. Participants were free to recall memories from any point in their life on the AMT, whereas they were asked to generate their three earliest memories on the Detailed Memory Task. It is unclear how these differences may have impacted memory retrieval. Both the AMT and DMT require effortful generative retrieval rather than the more spontaneous direct retrieval, and it had been assumed that this similarity would result in the hypothesized overgeneral memory bias.

The effect sizes for these findings were quite small (Cohen's d = .06 to .19) suggesting no meaningful relationship between memory specificity on the Detailed Memory Task and symptoms of depression and/or trauma in this study.

Autobiographical Memory Test: Clinical Correlates

There were no hypotheses regarding associations between the AMT and the clinical measures administered to participants (BDI-II, CTQ, BSI). These analyses were exploratory in nature. Multiple regression analyses failed to find regression models that predicted a statistically significant amount of variance on these clinical measures. Neither sex, mean proportion of specific memories, mean proportion of categoric memories, mean proportion of semantic memories, nor mean proportion of omissions were significant predictors of depression (BDI-II), childhood trauma (CTQ), or psychological distress (BSI). The small to medium effect sizes of these findings indicate that a meaningful relationship is unlikely, but they do not rule out the possibility that the current sample size was simply unable to detect a statistically significant relationship. A larger sample size may have had enough statistical power to detect the difference as statistically significant. Further research in this area is necessary to determine this with more confidence, especially since there is existing research that would support significant statistical relationships between AMT performance and the BDI-II (for example in Debeer et al.'s [2009] study using a university sample).

Memory Fluency Task: Clinical Correlates

There were no hypotheses regarding associations between the MFT and the clinical measures of depression (BDI-II), childhood trauma (CTQ), and psychological distress (BSI). These analyses were exploratory in nature, and similarly to what was found with the AMT variables, none of the multiple regression analyses using MFT variables were statistically significant. None of the clinical measures were predicted by sex, number of memories recalled, mean proportion of specific memories recalled, mean

proportion of negative memories recalled, mean age of earliest specific memory, mean age of specific memories, mean vividness of specific memories, or mean vividness of repeated memories.

Whereas the smaller effect sizes associated with the multiple regression analyses using AMT variables indicated that a meaningful relationship was unlikely, the larger effect sizes associated with this research question's multiple regression analyses speak more strongly to the need for further research. As the current sample size may have lacked the statistical power necessary to detect a significant relationship, testing these relationships in a larger sample size is indicated before ruling out with confidence that MFT variables are truly not meaningful predictors of scores on the BDI-II, CTQ, or BSI. Given that the MFT has not previously been investigated in relation to these clinical constructs conducting further research would provide evidence of whether these variables might in fact have statistically significant associations.

Quality of memories (i.e., specificity or lack thereof) has been found to have associations with emotional disorder in the autobiographical memory literature. The Memory Fluency Task is a measure of memory accessibility; it is primarily a quantity task (generate as many early memories as possible in 4 minutes). There is evidence in the literature to suggest that memory specificity is associated with constructs measured by the BDI-II, CTQ, and BSI. However, early memory accessibility has not been linked to these constructs, and the current findings do not suggest any such link.

Of the three clinical measures analyzed in this research question, the Childhood Trauma Questionnaire might be hypothesized to be the measure most likely to have significant associations with Memory Fluency Task variables since the CTQ and MFT

assess childhood constructs (childhood trauma and childhood memories). In contrast, the Beck Depression Inventory-II and Brief Symptom Inventory assess an individual's symptoms over the past two (BDI-II) to four (BSI) weeks. However, the CTQ spans an individual's entire childhood while the MFT focuses on earliest childhood memories (from before an individual entered kindergarten). There is no evidence in the current study to suggest that ability to access memories from this time period significantly predicts scores of childhood trauma, current depression, or current psychological distress.

Detailed Memory Task: Clinical Correlates

Due to the exploratory nature of these analyses, there were no hypotheses addressing associations between the Detailed Memory Task and the study's clinical variables. Performance on the DMT did not significantly predict scores on the BDI-II (depression) or BSI (psychological distress). However, total amount of unique details and amount of emotion details (as measured by UUI coding) were significant predictors of CTQ scores; the more details provided by participants overall, the greater their endorsement of childhood trauma on the CTQ. These findings were robust, as demonstrated by the effect size falling above the moderate range.

It might be expected that among individuals with childhood trauma, psychological distress associated with remembering childhood memories would contribute to less detail being provided on this task. However, if we consider that autobiographical memories are important to the life story, it is reasonable to expect that detail would not be negatively impacted by these symptoms. In fact, if these participants' earliest memories were negative, and they view themselves as being a distressed individual, then we would expect these memories to be clear and accessible (as evidenced by amount of unique

detail generated) given their relevance to, and congruence with, the life story (Tani, Peterson, & Smorti, in press; Williams et al., 2007).

This may seem contrary to previous research, such as the self-memory system, proposing that adverse life events result in truncation of memory retrieval to avoid distressing associated details. However, the UUI coding scheme used in the current study did not distinguish between *abstract, conceptual* details and *sensory-perceptual* details. The fact that participants with high CTQ scores provided more unique details in their earliest memories does not speak specifically to the construct of overgeneral memory: the results indicate that participants generated *more* details, but it is beyond the scope of the current study to investigate whether these details are reflective of general life events (overgeneral memory retrieval) or event-specific knowledge (specific memory retrieval). Future research might consider coding UUIs in this way to make a more meaningful interpretation. In the current findings, amount of detail (UUIs) retrieved on the Detailed Memory Task neither confirms nor denies the presence of an overgeneral memory bias.

In understanding the association between childhood trauma and detailed childhood memories, consider certain diagnostic criteria for PTSD, specifically the intrusive symptoms: "recurrent, involuntary, and intrusive distressing memories of the traumatic event(s); recurrent distressing dreams in which the content and/or affect of the dream are related to the traumatic event(s); dissociative reactions (e.g., flashbacks) in which the individual feels or acts as if the traumatic event(s) were recurring" (APA, 2013, p. 271). If someone were to develop intrusive symptoms consistent with PTSD following early childhood abuse it would be expected, consistent with the current findings, that they would in fact have very detailed first memories since events from this time period have

been replaying intrusively in their minds. Considered from this perspective, intrusive symptoms may help explain the relationship between childhood abuse and detailed childhood memories.

In keeping with the premise that memory recall can be influenced by intrusive trauma symptoms (e.g., flashbacks, intrusive thoughts), it seems reasonable that participants with childhood trauma histories had higher levels of detail in their earliest memories, particularly emotional detail. Childhood trauma has an inarguable emotional impact, and it seems as though participants in the current study with such histories provided more emotion-specific detail when recounting their earliest memories, perhaps due to years of intrusive symptoms. Other studies (Fivush, Hazzard, Sales, Sarfati, & Brown, 2003; Porter & Birt, 2001; Tani et al., in press) have previously identified this association between traumatic memories and emotional content in narratives by eliciting memories specific to abuse, trauma, or negative experiences, whereas the current study elicited individuals' three earliest memories whatever they may be. The current findings suggest that this association is present in individuals with abuse histories even when the narratives are not necessarily about these traumatic events. It would seem that individuals who experienced childhood abuse generate more emotion details in their earliest memory narratives regardless of the memory being recalled (i.e., trauma-related memory versus benign memory).

Previous research has demonstrated that increased detail is linked with traumatic and negative memories (Bohanek, Fivush, & Walker, 2005; Tani et al., in press). Suggested reasons for this link include the emotional saliency of these memories as well as the difficulty of describing events that have not been fully processed and integrated due

to their painful nature; it takes more words to describe events that have not been processed and integrated since they are less clear to the speaker, who does not have concise, well-formed ways of describing them. This may be related to the avoidant characteristics associated with PTSD. The DSM-5 lists the following two symptoms within the avoidant diagnostic criterion for PTSD: "avoidance of or efforts to avoid distressing memories, thoughts, or feelings about or closely associated with the traumatic event(s); avoidance of or efforts to avoid external reminders (people, places, conversations, activities, objects, situations) that arouse distressing memories, thoughts, or feelings about or closely associated with the traumatic event(s)" (APA, 2013, p. 271). An individual exhibiting avoidant symptoms associated with PTSD may not yet have processed and integrated the traumatic events, therefore resulting in more detailed narratives due to an inability to recount memories clearly and concisely.

The Detailed Memory Task variables did not significantly predict scores on the BDI-II or the BSI. Both of these non-significant findings had near-medium effect sizes, indicating the likelihood that the memory variables truly were not meaningful predictors of these clinical scores. However, it would be interesting to run these analyses in a sample whose participants endorsed higher scores on the BDI-II and BSI; while the effect sizes do not support very meaningful predictive relationships within this research question, the endorsement of symptoms on the BDI-II and BSI was low. Running these analyses in a sample with higher scores on these measures would provide more confidence in the results of the Detailed Memory Task to predict them.

Memory Specificity Across Tasks

The final hypothesis addressed the stability of an overgeneral memory bias across various measures. It was hypothesized that participants with an overgeneral memory bias on the AMT would also demonstrate this bias on the MFT. Since the current study failed to demonstrate the presence of an overgeneral memory bias on the MFT to begin with, it is perhaps unsurprising that this hypothesis was not supported. Regardless, participants' proportions of specific memories on each of the two memory tasks were compared to explore whether this construct remained consistent across tasks. There were no significant correlations between memory specificity on the AMT and memory specificity on the MFT. This may be further evidence of different retrieval processes being activated depending on which task is being completed. For example, the possibility that individuals who experienced symptoms of depression and/or trauma after childhood may be more likely to truncate their memory retrieval search when asked to retrieve memories from any point in their life (AMT) versus their earliest memories (MFT) in which they had not yet struggled with emotional disorder has already been raised (see Memory Fluency Task: OGM bias).

Methodological differences between the two memory tasks may affect the apparent lack of stability of memory specificity. Not only were the tasks themselves different (generating memories in response to specific cue words on the AMT versus generating memories from a certain time period on the MFT), but the time constraints also differed: 30 seconds for each cue word on the AMT, and a 4-minute window for the MFT. The impact of these differences is unclear, but it can be assumed that they did play a role in the failure of memory specificity to be a stable construct across memory tasks.

Another factor to consider is the derivation of the variables used in these bivariate correlations. The proportion of specific memories on the AMT was based on answers to 15 cue words, taking into account omissions when participants failed to answer within the 30-second time limit. Number of omissions was often minimal, with proportion of specific memories being calculated based on numbers very close to 15 total words. However, proportion of specific memories on the *MFT* would have been based on a much more variable total number of memories; descriptive statistics presented in the Results section indicated that approximately one third of the sample remembered 7 or fewer memories, one third remembered 8-10 memories, and one third remembered 11 or more memories. This has the potential to distort an individual's memory retrieval style (overgeneral versus specific). For example, someone who recalls only two early memories on the MFT could easily have a 100% proportion of specific memories if both of their recalled memories happen to be specific. If an individual who generated three memories also has two specific memories within them, they have a large drop to a 66% proportion of specific memories. Clinically these two individuals' performances may be similar, but numerically and statistically the difference between the two may be exaggerated. Therefore, comparing the proportion of specific memories generated on the AMT with the proportion of specific memories generated on the MFT is an exploratory foray into the question of memory specificity stability; however, the methodological and scoring differences between the two memory tasks are potential confounds to such direct comparisons.

To make a more conclusive argument it is necessary to replicate this finding in a study where there is, in fact, an overgeneral memory bias demonstrated on the MFT; if

there is an overgeneral memory bias demonstrated on the AMT and an overgeneral memory bias demonstrated on the MFT, but a significant correlation is still not found between memory specificity on each of these measures, it would then be possible to speculate as to how these tasks differ in their tendency to elicit certain memory categories (i.e., specific versus overgeneral).

Strengths and Limitations

The current study's methodology is its main strength. The Memory Fluency Task and Detailed Memory Task were used in addition to the Autobiographical Memory Test, which is a strong contribution to the literature; the need to investigate overgeneral memory with measures other than the AMT has previously been identified as a necessary future direction (Bunnell & Greenhoot, 2012; Harris et al., 2016; Williams et al., 2007). The clinical measures used (Beck Depression Inventory-II, Brief Symptom Inventory, Childhood Trauma Questionnaire, Impact of Event Scale—Revised, Structured Clinical Interview for DSM-IV Axis I Disorders) have excellent psychometric properties. In addition to the strong reliability and validity of these measures, the reliability of the procedure itself was quite high; one researcher conducted all participant interviews, therefore ensuring the highest possible consistency across all sessions. Tasks, instructions, and queries were approached the same way with every participant.

This work also makes an important contribution to the literature in its collection of early childhood memories (regardless of trauma content) from individuals with trauma histories. Much of the literature on early memories among trauma survivors explores trauma narratives specifically; Salmon and Reese (2015) describe the dearth of research

on non-trauma narratives in this population. The current study provides information about trauma survivors' childhood memories regardless of the events being recalled.

As with all research, there are some limitations to the current study. Generalizability of results to other populations may be limited, as the current sample was a university sample. This may impact generalizability due to the somewhat limited age range of a university-aged sample, as well as associated demographic factors such as socio-economic status and cognitive functioning. Additionally, the ethnicity of the sample was primarily Caucasian. While this closely mirrors the ethnic make-up of Newfoundland, it is uncommon in other parts of Canada. In addition to these demographic variables, the current study's recruitment methods resulted in a self-selected sample. All of these sample characteristics are a potential barrier to generalizability; the current study's findings may not reflect the statistical relationships that would be found in more heterogeneous samples.

The research questions and hypotheses focused on the presence of relationships among variables, not the origins behind their existence. Given these goals, the study design was non-experimental. A limitation of all non-experimental research is the inability to determine causality of relationships. As such, while the current study was able to identify significant relationships among variables, it is inappropriate to speculate about the causes of these relationships based on the current findings alone.

The assessment of lifetime depression was unavoidably done using a retrospective measure: the SCID-I. It is a strength of this study that a semi-structured interview was used rather than a self-report questionnaire, but it is a retrospective interview nonetheless. As such, participants were not classified with as much confidence as may have been

possible with other assessment methods, such as a previously documented diagnosis from the time the depressive episode occurred. Administering the BDI-II allowed for the examination of participants' current symptoms of depression. Categorizing participants as "clinical" and "control" based on BDI-II cut-off scores would have potentially made the two groups more reliably distinct, and provided more concrete evidence for classifying participants in their respective groups. Unfortunately, the negligible number of people endorsing even moderate levels of depression on this measure meant that the sample was unable to be classified into meaningful subgroups based on current depressive symptoms, and the SCID-I was used instead. It is possible that were the BDI-II able to have been used in this way, the differences in memory characteristics between the "clinical" and control groups would have been more exaggerated than they were in the current findings. Alternatively, more endorsement of depression symptoms on the BDI-II would have allowed for its analysis as a continuous measure, as was done in the research paper by Debeer and her colleagues (2009).

Recruitment and interviewing of participants occurred between May 2013 and August 2014, which encompassed several cycles of semesters. Individuals typically have lower mood in the winter and more elevated mood in the summer, especially if they have a lifetime history of depression (Winthorst et al., 2014). In addition, students would likely have felt relatively good at the beginning of the semester, more distressed around midterm season, and potentially either more distressed (if dealing with a tough exam schedule) or less distressed (if excited about finishing the semester) at the end of the semester. Given that dysphoric mood biases memory retrieval, students' performance on memory tasks may have been impacted depending on when in the year they participated.

Of course any such dysphoria can be assumed to have been detected by one or more of the clinical measures (particularly the Beck Depression Inventory-II or Brief Symptom Inventory), but it is worth considering how recruiting over a shorter timeline may have impacted findings.

The Childhood Trauma Questionnaire was used to screen for a history of potentially traumatic experiences, and only if an individual endorsed childhood abuse was the Impact of Event Scale—Revised administered to assess current symptoms of trauma. It is possible that current symptoms of trauma remained undetected in some participants since only potentially traumatic experiences that fell under the umbrella of childhood physical, sexual, or emotional abuse were assessed by the CTQ. There may have been participants with trauma symptoms due to abuse endured in adulthood, or to traumatic events unrelated to abuse (e.g., motor vehicle accidents, armed robbery), but who would have been classified into the control group since they did not endorse trauma items on the CTQ, and therefore would not have been given the IES-R to complete. If there were indeed participants in the control group who had a trauma history (albeit unrelated to childhood abuse), it is reasonable to expect that the differences seen between the "clinical" and control groups were more conservative than if it was possible to say with absolute certainty that nobody in the control group was experiencing trauma. Making use of the PTSD portion of the SCID-I in addition to the major depression portion would have decreased the likelihood of failing to detect histories of trauma, as the focus would not have been exclusively on childhood abuse.

The current study's small number of participants endorsing symptoms on the various clinical measures (both current and retrospective) led to the decision to

amalgamate current and lifetime cases, as well as depression and trauma cases, together into one "clinical" sample. Otherwise, the numbers in each sub-group of "clinical" participants (e.g., current depression, past depression) would have been too small for meaningful statistical analyses. The literature shows evidence for an overgeneral memory bias existing in currently depressed individuals, individuals in remission from depression, and individuals with trauma histories; this supports the rationale for combining the current study's "clinical" participants without distinguishing "clinical" sub-groups. However, this amalgamation has potential confounds. For example, cognitive symptoms associated with depression may have been impacting a small number of the "clinical" group who were currently depressed ($n = 4$), while not impacting others.

While this amalgamation was done to mitigate low numbers within potential "clinical" sub-groups, the total number of "clinical" cases and the sample size as a whole was still smaller than ideal. The effect sizes associated with some of the results made it impossible to definitively rule out certain meaningful relationships. A larger sample size would have resulted in more confident interpretations of certain statistical analyses.

Clinical Implications

The current study did not find the hypothesized overgeneral memory bias in participants with a lifetime history of depression and/or trauma (neither in early childhood memories nor in more recent memories), which suggests that overgeneral memory retrieval may not be as stable as previous research has suggested (see for example Williams et al., 2007). Recent research, in line with the current findings, posits that childhood trauma may be heavily implicated in the maintenance of OGM, while those in remission from depression may not display an OGM bias as frequently (Ono et al., 2016).

There are several reasons why autobiographical memory research is of particular relevance to clinicians. This section will focus on the prognostic implications of autobiographical memory dysfunction, as well as therapeutic interventions based on this dysfunction. Dalgleish and Werner-Seidler (2014) identify four domains of autobiographical memory dysfunction present in depressed individuals: 1) over-representation of negative memories, 2) impaired access to positive memories, 3) overgeneral memory as seen by categorical memory recall, and 4) rumination and avoidance regarding emotional memories. These domains are hypothesized to contribute to emotional disorders (e.g., depression, trauma), as well as maintain symptoms due to their cognitive impacts. It is unclear how early childhood autobiographical memories associate with these domains, and the current study aimed to investigate the scope and constancy of overgeneral memory in particular. Therapeutic interventions targeting these dysfunctional domains are receiving increased attention in the literature. Many of the studies presented below are focused on depression, however, the cognitive dysfunctions targeted by these interventions are transdiagnostic, often presenting in trauma as well.

Negative memory bias. Depressed individuals tend to recall more negative autobiographical memories than positive ones, and have faster recall of such memories, which contributes to negative self-schemas and the maintenance of depressive symptoms (Dalgleish & Werner-Seidler, 2014). The current study did not identify significant differences between the "clinical" and control groups on their proportion of negative memories generated on two early memory tasks (see Tables 3 and 4). However, few participants currently met diagnostic criteria for a major depressive episode, presumably lessening the bias towards negative material. Cognitive bias modification and imagery

rescripting are two therapeutic interventions that have been designed to target this negative memory bias.

Cognitive bias modification, which has been effectively used in the treatment of anxiety, uses systematic training to shift away from underlying negative processes (Dalgleish & Werner-Seidler, 2014). There has been some success using cognitive bias modification to target memory biases specifically, namely concreteness training, wherein individuals learn to use concrete thinking instead of abstract thinking (e.g., rumination). For example, dysphoric participants randomly assigned to a concreteness training condition (wherein they were trained to process upsetting events concretely) had greater decreases in depressive symptoms, greater increases in concreteness, and greater decreases in rumination compared to a waitlist control group (Watkins, Baeyens, & Read, 2009). Another study compared treatment as usual, treatment as usual plus guided self-help concreteness training, and treatment as usual plus guided self-help relaxation training (Watkins et al., 2012). The addition of concreteness training significantly decreased depressive symptoms at post-treatment, 3-month follow-up, and 6-month follow-up, and it also significantly improved rumination at post-treatment. There were no differences in symptom reduction between the concreteness training and relaxation training conditions; however, concreteness training significantly reduced rumination and overgeneralization compared to relaxation training at post-treatment. This speaks to the potential for concreteness training to target cognitive processes seen in depression, such as rumination.

Imagery rescripting has also been used to target negative memory biases. Imagery rescripting involves reimagining a past distressing memory in a way that is more tolerable for the individual (e.g., intervening in a memory of abuse). Imaginal exposure, mastery

imagery, and cognitive restructuring result in modified memories and more adaptive schematic representations (Wheatley et al., 2007). Similar to cognitive bias modification, this approach has been used successfully with anxiety and trauma, and has more recently been applied to depression (Dalgleish & Werner-Seidler, 2014). Wheatley and colleagues (2007) present research on the treatment of imagery rescripting with two females meeting criteria for major depression, but no trauma or anxiety disorders. Both cases no longer met criteria for major depression at post-treatment and maintained low symptom levels at 3-, 6-, and 12-month follow-up in addition to reducing the frequency of intrusive memories. This research identifies imagery rescripting as a potential treatment option for depressed individuals with accompanying intrusive memories.

Decreased positive memories. Just as depressed individuals have more negative memories, so too do they tend to have less accessible and less vivid positive memories (Dalgleish & Werner-Seidler, 2014). It is hypothesized that this hinders the potential emotional benefits of positive memories (i.e., feeling positive in response to positive memories), and may highlight the discrepancy between a depressed individual's current mood and the tone of a positive memory, thus leading to rumination and ensuing low mood (Dalgleish & Werner-Seidler, 2014). Once again, this phenomenon was not directly observed in the current findings. While participants' answers on the Autobiographical Memory Test were not analyzed in terms of positive memories generated, a related construct might be proportion of overgeneral memories generated in response to positive cue words; one might presume that participants would generate a categorical memory if struggling to find an accessible, vivid memory. The current data found that controls actually generated more categorical memories in response to positive cue words than did

"clinical" participants, failing to provide evidence for a dearth of positive memories among the "clinical" participants (see Table 2). However, it is likely that the low numbers of currently depressed participants affected this domain as well, and does not negate the literature supporting this cognitive bias among people with emotional disorders. Positive memory elaboration and method-of-loci are two techniques that have been used to target this particular domain of autobiographical memory dysfunction.

Positive memory elaboration has been targeted through interpretation bias modification (i.e., training to make more positive interpretations of ambiguous stimuli), for example (Holmes, Lang, & Shah, 2009). Holmes and colleagues (2009) compared the use of mental imagery versus verbal processing in interpretation bias modification, and found that mental imagery had greater effects on participants' emotions. Participants who were instructed to imagine aurally presented positive events had significantly more positive affect from pre-treatment to post-treatment than did participants who were instructed to think about only the semantic meaning of these same aurally presented positive events. Additionally, participants in the imagery condition were more resistant to negative mood induction than were participants in the verbal condition, who experienced significantly increased sadness and decreased happiness. This is noteworthy for depression, as ruminative processes are more verbal than imaginal in nature. The findings of Holmes et al. (2009) highlight the potential benefits of training depressed individuals to use more imagery in their thinking.

Method-of-loci is another imagery-based technique that has been used to target access to positive elaborated memories. Method-of-loci (sometimes referred to as a *memory palace*) is a mnemonic technique in which mental imagery is used to associate

locations within familiar spatial constructs (e.g., rooms in a home, the drive to work) with memorized information; retracing the steps within these spatial constructs cues memory recall of the associated information (Dalgleish et al., 2013). For example, one might use the mental image of one's childhood home to remember certain historical facts: visualizing Emperor Nero playing the fiddle upon one's flame-engulfed couch, and perhaps Julius Caesar seated at one's dining table blowing out 55 candles (his age at death) on a birthday cake.

Dalgleish and colleagues (2013) applied the method-of-loci strategy to target the difficulty of depressed individuals to access positive, self-affirming autobiographical memories. Currently depressed participants and participants in remission were randomly assigned to the method-of-loci condition or a rehearsal condition (in which participants were instructed to chunk and rehearse their memories, rather than use the true method-of-loci technique). While all participants experienced enhanced recollection of 15 positive, self-affirming autobiographical memories (generated during the initial experimental session) after one week of training, only the participants assigned to the method-of-loci condition maintained this enhanced recollection on a surprise follow-up test one week later. Method-of-loci training may be a strategy with potential for long-term effects in facilitating access to positive autobiographical memories among depressed populations, thus decreasing dysfunction in this domain.

Categorical memory. The associations between reduced memory specificity and symptoms of depression and trauma have been the focus of the current study. While it was hypothesized that an overgeneral memory bias would emerge among the "clinical" group, this was not the case: controls generated significantly more overgeneral memories

than did "clinical" participants on the Autobiographical Memory Test, and no significant differences emerged on the Memory Fluency Task or the Detailed Memory Task. Despite these unexpected results, overgeneral memory remains a construct that has been associated with emotional disorders in certain samples using certain methods. Future research is warranted to better understand the nuances of this memory bias. The self-memory system (Conway & Pleydell-Pearce, 2000) and CaR-FA-X model (Williams et al., 2007) presented in the Introduction provide insight into possible mechanisms underlying this area of autobiographical memory dysfunction and the associated impairments in problem-solving, imagining the future, and delayed recovery from affective episodes.

Memory specificity training is a group-based intervention that has been investigated in terms of its ability to decrease overgeneral autobiographical memory recall and symptoms of depression and trauma (Eigenhuis, Seldenrijk, van Schaik, Raes, & van Oppen, 2015; Moradi et al., 2014; Neshat-Doost et al., 2013; Raes, Williams, & Hermans, 2009). Memory specificity training typically involves four or five weekly group sessions wherein group members learn to identify the differences between specific and overgeneral memories, and practice generating specific autobiographical memories as homework between sessions.

Memory specificity training (MEST) has shown promising impacts on autobiographical memory and depressive symptoms. Research by Neshat-Doost and colleagues (2013) demonstrated increased memory specificity at post-treatment, and significantly decreased depressive symptoms at 2-month follow-up among participants in a MEST condition compared to controls. Additionally, this research found evidence that

changes in memory specificity mediated the relationship between MEST training and symptom reduction. Neshat-Doost and colleagues (2013) controlled for symptomatology changes in the statistical analyses, finding that changes in memory specificity had independent predictive ability in regards to follow-up symptom levels. A pilot study by Eigenhuis and colleagues (2015) echoed these findings: individuals recruited from an outpatient depression clinic had higher proportions of specific memories and decreased depressive symptoms (as measured by self-report and clinician ratings) following exposure to MEST.

As has been described throughout the current study, overgeneral memory is not specific to depression; it has been associated with other psychopathology, including posttraumatic stress disorder. Research investigating the benefits of memory specificity training has included individuals experiencing trauma symptoms. For example, Moradi and colleagues (2014) conducted a randomized controlled trial with Iranian combat veterans experiencing posttraumatic stress disorder. This population, too, demonstrated promising results: veterans in a MEST condition significantly increased their number of specific memories from baseline to post-treatment, and generated significantly more specific memories at post-treatment as compared to controls. Veterans in the MEST group had significantly greater decreases in PTSD symptoms at post-treatment and 3-month follow-up as compared to controls. Additionally, veterans in the MEST group reported significant reduction in PTSD symptoms compared to baseline, whereas this was not true in the control group.

Relationship to emotional memories. Depressed individuals have a tendency to engage in avoidance of distressing autobiographical memories in order to circumvent

associated distressing emotions (Dalgleish & Werner-Seidler, 2014). This is a largely unsuccessful coping strategy, as attempted memory avoidance is associated with greater intrusiveness of these memories, as well as increased recall of other distressing autobiographical memories (Dalgleish & Werner-Seidler, 2014). While this way of relating to one's emotional memories is dysfunctional and even counterproductive, Dalgleish and Werner-Seidler (2014) note that the tendency for depressed individuals to ruminate in response to autobiographical memories provides insight into these individuals' attempts to avoid this process altogether.

Avoidance, intrusiveness, and rumination were not explicitly assessed in the current study. However, it might be expected that, among participants with affective symptoms, memory vividness ratings would positively correlate with scores on the BDI-II (depression) and/or CTQ (childhood trauma) due to dysfunctional ruminative processes. This did not seem to be the case: Table 7 shows that vividness ratings for neither specific memories nor overgeneral memories were significantly correlated with any clinical measures. However, this can only speak to participants' rumination about their early memories. Perhaps omissions on the Autobiographical Memory Test alludes to avoidance, although once again there were no significant differences between the "clinical" and control groups on this construct (see Table 2). Rumination is not unique to depression and trauma. It may have been present in the control group due to psychopathology not screened in the current study, such as anxiety. The variables analyzed in the current study limit the ability to speak to this area of autobiographical memory dysfunction. Nonetheless, the therapeutic interventions presented below seem to promote healthier ways of relating to one's cognitive processes and merit investigation.

Third-wave behavioral approaches (e.g., dialectic behavior therapy, acceptance and commitment therapy) emphasize changing the relationship individuals have with their cognitions (such as autobiographical memories) instead of changing the actual cognitions themselves (as in second-wave behavioral approaches like cognitive behavioral therapy). Rumination-focused cognitive behavioral therapy and mindfulness-based cognitive therapy are two such approaches that have been used to target this area of dysfunction (Piet & Hougaard, 2011; Watkins et al., 2011).

Rumination-focused cognitive behavioral therapy (RF-CBT) is a 12-week manualized treatment using functional analysis, experiential/imagery exercises, and behavioral experiments to replace unhelpful ruminative processes with constructive rumination (Watkins et al., 2011). Watkins and colleagues (2011) conducted a randomized controlled trial investigating the effects of treatment as usual versus treatment as usual plus RF-CBT on outpatients' residual depressive symptoms. Their findings demonstrated significantly fewer depressive symptoms in the RF-CBT group compared to controls at post-treatment. In comparison to controls, the RF-CBT group also demonstrated better treatment response, higher remission rates, and lower relapse rates between baseline and post-treatment. Analyses showed that changes in rumination were significantly associated with changes in depressive symptoms, with rumination mediating the effect of treatment condition on symptomatology.

Mindfulness-based cognitive therapy (MBCT) is another group-based intervention with the goal of changing individuals' relationships to their thoughts and feelings by taking an observer role rather than engaging in unhelpful cognitive strategies such as rumination and suppression (Piet & Hougaard, 2011). Piet and Hougaard (2011) reviewed

six randomized controlled trials of MBCT, finding that the addition of this approach to treatment as usual is beneficial for relapse prevention in remitted major depressive disorder. This significant finding was only present among individuals who had at least three previous major depressive episodes, whereas individuals with fewer episodes did not demonstrate reduced relapse risk after receiving MBCT. It was suggested that MBCT might be more effective among individuals with more extensive depressive histories due to the potential increased amount of time spent ruminating, which is a main target of the MBCT approach (Piet & Hougaard, 2011).

Future Directions

Using the Memory Fluency Task and a Detailed Memory Task in the examination of overgeneral memory and emotional disorder was an exploratory avenue of research. The current study recruited from a particular population; examining associations between symptoms of depression and trauma and overgeneral memory on the MFT and a DMT in other populations is warranted. This could include community samples, clinical samples, and recruiting individuals beyond the age of 35.

Future research investigating similar variables as the current study would benefit from using a trauma questionnaire that is broader in scope than the childhood-focused CTQ. For example, the Trauma History Questionnaire (Green, 1996) is a 24-item self-report questionnaire assessing crime-related events (four items), general disaster and trauma (thirteen items), and physical and sexual experiences (seven items; see Appendix M). It has been shown to have good psychometric properties and to be appropriate for use with both clinical and nonclinical samples (Hooper, Stockton, Krupnick, & Green, 2011). Respondents indicate how many times they have experienced each item, and the

approximate age(s) at the time of the event(s). Using this questionnaire would enable researchers to classify participants as "clinical" or control with more confidence, as the items encompass a larger range of potentially traumatic experiences as compared to the CTQ. An added benefit of the Trauma History Questionnaire is the potential to investigate associations between age at the time of the event(s) and performance on the Memory Fluency Task. It would be interesting to see whether individuals demonstrate an overgeneral memory bias on the MFT if their history of trauma occurred at the same time period (i.e., before beginning kindergarten). This would help clarify the current study's results regarding the lack of overgeneral memory bias on the MFT, and the speculation that "clinical" participants did not truncate their memory retrieval on the MFT due to the less threatening nature of this time period (compared to adversity later in life).

The current study found that higher amounts of unique detail in participants' three earliest memories predicted higher amounts of childhood trauma endorsed on the CTQ. The amount of detail was coded, but it was beyond the scope of this study to look more specifically at the types of detail in the context of the self-memory system. That is to say, memories provided on this task were not coded for abstract, conceptual detail (general life events) versus sensory-perceptual detail (event-specific knowledge). Expanding the current findings to examine these details in the context of the self-memory system would clarify whether or not an overgeneral memory bias is represented in the Detailed Memory Task, whereas the current findings cannot directly speak to the construct of memory specificity. A recent review article by Crespo and Fernandez-Lansac (2016) indicates that traumatic narratives contain high amounts of sensory-perceptual detail. However, this is specific to narratives of trauma, and may not generalize to benign memories of

individuals with a history of trauma. Therefore, future studies would benefit from using a coding scheme that distinguishes abstract conceptual details from sensory-perceptual details on a DMT.

Relatively small numbers of individuals endorsed symptoms of depression and trauma in the current study. Originally, the study planned to compare various "clinical" groups (current depression, previous depression, current trauma, physical abuse, sexual abuse, emotional abuse), but due to low numbers in many of these categories these participants were amalgamated into one general "clinical" group to compare with the control group. Higher numbers in these various "clinical" groups, and thus separate subsamples of "clinical" cases, would allow future studies to make more definitive and specific conclusions regarding the memory characteristics of these participants. Recruiting through the campus Counselling Centre might facilitate higher numbers within these subsamples.

Moving forward, it is important to attempt to standardize administration of the Autobiographical Memory Test. As described above, there are an incredible number of methodological variations of this task across studies. Standardization of cue words, allotted time limits, and format (e.g., written versus oral) would facilitate the ability to compare results across studies, and to draw more meaningful conclusions from this literature. There may be some necessary variations based on a study's particular methodology. For example, there has been a demonstrated need for a minimal-instructions version when recruiting high-functioning participants such as university students. However, having a well-established, easily accessible standard version of the

AMT, including instructions and coding procedures, would lend more credibility to the conclusions researchers are drawing from the literature in this field.

Finally, continued evidence is warranted to determine whether psychological constructs and disorders other than depression and trauma truly are not associated with overgeneral autobiographical memory, as previous studies suggested (Williams et al., 2007). An overgeneral memory bias has been shown in other psychopathologies such as delusional disorder (Kaney et al., 1999), schizophrenia, (Berna et al., 2016), borderline personality disorder (see Van den Broeck, Claes, Pieters, & Raes, 2012 for a discussion of inconsistent findings in the literature), subclinical disordered eating (Ridout, Matharu, Sanders, & Wallis, 2015), and anorexia nervosa (Bomba et al., 2014). Note that overgeneral memory effects were found among these clinical samples even after controlling for depressive symptoms. While the focus in the overgeneral autobiographical memory literature has been on depression and trauma, it seems premature to assume that these are the only two psychological disorders associated with memory specificity. Further clarification might provide insight into research that has failed to find the relatively well-established link between memory specificity and symptoms of depression and trauma. For example, the current study screened for depression and trauma, but there were no specific assessments of other psychological symptoms. If other disorders impact memory specificity, it is likely that the current study's control group contained participants with such symptoms. This is a particularly pertinent confound given that disordered eating has been associated with overgeneral memory; university-aged females (n = 65; 73% of the current sample) constitute a population that is particularly at risk of exhibiting disordered eating behaviours.

References

Aglan, A., Williams, J.M.G., Pickles, A., & Hill, J. (2010). Overgeneral autobiographical memory in women: Association with childhood abuse and history of depression in a community sample. *British Journal of Clinical Psychology, 49*, 359-372. doi:10.1348/014466509x467413

American Psychiatric Association. (2000). *Diagnostic and statistical manual of mental disorders* (4th ed., text rev.). Washington, DC: Author.

American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). Washington, DC: Author.

Anderson, R.J., Boland, J., & Garner, S.R. (2016). Overgeneral past and future thinking in dysphoria: the role of emotional cues and cueing methodology. *Memory, 24*, 708-719. doi:10.1080/09658211.2015.1046134

Beck, A.T., & Steer, R.A. (1988). *Manual for the Beck Hopelessness Scale.* San Antonio, TX: Psychological Corporation.

Beck, A.T., Steer, R.A., & Brown, G.K. (1996). *Beck Depression Inventory—second edition.* San Antonio, TX: The Psychological Corporation. doi:10.1037/t00742-000

Berna, F., Potheegadoo, J., Aouadi, I., Ricarte, J.J., Allé, M.C., Coutelle, R.,…Danion, J.-M. (2016). A meta-analysis of autobiographical memory studies in schizophrenia spectrum disorder. *Schizophrenia Bulletin, 42*, 56-66. doi:10.1093/schbul/sbv099

Bernstein, D.P., & Fink, L. (1998). *Childhood Trauma Questionnaire: A retrospective self-report manual*. San Antonio, TX: The Psychological Corporation. doi:10.1037/t02080-000

Bernstein, D.P., Fink, L., Handelsman, L., Foote, J., Lovejoy, M., Wenzel, K., … Ruggiero, J. (1994). Initial reliability and validity of a new retrospective measure of child abuse and neglect. *American Journal of Psychiatry, 151*, 1132-1136. doi:10.1176/ajp.151.8.1132

Birchwood, M., Smith, J., Macmillan, F., Hogg, B., Prasad, R., Harvey, C., & Bering, S. (1989). Predicting relapse in schizophrenia: the development and implementation of an early signs monitoring system using patients and families as observers, a preliminary investigation. *Psychological Medicine, 19*, 649-656. doi:10.1017/s0033291700024247

Blaney, P.H. (1986). Affect and memory: A review. *Psychological Bulletin, 99*, 229-246. doi:10.1037//0033-2909.99.2.229

Bohanek, J.G., Fivush, R., & Walker, E. (2005). Memories of positive and negative emotional events. *Applied Cognitive Psychology, 19*, 51-66. doi:10.1002/acp.1064

Bomba, M., Marfone, M., Brivio, E., Oggiano, S., Broggi, F., Neri, F., & Nacinovich, R. (2014). Autobiographical memory in adolescent girls with anorexia nervosa. *European Eating Disorders Review, 22*, 479-486. doi:10.1002/erv.2321

Boulet, J., & Boss, M.W. (1991). Reliability and validity of the Brief Symptom Inventory. *Psychological Assessment: A Journal of Consulting and Clinical Psychology, 3*, 433-437. doi:10.1037/1040-3590.3.3.433

Bunnell, S.L., & Greenhoot, A.F. (2012). When and why does abuse predict reduced autobiographical memory specificity? *Memory, 20*, 121-137. doi:10.1080/09658211.2011.648197

Burnside, E., Startup, M., Byatt, M., Rollinson, L., & Hill, J. (2004). The role of overgeneral autobiographical memory in the development of adult depression following childhood trauma. *British Journal of Clinical Psychology, 43*, 365-376. doi:10.1348/0144665042388991

Clark, D.M., & Teasdale, J.D. (1982). Diurnal variations in clinical depression and accessibility of memories of positive and negative experiences. *Journal of Abnormal Psychology, 91*, 87-95. doi:10.1037/0021-843x.91.2.87

Cochran, C.D., & Hale, W.D. (1985). College student norms on the Brief Symptom Inventory. *Journal of Clinical Psychology, 41*, 777-779. doi:10.1002/1097-4679(198511)41:6<777::aid-jclp2270410609>3.0.co;2-2

Conway, M.A., & Pleydell-Pearce, C.W. (2000). The construction of autobiographical memories in the self-memory system. *Psychological Review, 107*, 261-288. doi:10.1037/0033-295x.107.2.261

Creamer, M., Bell, R., & Failla, S. (2003). Psychometric properties of the Impact of Event Scale—Revised. *Behaviour Research and Therapy, 41*, 1489-1496. doi:10.1016/j.brat.2003.07.010

Crespo, M., & Fernandez-Lansac, V. (2016). Memory and narrative of traumatic events: A literature review. *Psychological Trauma: Theory, Research, Practice, and Policy, 8*, 149-156. doi:10.1037/tra0000041

Dalgleish, T., Navrady, L., Bird, E., Hill, E., Dunn, B.D., & Golden, A.-M. (2013). Method-of-loci as a mnemonic device to facilitate access to self-affirming personal memories for individuals with depression. *Clinical Psychological Science, 1*, 156-162. doi:10.1177/2167702612468111

Dalgleish, T., & Werner-Seidler, A. (2014). Disruptions in autobiographical memory processing in depression and the emergence of memory therapeutics. *Trends in Cognitive Sciences, 18*, 596-604. doi:10.1016/j.tics.2014.06.010

Debeer, E., Hermans, D., & Raes, F. (2009). Associations between components of rumination and autobiographical memory specificity as measured by a Minimal Instructions Autobiograpahical Memory Test. *Memory, 17*, 892-903. doi:10.1080/09658210903376243

Derogatis, L.R. (1977). *The SCL-90 manual: Scoring, administration and procedures for the SCL-90.* Baltimore: Johns Hopkins University School of Medicine, Clinical Psychometrics Unit.

Derogatis, L.R. (1993). *Brief Symptom Inventory: Administration, scoring, and procedures manual* (4th ed.). Minneapolis, MN: National Computer Systems.

Derogatis, L.R., & Melisaratos, N. (1983). The Brief Symptom Inventory: An introductory report. *Psychological Medicine, 13*, 595-605. doi:10.1017/s0033291700048017

Eigenhuis, E., Seldenrijk, A., van Schaik, A., Raes, F., & van Oppen, P. (2015). Feasibility and effectiveness of memory specificity training in depressed outpatients: A pilot study. *Clinical Psychology and Psychotherapy*. doi:10.1002/cpp.1995

Faul, F., Erdfelder, E., Lang, A.-G., & Buchner, A. (2007). G*Power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behavior Research Methods, 39*, 175-191. doi:10.3758/bf03193146

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.

Fivush, R. (1991). The social construction of personal narratives. *Merrill-Palmer Quarterly, 37*, 59-82.

Fivush, R., Habermas, T., Waters, T.E.A., & Zaman, W. (2011). The making of autobiographical memory: intersections of culture, narratives and identity. *International Journal of Psychology, 46*, 321-345. doi:10.1080/00207594.2011.596541

Fivush, R., Hazzard, A., Sales, J.M., Sarfati, D., & Brown, T. (2003). Creating coherence out of chaos? Children's narratives of emotionally negative and positive events. *Applied Cognitive Psychology, 17*, 1-19. doi:10.1002/acp.854

Green, B.L. (1996). Trauma History Questionnaire. In B.H. Stamm (Ed.), *Measurement of stress, trauma, and adaptation* (pp. 366-369). Lutherville, MD: Sidran Press.

Griffith, J.W., Sumner, J.A., Debeer, E., Raes, F., Hermans, D., Mineka, S., … Craske, M.G. (2009). An item response theory/confirmatory factor analysis of the Autobiographical Memory Test. *Memory, 17*, 609-623. doi:10.1080/09658210902939348

Griffith, J.W., Sumner, J.A., Raes, F., Barnhofer, T., Debeer, E., & Hermans, D. (2012). Current psychometric and methodological issues in the measurement of overgeneral autobiographical memory. *Journal of Behavior Therapy and Experimental Psychiatry, 43*, S21-S31. doi:10.1016/j.jbtep.2011.05.008

Habermas, T., & Bluck, S. (2000). Getting a life: The emergence of the life story in adolescence. *Psychological Bulletin, 126*, 748-769. doi:10.1037/0033-2909.126.5.748

Hamilton, M. (1960). A rating scale for depression. *Journal of Neurology and Neurosurgical Psychiatry, 23*, 56-62. doi:10.1136/jnnp.23.1.56

Hamlat, E.J., Connolly, S.L., Hamilton, J.L., Stange, J.P., Abramson, L.Y., & Alloy, L.B. (2015). Rumination and overgeneral autobiographical memory in adolescents: An integration of cognitive vulnerabilities to depression. *Journal of Youth & Adolescence, 44*, 806-818. doi:10.1007/s10964-014-0090-2

Harris, L.S., Block, S.D., Ogle, C.M., Goodman, G.S., Augusti, E.-M., Larson, R.P., …Urquiza, A. (2016). Coping style and memory specificity in adolescents and adults with histories of child sexual abuse. *Memory, 24*, 1078-1090. doi:10.1080/09658211.2015.1068812

Haque, S., Juliana, E., Khan, R., & Hasking, P. (2014). Autobiographical memory and hierarchical search strategies in depressed and non-depressed participants. *BioMed Central Psychiatry, 14*, 1-9. doi:10.1186/s12888-014-0310-z

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. doi:10.1037/0022-006x.66.3.500

Hayes, J.A. (1997). What does the Brief Symptom Inventory measure in college and university counseling center clients? *Journal of Counseling Psychology, 44*, 360-367. doi:10.1037/0022-0167.44.4.360

Holmes, E.A., Lang, T.J., & Shah, D.M. (2009). Developing interpretation bias modification as a "cognitive vaccine" for depressed mood: Imagining positive events makes you feel better than thinking about them verbally. *Journal of Abnormal Psychology, 118*, 76-88. doi:10.1037/a0012590

Hooper, L.M., Stockton, P., Krupnick, J.L., & Green, B.L. (2011). Development, use, and psychometric properties of the Trauma History Questionnaire. *Journal of Loss and Trauma, 16*, 258-283. doi:10.1080/15325024.2011.572035

Jobson, L., & Cheraghi, S. (2016). Influence of memory theme and posttraumatic stress disorder on memory specificity in British and Iranian trauma survivors. *Memory, 24*, 1015-1022. doi:10.1080.09658211.2015.1061015

Kaney, S., Bowen-Jones, K., & Bentall, R.P. (1999). Persecutory delusions and autobiographical memory. *British Journal of Clinical Psychology, 38*, 97-102. doi:10.1348/014466599162692

Kangas, M., Henry, J.L., & Bryant, R.A. (2005). A prospective study of autobiographical memory and posttraumatic stress disorder following cancer. *Journal of Consulting and Clinical Psychology, 73*, 293-299. doi:10.1037/0022-006x.73.2.293

Kong, T., He, Y., Auerbach, R.P., McWhinnie, C.M., & Xiao, J. (2015). Rumination and depression in Chinese university students: The mediating role of overgeneral autobiographical memory. *Personality and Individual Differences, 77*, 221-224. doi:10.1016/j.paid.2014.09.035

Kuyken, W., & Brewin, C.R. (1995). Autobiographical memory functioning in depression and reports of early abuse. *Journal of Abnormal Psychology, 104*, 585-591. doi:10.1037/0021-843x.104.4.585

Lloyd, G.G., & Lishman, W.A. (1975). Effects of depression on the speed of recall of pleasant and unpleasant experiences. *Psychological Medicine, 5*, 173-180. doi:10.1017/s0033291700056440

Mackinger, H.F., Loschin, G.G., & Leibetseder, M.M. (2000). Prediction of postnatal affective changes by autobiographical memories. *European Psychologist, 5*, 52-61. doi:10.1027//1016-9040.5.1.52

Mackinger, H.F., Pachinger, M.M., Leibetseder, M.M., & Fartacek, R.R. (2000). Autobiographical memories in women remitted from major depression. *Journal of Abnormal Psychology, 109*, 331-334. doi:10.1037/0021-843x.109.2.331

Matsumoto, A., & Stanny, C.J. (2006). Language-dependent access to autobiographical memory in Japanese-English bilinguals and US monolinguals. *Memory, 14*, 378-390. doi:10.1080/09658210500365763

McAdams, D.P. (2001). The psychology of life stories. *Review of General Psychology, 5*, 100-122. doi:10.1037//1089-2680.5.2.100

McNally, R.J., Litz, B.T., Prassas, A., Shin, L.M., & Weathers, F.W. (1994). Emotional priming of autobiographical memory in posttraumatic stress disorder. *Cognition & Emotion, 8*, 351-367. doi:10.1080/02699939408408946

Mitchell, A.E.P. (2015). Autobiographical memory response to a negative mood in those with/without a history of depression. *Studia Psychologica, 57*, 229-241. Retrieved from http://search.proquest.com.qe2a-proxy.mun.ca/docview/1719458260?accountid=12378

Moffitt, K.H., Singer, J.A., Nelligan, D.W., Carlson, M.A., & Vyse, S.A. (1994). Depression and memory narrative type. *Journal of Abnormal Psychology, 103*, 581-583. doi:10.1037/0021-843x.103.3.581

Moradi, A.R., Moshirpanahi, S., Parhon, H., Mirzaei, J., Dalgleish, T., & Jobson, L. (2014). A pilot randomized controlled trial investigating the efficacy of MEmory Specificity Training in improving symptoms of posttraumatic stress disorder. *Behaviour Research and Therapy, 56*, 68-74. doi:10.1016/j.brat.2014.03.002

Morlan, K.K., & Tan, S.-Y. (1998). Comparison of the Brief Psychiatric Rating Scale and the Brief Symptom Inventory. *Journal of Clinical Psychology, 54*, 885-894. doi:10.1002/(sici)1097-4679(199811)54:7<885::aid-jclp3>3.0.co;2-e

Neshat-Doost, H.T., Dalgleish, T., Yule, W., Kalantari, M., Ahmadi, S.J., Dyregrov, A., & Jobson, L. (2013). Enhancing autobiographical memory specificity through cognitive training: An intervention for depression translated from basic science. *Clinical Psychological Science, 1*, 84-92. doi:10.1177/2167702612454613

Ono, M., Devilly, G.J., & Shum, D.H.K. (2016). A meta-analytic review of overgeneral memory: The role of trauma history, mood, and the presence of posttraumatic stress disorder. *Psychological Trauma: Theory, Research, Practice, and Policy, 8*, 157-164. doi:10.1037/tra0000027

Paivio, S.C., & Cramer, K.M. (2004). Factor structure and reliability of the Childhood Trauma Questionnaire in a Canadian undergraduate student sample. *Child Abuse & Neglect, 28*, 889-904. doi:10.1016/j.chiabu.2004.01.011

Park, R.J., Goodyer, I.M., & Teasdale, J.D. (2002). Categoric overgeneral autobiographical memory in adolescents with major depressive disorder. *Psychological Medicine, 32*, 267-276. doi:10.1017/s0033291701005189

Peterson, C. (2011). Children's memory reports over time: Getting both better and worse. *Journal of Experimental Child Psychology, 109*, 275-293. doi:10.1016/j.jecp.2011.01.009

Peterson, C., Baker-Ward, L., & Grovenstein, T.N. (2016). Childhood remembered: Reports of both unique and repeated events. *Memory, 24*, 240-256. doi:10.1080/09658211.2014.1001991

Peterson, C., Grant, V.V., & Boland, L.D. (2005). Childhood amnesia in children and adolescents: Their earliest memories. *Memory, 13*, 622-637. doi:10.1080/09658210444000278

Peterson, C., & Nguyen, D.T.K. (2010). Parent-child relationship quality and infantile amnesia in adults. *British Journal of Psychology, 101*, 719-737. doi:10.1348/000712609x482948

Peterson, C., Noel, M., Kippenhuck, L., Harmundal, L., & Vincent, C. (2009). Early memories of children and adults: Implications for infantile amnesia. *Cognitive Sciences, 4*, 65-89.

Peterson, C., & Roberts, C. (2003). Like mother, like daughter: Similarities in narrative style. *Developmental Psychology, 39*, 551-562. doi:10.1037/0012-1649.39.3.551

Peterson, C., Smorti, A., & Tani, F. (2008). Parental influences on earliest memories. *Memory, 16*, 569-578. doi:10.1080/02687030802025984

Peterson, C., Wang, Q., & Hou, Y. (2009). "When I was little": Childhood recollections in Chinese and European Canadian grade school children. *Child Development, 80*, 506-518. doi:10.1111/j.1467-8624.2009.01275.x

Peterson, C., Warren, K., Nguyen, D.T., & Noel, M. (2010). Infantile amnesia and gender: Does the way we measure it matter? *Procedia Social and Behavioral Sciences, 9*, 1767-1771. doi:10.1016/j.sbspro.2010.12.397

Piet, J., & Hougaard, E. (2011). The effect of mindfulness-based cognitive therapy for prevention of relapse in recurrent major depressive disorder: A systematic review and meta-analysis. *Clinical Psychology Review, 31*, 1032-1040. doi:10.1016/j.cpr.2011.05.002

Porter, S., & Birt, A.R. (2001). Is traumatic memory *special*? A comparison of traumatic memory characteristics with memory for other emotional life experiences. *Applied Cognitive Psychology, 15*, 101-117. doi:10.1002/acp.766

Raes, F., Hermans, D., Williams, J.M.G., & Eelen, P. (2007). A sentence completion procedure as an alternative to the Autobiographical Memory Test for assessing overgeneral memory in non-clinical populations. *Memory, 15*, 495-507. doi:10.1080/09658210701390982

Raes, F., Verstraeten, K., Bijttebier, P., Vasey, M.W., & Dalgleish, T. (2010). Inhibitory control mediates the relationship between depressed mood and overgeneral memory recall in children. *Journal of Clinical Child & Adolescent Psychology, 39*, 276-281. doi:10.1080/15374410903532684

Raes, F., Williams, J.M.G., & Hermans, D. (2009). Reducing cognitive vulnerability to depression: A preliminary investigation of memory specificity training (MEST) in inpatients with depressive symptomatology. *Journal of Behavior Therapy and Experimental Psychiatry, 40*, 24-38. doi:10.1016/j.jbtep.2008.03.001

Rawal, A., & Rice, F. (2012). Examining overgeneral autobiographical memory as a risk factor for adolescent depression. *Journal of the American Academy of Child & Adolescent Psychiatry, 51*, 518-527. doi:10.1016/j.jaac.2012.02.025

Ricarte, J.J., Latorre, J.M., Ros, L., Navarro, B., Aguilar, M.J., & Serrano, J.P. (2011). Overgeneral autobiographical memory effect in older depressed adults. *Aging & Mental Health, 15*, 1028-1037. doi:10.1080/13607863.2011.573468

Ridout, N., Matharu, M., Sanders, E., & Wallis, D.J. (2015). The influence of eating psychopathology on autobiographical memory specificity and social problem-solving. *Psychiatry Research, 228*, 295-303. doi:10.1016/j.psychres.2015.06.030

Salmon, K., & Reese, E. (2015). Talking (or not talking) about the past: The influence of parent-child conversation about negative experiences on children's memories. *Applied Cognitive Psychology, 29*, 791-801. doi:10.1002/acp.3186

Scher, C.D., Stein, M.B., Asmundson, G.J.G., McCreary, D.R., & Forde, D.R. (2001). The Childhood Trauma Questionnaire in a community sample: Psychometric properties and normative data. *Journal of Traumatic Stress, 14*, 843-857. doi:10.1023/a:1013058625719

Scott, J., Stanton, B., Garland, A., & Ferrier, I.N. (2000). Cognitive vulnerability in patients with bipolar disorder. *Psychological Medicine, 30*, 467-472. doi:10.1017/s0033291799008879

Singer, J.A., & Moffitt, K.H. (1992). An experimental investigation of specificity and generality in memory narratives. *Imagination, Cognition and Personality, 11*, 233-257. doi:10.2190/72a3-8upy-gdb9-gx9k

Tani, F., Peterson, C., & Smorti, M. (in press). The words of violence: Autobiographical narratives of abused women. *Journal of Family Violence.*

Teasdale, J.D., & Fogarty, S.J. (1979). Differential effects of induced mood on retrieval of pleasant and unpleasant events from episodic memory. *Journal of Abnormal Psychology, 88*, 248-257. doi:10.1037/0021-843x.88.3.248

Tukey, J.W. (1953). The problem of multiple comparisons [Mimeographed notes]. Princeton, NJ: Princeton University.

Tulving, E., & Thomson, D.F. (1973). Encoding specificity and retrieval processes in episodic memory. *Psychological Review, 80*, 352-373. doi:10.1037/h0020071

Van Daele, T., Griffith, J.W., Van den Bergh, O., & Hermans, D. (2014). Overgeneral autobiographical memory predicts changes in depression in a community sample. *Cognition and Emotion, 28*, 1303-1312. doi:10.1080/02699931.2013.879052

Van den Broeck, K., Claes, L., Pieters, G., & Raes, F. (2012). Memory specificity in borderline personality disorder: Associations with depression and self-discrepancy. *Journal of Behavior Therapy and Experimental Psychiatry, 43*, S51-S59. doi:10.1016/j.jbtep.2011.02.001

Wang, Q., Conway, M., & Hou, Y. (2004). Infantile amnesia: A cross-cultural investigation. *Cognitive Sciences, 1,* 123-135.

Waters, T.E.A., Bauer, P.J., & Fivush, R. (2014). Autobiographical memory functions served by multiple event types. *Applied Cognitive Psychology, 28*, 185-195. doi:10.1002/acp.2976

Watkins, E.R., Baeyens, C.B., & Read, R. (2009). Concreteness training reduces dysphoria: Proof-of-principle for repeated cognitive bias modification in depression. *Journal of Abnormal Psychology, 118*, 55-64.

Watkins, E.R., Mullan, E., Wingrove, J., Rimes, K., Steiner, H., Bathurst, N.,…Scott, J. (2011). Rumination-focused cognitive-behavioural therapy for residual depression: phase II randomised controlled trial. *The British Journal of Psychiatry, 199*, 317-322. doi:10.1192/bjp.bp.110.090282

Watkins, E.R., Taylor, R.S., Byng, R., Baeyens, C., Read, R., Pearson, K., & Watson, L. (2012). Guided self-help concreteness training as an intervention for major depression in primary care: A phase II randomized controlled trial. *Psychological Medicine, 42*, 1359-1371. doi:10.1017/S0033291711002480

Watkins, P.C., Vache, K., Verney, S.P., & Mathews, A. (1996). Unconscious mood-congruent memory bias in depression. *Journal of Abnormal Psychology, 105*, 34-41. doi:10.1037/0021-843x.105.1.34

Weathers, F.W., Litz, B.T., Herman, D.S., Huska, J.A., & Keane, T.M. (1993). *The PTSD Checklist (PCL): reliability, validity, and diagnostic utility.* Paper presented at the 9th annual conference of the ISTSS, San Antonio.

Weiss, D.S., & Marmar, C.R. (1997). The Impact of Event Scale – Revised. In J.P. Wilson & T.M. Kean (Eds.), *Assessing psychological trauma and PTSD* (pp. 399-411). New York, NY: The Guilford Press.

Wheatley, J., Brewin, C.R., Patel, T., Hackmann, A., Wells, A., Fisher, P., & Myers, S. (2007). "I'll believe it when I can see it": Imagery rescripting of intrusive sensory memories in depression. *Journal of Behavior Therapy and Experimental Psychiatry, 38*, 371-385. doi:10.1016/j.jbtep.2007.08.005

Williams, J.M.G., Barnhofer, T., Crane, C., Hermans, D., Raes, F., Watkins, E., & Dalgleish, T. (2007). Autobiographical memory specificity and emotional disorder. *Psychological Bulletin, 133*, 122-148. doi:10.1037/0033-2909.133.1.122

Williams, J.M.G., & Broadbent, K. (1986). Autobiographical memory in suicide attempters. *Journal of Abnormal Psychology, 95*, 144-149. doi:10.1037/0021-843x.95.2.144

Williams, J.M.G., & Dritschel, B. (1988). Emotional disturbance and the specificity of autobiographical memory. *Cognition & Emotion, 2*, 221-234. doi:10.1080/02699938808410925

Williams, J.M.G., & Dritschel, B. (1992). Categoric and extended autobiographical memories. In M.A. Conway, D.C. Rubin, H. Spinnler, & W.A. Wagenaar (Eds.), *Theoretical perspectives on autobiographical memory* (pp. 391-410). Dordrecht, the Netherlands: Kluwer Academic.

Williams, J.M.G., & Scott, J. (1988). Autobiographical memory in depression. *Psychological Medicine, 18*, 689-695. doi:10.1017/s0033291700008370

Winthorst, W.H., Roest, A.M., Bos, E.H., Meesters, Y., Penninx, B.W.J.H., Nolen, W.A., & de Jonge, P. (2014). Self-attributed seasonality of mood and behavior: A report from the Netherlands Study of Depression and Anxiety. *Depression and Anxiety, 31*, 517-523. doi:10.1002/da.22130

Table 1

Descriptive statistics regarding continuous clinical variables

Measure	N	M	Range	SD
BDI-II	89	8.26	0 - 42.0	6.81
BSI (GSI; raw scores)	89	.54	0 - 2.64	.50
CTQ Physical Abuse	89	5.44	5.0 - 12.0	1.18
CTQ Sexual Abuse[a]	88	5.70	5.0 - 22.0	2.87
CTQ Emotional Abuse	89	7.46	5.0 - 20.0	3.11
IES-R	17	21.53	0 - 58.0	19.93

Note. BDI-II = Beck Depression Inventory; CTQ = Childhood Trauma Questionnaire; IES-R = Impact of Event Scale—Revised; BSI = Brief Symptom Inventory; GSI = Global Severity Index.

[a]One participant left a sexual abuse item blank, resulting in $N = 88$.

Table 2

AMT variables compared between controls and non-controls

	Depression + Trauma (n = 29[a])		Controls (n = 53[a])			
AMT	M	SD	M	SD	t	Cohen's d
% specific memories	64.1	21.9	59.4	17.5	-1.08	.25
% categoric memories	12.6	11.0	18.7	13.4	2.09*	.48
% semantic memories	4.1	7.2	3.7	5.3	-.35	.06
% omissions	3.7	6.1	2.0	4.1	-1.33	.30
% categoric memories for negative cues	9.6	16.8	13.6	18.2	.96	.22
% categoric memories for positive cues	7.4	10.5	15.2	18.7	2.41*	.56

Note. AMT = Autobiographical Memory Test.
[a]Seven fewer participants' data are included in these analyses, as the AMT procedure was changed after initial piloting. No other elements of the procedure were changed, so data from these participants' performance on the other tasks is included in other analyses.
*$p < .05$

Table 3

MFT variables compared between controls and non-controls

	Depression + Trauma			Controls				
MFT	N	M	SD	N	M	SD	t	Cohen's d
# of memories	31	8.84	4.45	58	8.66	3.46	-.22	.05
% specific memories	31	76.5	27.3	58	71.6	23.8	-.88	.20
% negative memories[a]	29	32.1	19.8	58	26.2	19.2	-1.33	.30
Age of earliest specific memory[b]	30	36.57	8.87	56	38.39	9.89	.85	.19
Average age for specific memories	31	46.54	13.31	58	47.94	11.06	.53	.12
Vividness of specific memories	31	3.09	1.05	58	3.21	.86	.57	.13
Vividness of repeated memories	31	1.67	1.82	58	2.15	1.49	1.27	.28

Note. MFT = Memory Fluency Task. Age is reported in months. Vividness was rated from 1 to 5.
[a]n = 29 as two participants did not generate any memories that matched the retrieval instructions.
[b]n = 30 and n = 56 as three participants did not generate any specific memories.

Table 4

DMT variables compared between controls and non-controls

	Depression + Trauma (n = 31)		Controls (n = 58)			
Detailed	M	SD	M	SD	t	Cohen's d
Word count	381.6	178.5	393.6	219.4	.26	.06
Total UUIs	106.6	43.0	110.0	48.0	.33	.07
% emotion UUIs	2.9	2.2	2.5	2.1	-.86	.19
% specific memories	8.9	2.3	8.7	2.6	-.45	.08
% negative memories	35.5	33.3	30.5	29.5	-.73	.16

Note. UUIs = Unique units of information.

Table 5

Correlation matrix for variables in multiple regressions: Autobiographical Memory Test

Variable	% specific	% categoric	% semantic	% omissions	BDI-II	CTQ	BSI
% specific memories	1						
% categoric memories	-.68**	1					
% semantic memories	-.46**	.16	1				
% omissions	-.21	.05	.12	1			
BDI-II	.01	-.18	.15	-.002	1		
CTQ	.03	-.07	.22*	-.03	.34**	1	
BSI	.03	-.16	.17	.01	.82**	.37**	1
Means	*.61*	*.17*	*.04*	*.03*	*8.26*	*55.90*	*.54*
SD	*.19*	*.13*	*.06*	*.05*	*6.81*	*4.85*	*.50*
N	*82*	*82*	*82*	*82*	*89*	*88*	*89*

Note. BDI-II = Beck Depression Inventory; CTQ = Childhood Trauma Questionnaire; BSI = Brief Symptom Inventory.
*$p < .05$. **$p < .01$

Table 6

Summary of regression analyses: AMT predictor variables (N = 82)

Variable	R	R^2	Adjusted R^2	B	SE	Beta	t
BDI-II	.31	.10	.04				
Sex				2.34	1.76	.15	1.33
% Specific				-4.30	6.23	-.12	-.68
% Categoric				-14.80	8.30	-.28	-1.78
% Semantic				13.54	14.68	.12	.92
% Omissions				-1.78	16.02	-.01	-.11
CTQ	.27	.07	.01				
Sex				-.14	1.29	-.01	-.11
% Specific				4.16	4.62	.16	.90
% Categoric				-.29	6.10	-.01	-.05
% Semantic				24.90	10.79	.30	2.31*
% Omissions				-3.94	11.77	-.04	-.34
BSI	.31	.09	.03				
Sex				.19	.13	.17	1.47
% Specific				-.05	.46	-.02	-.10
% Categoric				-.77	.61	-.19	-1.25
% Semantic				1.43	1.08	.17	1.32
% Omissions				.14	1.18	.01	.11

Note. AMT = Autobiographical Memory Test; BDI-II = Beck Depression Inventory; CTQ = Childhood Trauma Questionnaire; BSI = Brief Symptom Inventory.
*$p < .05$.

Table 7

Correlation matrix for variables in multiple regressions: Memory Fluency Task

Variable	# of mems	% specific	% negative	Earliest age	Avg age for spec	Avg vivid for spec	Avg vivid for rep
# of mems	1						
% specific	.17	1					
% negative	-.07	.32**	1				
Earliest age	-.33**	.12	-.08	1			
Avg age for spec	.30**	.60**	-.03	.73**	1		
Avg vivid for spec	.41**	.40**	.01	.11	.67**	1	
Avg vivid for rep	.26*	-.44**	-.35**	-.13	.01	.25*	1
BDI-II	.02	.17	.17	.10	.03	-.11	-.17
CTQ	-.12	-.02	.05	.13	-.13	-.02	-.07
BSI	.11	.15	.17	-.01	.03	-.07	-.10
Means	*8.72*	*.73*	*.28*	*37.76*	*47.45*	*3.17*	*1.98*
SD	*3.81*	*.25*	*.19*	*9.53*	*11.83*	*.93*	*1.62*
N	*89*	*89*	*87*	*86*	*89*	*89*	*89*

Note. BDI-II = Beck Depression Inventory; CTQ = Childhood Trauma Questionnaire; BSI = Brief Symptom Inventory; spec = specific; rep = repeated. Age is reported in months. Vividness was rated from 1 to 5. Bivariate correlations between the clinical measures are reported in Table 5.
*$p < .05$. **$p < .01$

Table 8

Summary of regression analyses: MFT predictor variables

Variable	R	R^2	Adjusted R^2	B	SE	Beta	t
BDI-II (*N* = 85)	.41	.17	.08				
Sex				3.52	1.68	.23	2.10*
# of mems				.37	.25	.19	1.49
% specific				6.30	5.19	.18	1.21
% negative				4.55	4.10	.13	1.11
Earliest age				.31	.14	.41	2.12*
Avg age for specific				-.31	.20	-.27	-1.56
Avg vivid for specific				-2.57	1.22	-.24	-2.12*
Avg vivid for repeated				.09	.64	.02	.14
CTQ (*N* = 84)	.30	.09	-.01				
Sex				.52	1.15	.05	.45
# of mems				.05	.17	.04	.32
% specific				3.30	3.51	.15	.94
% negative				.45	2.78	.02	.16
Earliest age				.20	.10	.42	2.07*
Avg age for specific				-.30	.14	-.39	-2.16*
Avg vivid for specific				.87	.82	.13	1.07
Avg vivid for repeated				.08	.43	.03	.18
BSI (*N* = 85)	.38	.15	.06				
Sex				.26	.12	.24	2.10*
# of mems				.03	.02	.22	1.71
% specific				.44	.38	.17	1.13
% negative				.38	.30	.15	1.25
Earliest age				.01	.01	.25	1.27
Avg age for specific				-.01	.02	-.15	-.88
Avg vivid for specific				-.19	.09	-.25	-2.16*
Avg vivid for repeated				.03	.05	.09	.61

Note. MFT = Memory Fluency Task; BDI-II = Beck Depression Inventory; CTQ = Childhood Trauma Questionnaire; BSI = Brief Symptom Inventory.
*$p < .05$

Table 9

Correlation matrix for variables in multiple regressions: Detailed Memory Task

Variable	UUIs	% emotion UUIs	% negative	% specific	BDI-II	CTQ	BSI
UUIs	1						
% emotion UUIs	.05	1					
% negative	.01	.43**	1				
% specific	.06	.18	.23*	1			
BDI-II	.28**	-.002	.01	.13	1		
CTQ	.35**	.26*	.03	.15	.34**	1	
BSI	.28**	.07	.01	.13	.82**	.37**	1
Means	*108.82*	*.03*	*.32*	*.88*	*8.26*	*55.90*	*.54*
SD	*46.11*	*.02*	*.31*	*.25*	*6.81*	*4.85*	*.50*
N	*89*	*89*	*89*	*89*	*89*	*88*	*89*

Note. UUIs = Unique units of information; BDI-II = Beck Depression Inventory; CTQ = Childhood Trauma Questionnaire; BSI = Brief Symptom Inventory.
*$p < .05$. **$p < .01$

Table 10

Summary of regression analyses: DMT predictor variables (N = 82)

Variable	R	R^2	Adjusted R^2	B	SE	Beta	t
BDI-II	.34	.11	.06				
Sex				2.21	1.59	.15	1.39
UUIs				.04	.02	.28	2.68**
% emotion UUIs				-15.93	37.05	-.05	-.43
% negative				-.10	2.58	-.004	-.04
% specific				3.51	2.94	.13	1.19
CTQ	.46	.21	.16				
Sex				.17	1.09	.02	.15
UUIs				.04	.01	.34	3.42**
% emotion UUIs				64.47	25.06	.28	2.57*
% negative				-1.76	1.74	-.11	-1.01
% specific				2.27	1.98	.12	1.15
BSI	.34	.12	.07				
Sex				.18	.12	.16	1.57
UUIs				.003	.001	.27	2.60*
% emotion UUIs				.97	2.71	.04	.36
% negative				-.09	.19	-.05	-.46
% specific				.25	.21	.13	1.18

Note. BDI-II = Beck Depression Inventory; CTQ = Childhood Trauma Questionnaire; BSI = Brief Symptom Inventory; UUIs = Unique units of information.
*$p < .05$. **$p < .01$

Table 11

Correlation matrix for memory specificity variables

Variable	AMT: % specific	MFT: % specific	MFT: number of memories
AMT: % specific	1		
MFT: % specific	.08	1	
MFT: number of memories	.16	.17	1
Means	*61.06*	*73.29*	*8.72*
SD	*19.16*	*25.07*	*3.81*
N	*82*	*89*	*89*

Note. AMT = Autobiographical Memory Test; MFT = Memory Fluency Task.

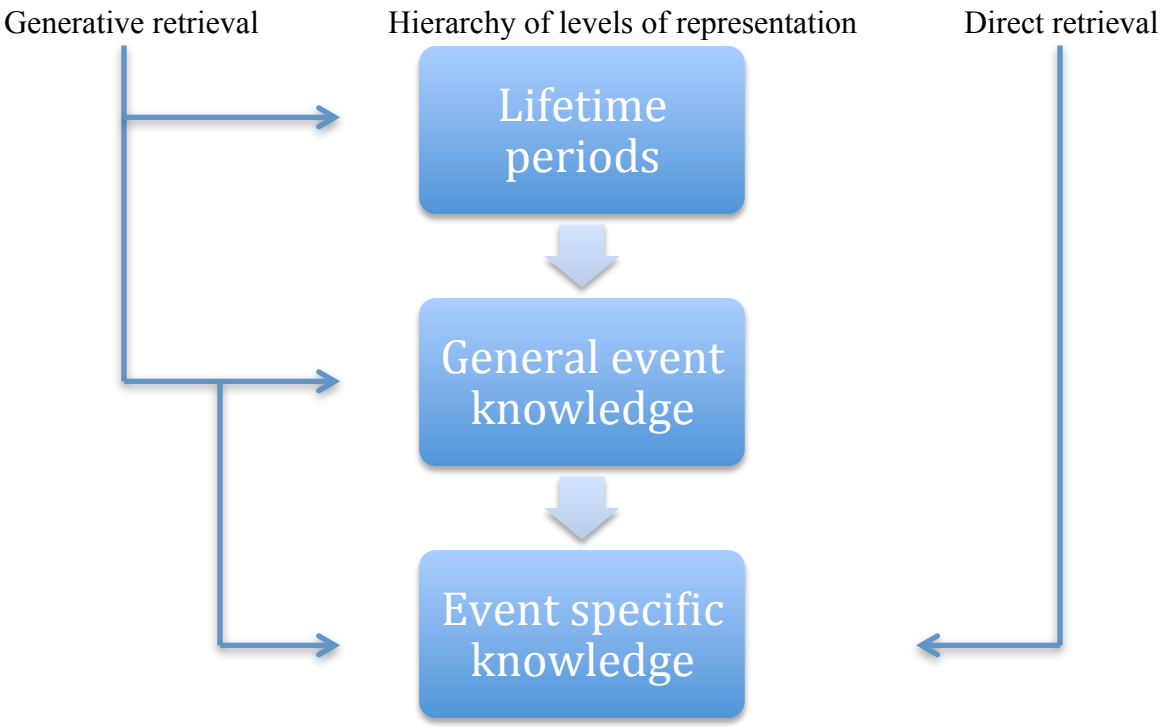
Table 12

Correlation matrix for AMT variables and BDI-II

Variable	% specific	% categoric	% extended	% semantic	% omissions	BDI-II
% specific	1					
% categoric	-.68**	1				
% extended	-.51**	-.09	1			
% semantic	-.46**	.16	.03	1		
% omissions	-.21	.05	-.22*	.12	1	
BDI-II	.01	-.18	.14	.15	-.002	1
Means	*61.06*	*16.59*	*14.96*	*3.82*	*2.60*	*8.26*
SD	*19.16*	*12.88*	*11.55*	*6.02*	*4.89*	*6.81*
N	*82*	*82*	*82*	*82*	*82*	*89*

Note. AMT = Autobiographical Memory Test; BDI-II = Beck Depression Inventory.
*$p < .05$. **$p < .01$

Appendix A
Conway & Pleydell-Pearce's Self-Memory System



Appendix B
Demographic Questionnaire

ID number: _____ Today's date (yyyy/mm/dd): _____

Sex: _____ D.O.B. (yyyy/mm/dd):_____

Ethnicity: _____

Marital Status: _____

Occupation: _____

What is the highest level of education you have completed?

High School Graduate
Some university, college, or trade school
College or trade school Graduate
University Graduate
Post-graduate degree

Please list all languages that were routinely spoken in your home before you began attending school. Please also estimate the percentage that each language was used (e.g., English 75%, French 25%).

1. _____
2. _____
3. _____
4. _____

Appendix C
Recruitment Poster

MEMORIAL UNIVERSITY

INTERESTED IN MEMORY?

Wanted: Participants for a study about the effects of different moods and experiences on memory

Participate in a 60 minute visit and be entered in a draw to **win a $50 gift card** for a store of your choosing in the Avalon Mall!

If interested, please contact us! Flexible scheduling ☺
Contact Rebecca at rmg810@mun.ca

The proposal for this research has been reviewed by the Interdisciplinary Committee on Ethics in Human Research and found to be in compliance with Memorial University's ethics policy. If you have ethical concerns about the research (such as the way you have been treated or your rights as a participant), you may contact the Chairperson of the ICEHR at icehr@mun.ca or by telephone at 709-864-2861.
This study is being conducted for the doctoral research of a student in the PsyD program.

Memory Study: rmg810@mun.ca	Memory Study: rmg810@mun.ca	Memory Study: rmg810@mun.ca	Memory Study: rmg810@mun.ca	Memory Study: rmg810@mun.ca	Memory Study: rmg810@mun.ca	Memory Study: rmg810@mun.ca	Memory Study: rmg810@mun.ca	Memory Study: rmg810@mun.ca	Memory Study: rmg810@mun.ca

Appendix D
Brief Symptom Inventory

BRIEF SYMPTOM INVENTORY

INSTRUCTIONS

Below is a numbered list of problems and complaints. For each of these numbered statements circle the number on the right which best describes how much discomfort the problem has caused you over the PAST FOUR WEEKS. Please do not skip any items. " Thank you "

OVER THE PAST FOUR WEEKS HOW MUCH HAVE YOU BEEN DISTRESSED BY:	NOT AT ALL	A LITTLE	MODERATELY	QUITE A BIT	EXTREMELY
1. Nervousness or shakiness inside	0	1	2	3	4
2. Faintness or dizziness	0	1	2	3	4
3. The idea that someone else can control your thoughts	0	1	2	3	4
4. Feeling others are to blame for most of your troubles	0	1	2	3	4
5. Trouble remembering things	0	1	2	3	4
6. Feeling easily annoyed or irritated	0	1	2	3	4
7. Pains in heart or chest	0	1	2	3	4
8. Feeling afraid in open spaces	0	1	2	3	4
9. Thoughts of ending your life	0	1	2	3	4
10. Feeling that most people cannot be trusted	0	1	2	3	4
11. Poor appetite	0	1	2	3	4
12. Feeling suddenly scared for no reason	0	1	2	3	4
13. Temper outbursts that you could not control	0	1	2	3	4
14. Feeling lonely even when you are with people	0	1	2	3	4
15. Feeling blocked in getting things done	0	1	2	3	4
16. Feeling lonely	0	1	2	3	4
17. Feeling unhappy	0	1	2	3	4
18. Feeling no interest in things	0	1	2	3	4
19. Feeling fearful	0	1	2	3	4
20. Your feelings being easily hurt	0	1	2	3	4
21. Feeling that people are unfriendly or dislike you	0	1	2	3	4
22. Feeling inferior to others	0	1	2	3	4
23. Nausea or upset stomach	0	1	2	3	4
24. Feeling that you are watched or talked about by others	0	1	2	3	4
25. Trouble falling asleep	0	1	2	3	4

Continued . . .

Appendix D continued

OVER THE PAST FOUR WEEKS HOW MUCH HAVE YOU BEEN DISTRESSED BY:	NOT AT ALL	A LITTLE	MODERATELY	QUITE A BIT	EXTREMELY
26. Having to check and double check what you do	0	1	2	3	4
27. Difficulty in making decisions	0	1	2	3	4
28. Feeling afraid to travel on buses or trains	0	1	2	3	4
29. Trouble getting your breath	0	1	2	3	4
30. Hot or cold spells	0	1	2	3	4
31. Having to avoid certain things, places or activities because they frighten you	0	1	2	3	4
32. You mind going blank	0	1	2	3	4
33. Numbness or tingling in parts of your body	0	1	2	3	4
34. The idea that you should be punished for your sins	0	1	2	3	4
35. Feeling hopeless about the future	0	1	2	3	4
36. Trouble concentrating	0	1	2	3	4
37. Feeling weak in parts of your body	0	1	2	3	4
38. Feeling tense or keyed-up	0	1	2	3	4
39. Thoughts of death or dying	0	1	2	3	4
40. Having urges to beat, injure or harm someone	0	1	2	3	4
41. Having urges to break or smash things	0	1	2	3	4
42. Feeling very self-conscious with others	0	1	2	3	4
43. Feeling uneasy in crowds	0	1	2	3	4
44. Never feeling close to another person	0	1	2	3	4
45. Spells of terror or panic	0	1	2	3	4
46. Getting into frequent arguments	0	1	2	3	4
47. Feeling nervous when you are left alone	0	1	2	3	4
48. Others not giving you proper credit for your achievements	0	1	2	3	4
49. Feeling so restless you could not sit still	0	1	2	3	4
50. Feelings of worthlessness	0	1	2	3	4
51. Feeling that people will take advantage of you if you let them	0	1	2	3	4
52. Feelings of guilt	0	1	2	3	4
53. The idea that something is wrong with your mind	0	1	2	3	4

Appendix E
Beck Depression Inventory—II

BDI-II

Date:

Name: _____ Marital Status: _____ Age: _____ Sex: _____

Occupation: _____ Education: _____

Instructions: This questionnaire consists of 21 groups of statements. Please read each group of statements carefully, and then pick out the **one statement** in each group that best describes the way you have been feeling during the **past two weeks, including today**. Circle the number beside the statement you have picked. If several statements in the group seem to apply equally well, circle the highest number for that group. Be sure that you do not choose more than one statement for any group, including Item 16 (Changes in Sleeping Pattern) or Item 18 (Changes in Appetite).

1. Sadness
- 0 I do not feel sad.
- 1 I feel sad much of the time.
- 2 I am sad all the time.
- 3 I am so sad or unhappy that I can't stand it.

2. Pessimism
- 0 I am not discouraged about my future.
- 1 I feel more discouraged about my future than I used to be.
- 2 I do not expect things to work out for me.
- 3 I feel my future is hopeless and will only get worse.

3. Past Failure
- 0 I do not feel like a failure.
- 1 I have failed more than I should have.
- 2 As I look back, I see a lot of failures.
- 3 I feel I am a total failure as a person.

4. Loss of Pleasure
- 0 I get as much pleasure as I ever did from the things I enjoy.
- 1 I don't enjoy things as much as I used to.
- 2 I get very little pleasure from the things I used to enjoy.
- 3 I can't get any pleasure from the things I used to enjoy.

5. Guilty Feelings
- 0 I don't feel particularly guilty.
- 1 I feel guilty over many things I have done or should have done.
- 2 I feel quite guilty most of the time.
- 3 I feel guilty all of the time.

6. Punishment Feelings
- 0 I don't feel I am being punished.
- 1 I feel I may be punished.
- 2 I expect to be punished.
- 3 I feel I am being punished.

7. Self-Dislike
- 0 I feel the same about myself as ever.
- 1 I have lost confidence in myself.
- 2 I am disappointed in myself.
- 3 I dislike myself.

8. Self-Criticalness
- 0 I don't criticize or blame myself more than usual.
- 1 I am more critical of myself than I used to be.
- 2 I criticize myself for all of my faults.
- 3 I blame myself for everything bad that happens.

9. Suicidal Thoughts or Wishes
- 0 I don't have any thoughts of killing myself.
- 1 I have thoughts of killing myself, but I would not carry them out.
- 2 I would like to kill myself.
- 3 I would kill myself if I had the chance.

10. Crying
- 0 I don't cry anymore than I used to.
- 1 I cry more than I used to.
- 2 I cry over every little thing.
- 3 I feel like crying, but I can't.

_____ Subtotal Page 1

Continued on Back

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Appendix E continued

11. Agitation

0 I am no more restless or wound up than usual.
1 I feel more restless or wound up than usual.
2 I am so restless or agitated that it's hard to stay still.
3 I am so restless or agitated that I have to keep moving or doing something.

12. Loss of Interest

0 I have not lost interest in other people or activities.
1 I am less interested in other people or things than before.
2 I have lost most of my interest in other people or things.
3 It's hard to get interested in anything.

13. Indecisiveness

0 I make decisions about as well as ever.
1 I find it more difficult to make decisions than usual.
2 I have much greater difficulty in making decisions than I used to.
3 I have trouble making any decisions.

14. Worthlessness

0 I do not feel I am worthless.
1 I don't consider myself as worthwhile and useful as I used to.
2 I feel more worthless as compared to other people.
3 I feel utterly worthless.

15. Loss of Energy

0 I have as much energy as ever.
1 I have less energy than I used to have.
2 I don't have enough energy to do very much.
3 I don't have enough energy to do anything.

16. Changes in Sleeping Pattern

0 I have not experienced any change in my sleeping pattern.
1a I sleep somewhat more than usual.
1b I sleep somewhat less than usual.
2a I sleep a lot more than usual.
2b I sleep a lot less than usual.
3a I sleep most of the day.
3b I wake up 1–2 hours early and can't get back to sleep.

17. Irritability

0 I am no more irritable than usual.
1 I am more irritable than usual.
2 I am much more irritable than usual.
3 I am irritable all the time.

18. Changes in Appetite

0 I have not experienced any change in my appetite.
1a My appetite is somewhat less than usual.
1b My appetite is somewhat greater than usual.
2a My appetite is much less than before.
2b My appetite is much greater than usual.
3a I have no appetite at all.
3b I crave food all the time.

19. Concentration Difficulty

0 I can concentrate as well as ever.
1 I can't concentrate as well as usual.
2 It's hard to keep my mind on anything for very long.
3 I find I can't concentrate on anything.

20. Tiredness or Fatigue

0 I am no more tired or fatigued than usual.
1 I get more tired or fatigued more easily than usual.
2 I am too tired or fatigued to do a lot of the things I used to do.
3 I am too tired or fatigued to do most of the things I used to do.

21. Loss of Interest in Sex

0 I have not noticed any recent change in my interest in sex.
1 I am less interested in sex than I used to be.
2 I am much less interested in sex now.
3 I have lost interest in sex completely.

15 16 17 18 19 20 A B C D E

NOTICE: This form is printed with both blue and black ink. If your copy does not appear this way, it has been photocopied in violation of copyright laws.

Subtotal Page 2
Subtotal Page 1
Total Score

Appendix F
Structured Clinical Interview for DSM-IV Disorders

I. CURRENT MAJOR DEPRESSIVE EPISODE

Now I am going to ask you some questions about your mood.

A1) In the last month has there been a period of time when you were feeling depressed or down most of the day nearly every day?
YES: -What was that like?
-How long did it last? As long as two weeks?

A2) What about losing interest or pleasure in things you usually enjoyed?
YES: -Was it nearly every day? social
-How long did it last? As long as two weeks?

[if NO to both A1 and A2, move on to PAST MAJOR DEPRESSIVE EPISODE]

FOR THE FOLLOWING QUESTIONS, FOCUS ON THE WORST TWO WEEKS IN THE PAST MONTH (OR ELSE THE PAST TWO WEEKS IF EQUALLY DEPRESSED FOR ENTIRE MONTH)

During this (TWO-WEEK PERIOD)...

A3) How was your appetite? (What about compared to your usual appetite? Did you have to force yourself to eat? Eat less/more than usual?)
YES: -Was that nearly every day?
-Did you lose or gain any weight? (How much?)
-Were you trying to (lose/gain) weight?

A4) How were you sleeping? (trouble falling asleep, waking frequently, trouble staying asleep, waking too early, OR sleeping too much?)
-How many hours a night compared to usual?
-Was that nearly every night?

A5) Were you so fidgety or restless that you were unable to sit still?
YES: -Was it so bad that other people noticed it? (What did they notice?)
[N.B. ONLY QUALIFIES IF OBSERVABLE BY OTHERS]
-Was that nearly every day?

NO: What about the opposite – talking or moving more slowly than is normal for you?
YES: -Was it so bad that other people noticed it? (What did they notice?)
-Was that nearly every day?

A6) What was your energy like? (Tired all the time? Nearly every day?)

A7) How did you feel about yourself? (Worthless?) (Nearly every day?)

1

Appendix F continued

BAD: Did you find this was worse than the way you normally feel about yourself?

OKAY: What about feeling guilty about things you had done or not done? (Nearly every day?)
-Did you find this was worse than the way you normally feel about yourself?

A8) Did you have trouble thinking or concentrating?
YES: -What kinds of things did it interfere with?
-Nearly every day?

NO: -Was it hard to make decisions about everyday things?
YES: Nearly every day?

A9) -Were things so bad that you were thinking a lot about death or that you would be better off dead?
-Did you ever think of hurting yourself or ending your life?
[IF CURRENTLY FEELING THIS WAY, REMIND THEM OF THE LIMITS OF CONFIDENTIALITY AND ASK IF YOU CAN BRING THEM TO THE COUNSELING CENTER TO GET SOME HELP WITH IT]

B1) IF UNCLEAR: Has (DEPRESSIVE EPISODE/OWN WORDS) made it hard for you to do your work, take care of things at home, or get along with other people?

C1) Just before this began, were you physically ill?
YES: -Can you tell me about that?
-What did the doctor say?

C2) Just before this began, were you using any medications?
YES: Any change in the amount you were using?

C3) Just before this began, were you drinking or using any street drugs?
YES: Was there a change in your drinking or drug-use habits?

D1) Did this begin soon after someone close to you died?

E) How many separate times in your life have you been (depressed/OWN WORDS) nearly every day for at least two weeks and had several of the symptoms that you described, like (SYMPTOMS OF WORST EPISODE)?
- [For each episode, ask when it occurred, e.g., age]

2

Appendix F continued

II. PAST MAJOR DEPRESSIVE EPISODE

Criterion A

IF NOT CURRENTLY DEPRESSED:
A1) Have you ever had a period when you were feeling depressed or down most of the day nearly every day?

YES: -What was that like?
-When was that?
-How long did it last? (As long as two weeks?)
-A2) During that time, did you lose interest or pleasure in things you usually enjoyed?
YES: -What was that like?
-When was that?
-Was it nearly every day?
-How long did it last? (As long as two weeks?)

NO: -A2) What about a time when you lost interest or pleasure in things you usually enjoyed?
NO: [Discontinue]

YES: What was that like?
-When was that?
-Was it nearly every day?
-How long did it last? (As long as two weeks?)

Ai) Have you ever had more than one time like that? (Which time was the worst?)

Aii) IF UNCLEAR: Have you had any times like that in the past year?

[skip to A3, on page 4]

IF CURRENTLY DEPRESSED BUT FULL CRITERIA ARE NOT MET:
A1) Has there ever been another time when you were depressed or down most of the day nearly every day?

YES: -What was that like?
-When was that?
-How long did it last? (As long as two weeks?)
-A2) During that time, did you lose interest or pleasure in things you usually enjoyed?
YES: -What was that like?
-When was that?
-Was it nearly every day?
-How long did it last? (As long as two weeks?)

3

Appendix F continued

NO: A2) What about a time when you lost interest or pleasure in things you usually enjoyed?
NO: [Discontinue]

YES: What was that like?
-When was that?
-Was it nearly every day?
-How long did it last? (As long as two weeks?)

Ai) Have you ever had more than one time like that? (Which time was the worst?)

Aii) IF UNCLEAR: Have you had any times like that in the past year?

IF MORE THAN ONE PAST EPISODE IS LIKELY, SELECT THE "WORST" ONE FOR YOUR INQUIRY ABOUT A PAST MAJOR DEPRESSIVE EPISODE. HOWEVER, IF THERE WAS AN EPISODE IN THE PAST YEAR, ASK ABOUT THAT EPISODE EVEN IF IT WAS NOT THE WORST.

FOR THE FOLLOWING QUESTIONS, FOCUS ON THE WORST TWO WEEKS OF THE PAST MAJOR DEPRESSIVE EPISODE THAT YOU ARE INQUIRING ABOUT

During that (TWO WEEK PERIOD)…

A3) How was your appetite?
-What about compared to your usual appetite?
-Did you have to force yourself to eat?
-Eat (less/more) than usual?
YES: -Was that nearly every day?
-Did you lose or gain any weight?
YES: -How much?
-Were you trying to (lose/gain) weight?

A4) How were you sleeping? (trouble falling asleep, waking frequently, trouble staying asleep, waking too early, OR sleeping too much?)
-How many hours a night compared to usual?
-Was that nearly every night?

A5) Were you so fidgety or restless that you were unable to sit still?
YES: -Was it so bad that other people noticed it? (What did they notice?)
-Was that nearly every day?

NO: -What about the opposite – talking or moving more slowly than is normal for you?
YES: -Was it so bad that other people noticed it? (What did they notice?)
-Was it nearly every day?

4

Appendix F continued

A6) What was your energy like? (Tired all the time? Nearly every day?)

A7) How did you feel about yourself? (Worthless?)
BAD: -Nearly every day?
-Did you find this was worse than the way you normally feel about yourself?

OKAY: -What about feeling guilty about things you had done or not done?
YES: -Nearly every day?
- Did you find this was worse than the way you normally feel about yourself?

A8) Did you have trouble thinking or concentrating?
YES: -What kinds of things did it interfere with?
-Nearly every day?

NO: Was it hard to make decisions about everyday things?
YES: Nearly every day?

A9) -Were things so bad that you were thinking a lot about death or that you would be better off dead?
-Did you ever think of hurting yourself or ending your life?
[IF CURRENTLY FEELING THIS WAY, REMIND THEM OF THE LIMITS OF CONFIDENTIALITY AND ASK IF YOU CAN BRING THEM TO THE COUNSELING CENTER TO GET SOME HELP WITH IT]

****check scoring sheet to see whether to ask Aiii or C1****

Aiii) (IF NOT ALREADY ASKED) Has there been any other time when you were (depressed/OWN WORDS) and had even more of the symptoms that I just asked you about?
YES: [Return to beginning of PAST MDE, page 3, and check whether there have been any other MDEs that were more severe and/or caused more symptoms. If so, ask about that episode.]

NO: [Discontinue]

C1) IF UNCLEAR: Did (depressive/OWN WORDS) make it hard for you to do your work, take care of things at home, or get along with other people?
YES: [continue D]
NO: IF NOT ALREADY ASKED: Has there been any other time when you were (depressed/OWN WORDS) and it caused even more problems than the time I just asked you about?
YES: [Return to Past MDE, page 3, and check whether there have been any other MDEs that were more severe and/or caused more symptoms. If so, ask about that episode.]

5

Appendix F continued

NO: [Discontinue]

D1) Just before this began, were you physically ill?
YES: -Can you tell me about it?
-What did the doctor say?

D2) Just before this began, were you using any medications?
YES: -Any change in the amount you were using?

D3) Just before this began, were you drinking or using any street drugs?

if answered yes to D1, D2, or D3
IF UNKNOWN: Has there been any other time when you were (depressed/OWN WORDS) like this but were not (using SUBSTANCE/ill with GMC)?
YES: [Go to Past MDE, page 3, and check whether there has been any other MDE not due to a substance or general medical condition. If so, ask about that episode.]

NO: [Discontinue]

E1) Did this begin soon after someone close to you died?
YES: IF UNKNOWN: Has there been any other time when you were (depressed/OWN WORDS) like this that did not occur after someone close to you died?
YES: [Go to Past MDE, page 3, and check whether there has been any other MDE that was not better accounted for by bereavement. If so, ask about that episode.]
NO: [Discontinue]

F) How old were you when (PAST MAJOR DEPRESSIVE EPISODE) started?

G) How many separate times in your life have you been (depressed/OWN WORDS) nearly every day for at least two weeks and had several of the symptoms that you described, like (SYMPTOMS OF WORST EPISODE)?
- [For each episode, ask when it occurred, e.g., age]

6

Appendix G
Childhood Trauma Questionnaire

CTQ

Instructions

These questions ask about some of your experiences growing up as a child and a teenager. Although these questions are of a personal nature, please try to answer as honestly as you can. For each question, circle the dot under the response that best describes how you feel. If you wish to change your response put an X through it and circle your new choice.

Example of corrected response:

Original Response

Never True	Rarely True	Sometimes True	Often True	Very Often True
•	•	⊙	•	•

Changed Response

Never True	Rarely True	Sometimes True	Often True	Very Often True
•	•	⊗	⊙	•

Appendix G continued

When I was growing up...	Never True	Rarely True	Sometimes True	Often True	Very Often True
1. I didn't have enough to eat.	●	●	●	●	●
2. I knew that there was someone to take care of me and protect me.	●	●	●	●	●
3. People in my family called me things like "stupid," "lazy," or "ugly."	●	●	●	●	●
4. My parents were too drunk or high to take care of the family.	●	●	●	●	●
5. There was someone in my family who helped me feel that I was important or special.	●	●	●	●	●
6. I had to wear dirty clothes.	●	●	●	●	●
7. I felt loved.	●	●	●	●	●
8. I thought that my parents wished I had never been born.	●	●	●	●	●
9. I got hit so hard by someone in my family that I had to see a doctor or go to the hospital.	●	●	●	●	●
10. There was nothing I wanted to change about my family.	●	●	●	●	●
11. People in my family hit me so hard that it left me with bruises or marks.	●	●	●	●	●
12. I was punished with a belt, a board, a cord, or some other hard object.	●	●	●	●	●
13. People in my family looked out for each other.	●	●	●	●	●
14. People in my family said hurtful or insulting things to me.	●	●	●	●	●
15. I believe that I was physically abused.	●	●	●	●	●
16. I had the perfect childhood.	●	●	●	●	●
17. I got hit or beaten so badly that it was noticed by someone like a teacher, neighbor, or doctor.	●	●	●	●	●
18. I felt that someone in my family hated me.	●	●	●	●	●
19. People in my family felt close to each other.	●	●	●	●	●
20. Someone tried to touch me in a sexual way, or tried to make me touch them.	●	●	●	●	●
21. Someone threatened to hurt me or tell lies about me unless I did something sexual with them.	●	●	●	●	●
22. I had the best family in the world.	●	●	●	●	●
23. Someone tried to make me do sexual things or watch sexual things.	●	●	●	●	●
24. Someone molested me.	●	●	●	●	●
25. I believe that I was emotionally abused.	●	●	●	●	●
26. There was someone to take me to the doctor if I needed it.	●	●	●	●	●
27. I believe that I was sexually abused.	●	●	●	●	●
28. My family was a source of strength and support.	●	●	●	●	●

Appendix H
Impact of Event Scale—Revised

IMPACT OF EVENT SCALE – REVISED

INSTRUCTIONS: Below is a list of difficulties people sometimes have after stressful life events. Please read each item, and then indicate how distressing each difficulty has been for you **DURING THE PAST SEVEN DAYS** with respect to _____, which occurred on _____. How much were you distressed or bothered by these difficulties?

Not at all = 0	A little bit = 1	Moderately = 2	Quite a bit = 3	Extremely = 4

1. Any reminder brought back feelings about it. ___

2. I had trouble staying asleep. ___

3. Other things kept making me think about it. ___

4. I felt irritable and angry. ___

5. I avoided letting myself get upset when I thought about it or was reminded of it. ___

6. I thought about it when I didn't mean to. ___

7. I felt as if it hadn't happened or wasn't real. ___

8. I stayed away from reminders of it. ___

9. Pictures about it popped into my mind. ___

10. I was jumpy and easily startled. ___

11. I tried not to think about it. ___

12. I was aware that I still had a lot of feelings about it, but I didn't deal with them. ___

13. My feelings about it were kind of numb. ___

14. I found myself acting or feeling like I was back at that time. ___

15. I had trouble falling asleep. ___

16. I had waves of strong feelings about it. ___

17. I tried to remove it from my memory. ___

18. I had trouble concentrating. ___

NEXT PAGE →

Appendix H continued

19. Reminders of it caused me to have physical reactions, such as sweating, trouble breathing, nausea, or a pounding heart. ___

20. I had dreams about it. ___

21. I felt watchful and on-guard. ___

22. I tried not to talk about it. ___

NEXT PAGE →

Appendix I
Consent Form

Impact of Mood and Past Experiences on Autobiographical Memories
Informed Consent Form

Researcher: Rebecca Ginsburg, Psychology Department, MUN
Email: rmg810@mun.ca Phone: 864-7698
Supervisor: Dr. Carole Peterson, Psychology Department, MUN
Email: carole@mun.ca Phone: 864-7682

You are invited to take part in a research project, and this form is part of the process of informed consent. It should give you the basic idea of what the research is about and what your participation will involve. If you would like more detail about something mentioned here, or information not included here, you should feel free to ask. Please take the time to read this carefully and to understand any other information given to you by the researcher.

It is entirely up to you to decide whether to take part in this research. If you choose not to take part or if you decide to withdraw from the research once it has started, there will be no negative consequences for you, now or in the future.

Introduction: We are conducting a project concerned with young adults' earliest autobiographical memories (that is, memories of personally experienced events) and how they are related to mood and past experiences. We would like to compare the memories of young adults with various moods and experiences.

Purpose of study: Researchers have suggested that autobiographical memories vary as a function of mood and past experiences. We would like to explore whether this is also true of earliest autobiographical memories.

What you will do in this study: You will be asked to recall as many memories as you can about your early childhood in 4 minutes and tell your interviewer quick notes on them as reminders. At the end of the timed recall task you will look back at the reminders and note properties such as associated emotions and your age at the time of each memory. You will be asked additional details about three of these memories. There is a second memory task, wherein you will be asked to recall a memory in response to each of 15 cue words. Additionally, you will be asked to participate in a brief interview regarding your mood and complete four brief questionnaires.

Length of time: This study will take approximately one hour of your time.

Possible benefits and risks: It is possible that you may remember an upsetting event during this study. If so, you will be provided with information about the University

Counseling Centre should you wish to discuss your experience with a counselor. The questionnaires and brief interview are of a sensitive nature.

Compensation: You have the option of being entered into a draw for a $50 gift card for the Avalon Mall.

Withdrawal from the study: You can withdraw from participation at any point without giving any reason, and any data collected up until that point will be destroyed. There are no consequences for withdrawal and there will be no academic impact (i.e., if you are in Dr. Peterson's class, or if Rebecca Ginsburg is your Teaching Assistant, withdrawal will not affect you academically). You will not be able to withdraw your data after the data has been aggregated (this will occur when we have finished collecting data).

Confidentiality and anonymity: Your participation will be kept anonymous and strictly confidential. The information gathered will be seen solely by the researchers involved in this study and will be used solely for research purposes. Questionnaires and interview forms will be identified by ID number only and will not have any identifying information on them. Data will be reported in aggregated form for experience groups, and no information that identifies individual study participants will ever be released. The data collected during this study will be used for a doctoral dissertation and for publication in journal articles.

Limits of confidentiality: During the study, if you disclose that you are at risk of harming yourself or someone else, the interviewer is obligated to break confidentiality and inform the appropriate mental health professionals and/or the authorities in order to help protect you or the other person from harm.

Recording of data: The interviews will be audio-recorded and later transcribed for data scoring. All research assistants who transcribe the data will sign a confidentiality agreement.

Storage of data: The data will be stored in a locked cabinet in a locked research lab (electronic data will be password protected), and access will be limited to the researchers involved in conducting this study who are all supervised by the Principal Investigator, Dr. Carole Peterson in the Department of Psychology. Memorial University policy on integrity in Scholarly Research requires that the data be kept for a minimum of 5 years. After that, the data will be destroyed in a secure manner.

Sharing of results with participants: We would be happy to provide you with a summary of research findings or a copy of the published report once the study has been completed if you provide us with an email or mailing address.

Questions: You are welcome to ask questions at any time during your participation in this research. If you would like more information about this study, please contact Rebecca Ginsburg or Dr. Carole Peterson (contact information is at the beginning of this form).

The proposal for this research has been reviewed by the Interdisciplinary Committee on Ethics in Human Research and found to be in compliance with Memorial University's ethics policy. If you have ethical concerns about the research (such as the way you have been treated or your rights as a participant), you may contact the Chairperson of the ICEHR at icehr@mun.ca or by telephone at 709-864-2861.

Consent: Your signature on this from means that:

- You have read the information about the research.
- You have been able to ask questions about this study.
- You are satisfied with the answers to all your questions.
- You understand what the study is about and what you will be doing.
- You understand that you are free to withdraw from the study at any time, without having to give a reason, and that doing so will not affect you now or in the future.
- You understand that any data collected from you up to the point of your withdrawal will be destroyed.

If you sign this form, you do not give up your legal rights and do not release the researchers from their professional responsibilities.

Your signature:
I have read and understood what this study is about and appreciate the risks and benefits. I have had adequate time to think about this and had the opportunity to ask questions and my questions have been answered.

- ○ I agree to participate in the research project understanding the risks and contributions of my participation, that my participation is voluntary, and that I may end my participation at any time.
- ○ I agree to be audio-recorded during the interview.
- ○ I agree to have direct quotations from my interview used anonymously in the thesis and any journal publications (without my name being identified).

A copy of this Informed Consent Form has been given to me for my records.

_____ _____

Signature of participant Date

If you would like a summary of the research findings or a copy of the published report, please provide either your email or mailing address below:

_____

_____

_____

Researcher's signature:
I have explained this study to the best of my ability. I invited questions and gave answers. I believe that the participant fully understands what is involved in being in the study, any potential risks of the study and that he or she has freely chosen to be in the study.

_____ _____
Signature of Principal Investigator Date

Appendix J
PREP Consent Form

Informed Consent Form: Psychology Research Experience Pool

Title: Impact of Mood and Past Experiences on Autobiographical Memories

Researcher: Rebecca Ginsburg, Psychology Department, MUN
Email: rmg810@mun.ca Phone: 864-7698
Supervisor: Dr. Carole Peterson, Psychology Department, MUN
Email: carole@mun.ca Phone: 864-7682

You are invited to take part in a research project, and this form is part of the process of informed consent. It should give you the basic idea of what the research is about and what your participation will involve. If you would like more detail about something mentioned here, or information not included here, you should feel free to ask. Please take the time to read this carefully and to understand any other information given to you by the researcher.

It is entirely up to you to decide whether to take part in this research. If you choose not to take part or if you decide to withdraw from the research once it has started, there will be no negative consequences for you, now or in the future.

Introduction: As part of my doctoral thesis, I am conducting research under the supervision of Dr. Carole Peterson. The project is concerned with young adults' earliest autobiographical memories (that is, memories of personally experienced events) and how they are related to mood and past experiences. We would like to compare the memories of young adults with various moods and experiences.

Purpose of study: Researchers have suggested that autobiographical memories vary as a function of mood and past experiences. We would like to explore whether this is also true of earliest autobiographical memories.

What you will do in this study: You will be asked to recall as many memories as you can about your early childhood in 4 minutes and tell your interviewer quick notes on them as reminders. At the end of the timed recall task you will look back at the reminders and note properties such as associated emotions and your age at the time of each memory. You will be asked additional details about three of these memories. There is a second memory task, wherein you will be asked to recall a memory in response to each of 15 cue words. Additionally, you will be asked to participate in a brief interview regarding your mood and complete four brief questionnaires.

Length of time: This study will take approximately one hour of your time.

Withdrawal from the study: You can withdraw from participation at any point without giving any reason, and any data collected up until that point will be destroyed. There are no consequences for withdrawal and there will be no academic impact (i.e., if you are in Dr. Peterson's class, or if Rebecca Ginsburg is your Teaching Assistant, withdrawal will not affect you academically). You will not be able to withdraw your data after the data has been aggregated (this will occur when we have finished collecting data).

Possible benefits and risks: It is possible that you may remember an upsetting event during this study. If so, you will be provided with information about the University Counseling Centre should you wish to discuss your experience with a counselor. The questionnaires and brief interview are of a sensitive nature.

Compensation: You will receive one credit point toward your Psychology course per hour of participation or part thereof. Additionally, you have the option of being entered into a draw for a $50 gift card for the Avalon Mall.

Confidentiality vs. Anonymity: There is a difference between confidentiality and anonymity. Confidentiality is ensuring that identities of participants are accessible only to those authorized to have access. Anonymity is a result of not disclosing participants' identifying characteristics (such as name or description of physical appearance).

Confidentiality and Storage of Data: The information gathered will be seen solely by the researchers involved in this study and will be used solely for research purposes. Questionnaires and interview forms will be identified by ID number only and will not have any identifying information on them. Data will be reported in aggregated from for experience groups, and no information that identifies individual study participants will ever be released. The data will be stored in a locked cabinet in a locked research lab (electronic data will be password protected), and access will be limited to the researchers involved in conducting this study who are all supervised by the principal investigator, Dr. Carole Peterson in the Department of Psychology. Memorial University policy on integrity in Scholarly Research requires that the data be kept for a minimum of 5 years. After that, the data will be destroyed in a secure manner.

Anonymity: Please note that your course instructor will not have access to detailed Psychology Research Experience Pool participation details. He or she will only be able to view the total number of credit points earned by students, and will not know whether you have participated in this, or any other study, nor whether any credit points earned from participation in any study were earned from Research Participation, Research Observation, or completion of the alternative assignment.

Limits of confidentiality: During the study, if you disclose that you are at risk of harming yourself or someone else, the interviewer is obligated to break confidentiality and inform the appropriate mental health professionals and/or the authorities in order to help protect you or the other person from harm.

Recording of data: The interviews will be audio-recorded and later transcribed for data scoring. All research assistants who transcribe the data will sign a confidentiality agreement.

Research Participation vs. Research Observation: Your participation in this study is intended to be an educational Research Experience. You therefore have the choice of whether or not to provide data to researchers for inclusion in their analysis. If you consent to provide your data for analysis, please check the box below labeled "Research Participation." However, if you wish to observe the process of research participation without providing data to researchers for inclusion in their analysis, then you may choose to do so, without any loss of experience or credit. If you consent to observe the research experience without providing any data, please check the box below labeled "Research Observation." Please note that you may choose to change your Research Experience from Participation to Observation at any point in time, without loss of experience or credit.

Reporting of Results: The data collected during this study will be used for a doctoral dissertation and for publication in journal articles. Data will be reported in aggregated form for experience groups.

Sharing of results with participants: We would be happy to provide you with a summary of research findings or a copy of the published report once the study has been completed if you provide us with an email or mailing address.

Questions: You are welcome to ask questions at any time during your participation in this research. If you would like more information about this study, please contact Rebecca Ginsburg or Dr. Carole Peterson (contact information is at the beginning of this form).

ICEHR Approval Statement: The proposal for this research has been reviewed by the Interdisciplinary Committee on Ethics in Human Research and found to be in compliance with Memorial University's ethics policy. If you have ethical concerns about the research (such as the way you have been treated or your rights as a participant), you may contact the Chairperson of the ICEHR at icehr@mun.ca or by telephone at 709-864-2861.

Consent: Your signature on this from means that:

- You have read the information about the research.
- You have been able to ask questions about this study.
- You are satisfied with the answers to all your questions.
- You understand what the study is about and what you will be doing.
- You understand that you are free to withdraw from the study at any time, without having to give a reason, and that doing so will not affect you now or in the future.
- You understand that any data collected from you up to the point of your withdrawal will be destroyed.

- You understand the difference between Research Participation and Research Observation, and that you may freely choose which Research Experience option you prefer.
- You understand that you are free to change your Research Experience option from Participation to Observation at any time during the study, without having to give a reason, and that doing so will not affect you now or in the future.
- You understand that any data collected from you up to the point of your choice to participate as a Research Observer will be destroyed.

If you sign this form, you do not give up your legal rights and do not release the researchers from their professional responsibilities.

Your signature:
I have read and understood what this study is about and appreciate the risks and benefits. I have had adequate time to think about this and had the opportunity to ask questions and my questions have been answered.

- ○ I ***agree*** to participate in the research project understanding the risks and contributions of my participation, that my participation is voluntary, and that I may end my participation at any time.
- ○ I ***agree*** to be audio-recorded during the interview.
- ○ I ***do not agree*** to be audio-recorded during the interview.
- ○ I ***agree*** to the use of anonymous quotations (without my name being identified).
- ○ I ***do not agree*** to the use of quotations.

Research Participation vs. Research Observation

- ○ Research Participation: I consent to provide data from my research experience to researchers for analysis.
- ○ Research Observation: I do not consent to provide data from my research experience to researchers for analysis.

A copy of this Informed Consent Form has been given to me for my records.

_____ _____
Signature of participant Date

If you would like a summary of the research findings or a copy of the published report, please provide either your email or mailing address below:

_____

_____

_____

Researcher's signature:
I have explained this study to the best of my ability. I invited questions and gave answers. I believe that the participant fully understands what is involved in being in the study, any potential risks of the study and that he or she has freely chosen to be in the study.

_____ _____
Signature of Principal Investigator Date

Appendix K
Gift Card Consent Form

CONSENT FORM – Participating in a draw for $50

_____I would like my name to be entered into a draw for $50.

Signature of Student: _____

Contact information (if you would like to participate in the draw)

E-mail address: _____

Or telephone number: _____

Date: _____

Thank you very much.

Rebecca Ginsburg
Phone: 864-7698
rmg810@mun.ca

Appendix L
AMT Instructions

I am interested in your memory for events that have happened in your life. I am going to read to you some words. For each word I want you to think of an event that happened to you which the word reminds you of. The event could have happened recently or a long time ago, but it should have happened at least one week ago. It might be an important event, or a trivial event. It is important to try and retrieve a different memory or event for each cue word – don't use the same memory more than once.

Do you have any questions before we begin?

The first cue word is HAPPY
The next word is ANGRY
The next word is GRASS
The next word is RELAXED
The next word is LONELY
The next word is GIGANTIC
The next word is SUCCESSFUL
The next word is SAD
The next word is WILDLIFE
The next word is EXCITED
The next word is FAILURE
The next word is BREAD
The next word is PROUD
The next word is GUILTY
The next word is SEARCH

After the test, go over each word to determine how long ago the memory occurred and what the associated emotion was, as well as to query any coding concerns.

Appendix M
Trauma History Questionnaire

The following is a series of questions about serious or traumatic life events. These types of events actually occur with some regularity, although we would like to believe they are rare, and they affect how people feel about, react to, and/or think about things subsequently. Knowing about the occurrence of such events, and reactions to them, will help us to develop programs for prevention, education, and other services. The questionnaire is divided into questions covering crime experiences, general disaster and trauma questions, and questions about physical and sexual experiences.

For each event, please indicate (circle) whether it happened and, if it did, the number of times and your approximate age when it happened (give your best guess if you are not sure). Also note the nature of your relationship to the person involved and the specific nature of the event, if appropriate.

Crime-Related Events		**Circle one**		***If you circled yes, please indicate***	
				Number of times	**Approximate age(s)**
1	Has anyone ever tried to take something directly from you by using force or the threat of force, such as a stick-up or mugging?	No	Yes		
2	Has anyone ever attempted to rob you or actually robbed you (i.e., stolen your personal belongings)?	No	Yes		
3	Has anyone ever attempted to or succeeded in breaking into your home when you were not there?	No	Yes		
4	Has anyone ever attempted to or succeed in breaking into your home while you were there?	No	Yes		
General Disaster and Trauma		**Circle one**		***If you circled yes, please indicate***	
				Number of times	**Approximate age(s)**
5	Have you ever had a serious accident at work, in a car, or somewhere else? (**If yes**, please specify below) _____	No	Yes		
6	Have you ever experienced a natural disaster such as a tornado, hurricane, flood or major earthquake, etc., where you felt you or your loved ones were in danger of death or injury? (**If yes**, please specify below) _____	No	Yes		
7	Have you ever experienced a "man-made" disaster such as a train crash, building collapse, bank robbery, fire, etc., where you felt you or your loved ones were in danger of death or injury? (**If yes**, please specify below) _____	No	Yes		

Appendix M continued

8	Have you ever been exposed to dangerous chemicals or radioactivity that might threaten your health?	No	Yes		
9	Have you ever been in any other situation in which you were seriously injured? (**If yes**, please specify below) _____	No	Yes		
10	Have you ever been in any other situation in which you feared you might be killed or seriously injured? (**If yes**, please specify below) _____	No	Yes		
11	Have you ever seen someone seriously injured or killed? (**If yes**, please specify who below) _____	No	Yes		
12	Have you ever seen dead bodies (other than at a funeral) or had to handle dead bodies for any reason? (**If yes**, please specify below) _____	No	Yes		
13	Have you ever had a close friend or family member murdered, or killed by a drunk driver? (**If yes**, please specify relationship [e.g., mother, grandson, etc.] below) _____	No	Yes		
14	Have you ever had a spouse, romantic partner, or child die? (**If yes**, please specify relationship below) _____	No	Yes		
15	Have you ever had a serious or life-threatening illness? (**If yes**, please specify below) _____	No	Yes		
16	Have you ever received news of a serious injury, life-threatening illness, or unexpected death of someone close to you? (**If yes**, please indicate below) _____	No	Yes		
17	Have you ever had to engage in combat while in military service in an official or unofficial war zone? (**If yes**, please indicate where below) _____	No	Yes		

Appendix M continued

Physical and Sexual Experiences		**Circle one**		***If you circled yes, please indicate***	
				Repeated?	**Approximate age(s) and frequency**
18	Has anyone ever made you have intercourse or oral or anal sex against your will? (**If yes**, please indicate nature of relationship with person [e.g., stranger, friend, relative, parent, sibling] below) _____	No	Yes		
19	Has anyone ever touched private parts of your body, or made you touch theirs, under force or threat? (**If yes**, please indicate nature of relationship with person [e.g., stranger, friend, relative, parent, sibling] below) _____	No	Yes		
20	Other than incidents mentioned in Questions 18 and 19, have there been any other situations in which another person tried to force you to have an unwanted sexual contact?	No	Yes		
21	Has anyone, including family members or friends, ever attacked you with a gun, knife, or some other weapon?	No	Yes		
22	Has anyone, including family members or friends, ever attacked you without a weapon and seriously injured you?	No	Yes		
23	Has anyone in your family ever beaten, spanked, or pushed you hard enough to cause injury?	No	Yes		
24	Have you experienced any other extraordinarily stressful situation or event that is not covered above? (**If yes**, please specify below) _____	No	Yes		