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Overgeneral Autobiographical Memory and Traumatic Events:

An Evaluative Review

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Abstract

Does trauma exposure impair retrieval of autobiographical memories? Many theorists have suggested that the reduced ability to access specific memories of life events, termed *overgenerality*, is a protective mechanism helping attenuate painful emotions associated with trauma. The authors addressed this question by reviewing 24 studies that assessed trauma exposure and overgenerality, examining samples with posttraumatic stress disorder, acute stress disorder, depression, traumatic event exposure, and other clinical disorders. Limitations are discussed, including variations in assessment of events, depression, and overgenerality and the need for additional comparison groups. Across studies, there was no consistent association between trauma exposure and overgenerality, suggesting that trauma exposure is unlikely to be the primary mechanism leading to overgenerality. Instead, psychopathology factors such as depression and posttraumatic stress appear to be more consistently associated with overgenerality. Alternative overgenerality theories may help identify key overgenerality mechanisms, improving current understanding of autobiographical memory processes underlying psychopathology.

Keywords

autobiographical memory; trauma; depression; posttraumatic stress disorder

Theorists have long thought that traumatic events have a profound impact on autobiographical memory. Beginning with Freud (Breuer & Freud, 1895, cited in Corsini & Wedding, 2000) and Janet (1919/1925, cited in van der Kolk, 1994), theorists have postulated that the occurrence of traumatic events, particularly during childhood, leads to dramatic alterations in memory functioning. Many share this view, believing that trauma can lead to memory fragmentation or disorganization (e.g., van der Kolk, 1994) or the dissociation of trauma memories from other autobiographical memories (e.g., Brewin, 2001; Ehlers & Clark, 2000; van der Kolk, 1994). Whereas these theorists typically highlight irregularities in autobiographical memories of traumatic events, others focus on the possibility that trauma disrupts autobiographical memory more globally, leading to widespread changes in memory functioning, such as increased susceptibility to memory distortion (Bremner, Shobe, & Kihlstrom, 2000; Zoellner, Foa, Brigidi, & Przeworski, 2000) or impaired retrieval of memories of specific autobiographical events (e.g., J. M. G. Williams, 1996). The latter phenomenon, termed *autobiographical memory overgenerality*, is the focus of this review.

Common to many theorists is the notion that alterations in memory following trauma represent a protective mechanism that dampens the extreme emotional pain associated with traumatic experiences. The occurrence of trauma could change the way memories are accessed, with

trauma survivors learning to halt memory retrieval in order to avoid intense emotional distress. J. M. G. Williams (1996) proposed that this functional process is the source of autobiographical memory overgenerality, an effect widely seen in individuals with major depressive disorder (MDD; for reviews, see van Vreeswijk & de Wilde, 2004; J. M. G. Williams, 1996). When instructed to describe specific memories, individuals with MDD instead tend to describe broader, more general categories of events rather than a particular instance, even with repeated prompting. The overgenerality effect, then, refers to the tendency to retrieve general memories despite instructions to describe specific autobiographical events. Notably, overgenerality is also evident in posttraumatic stress disorder (PTSD), and it appears that overgenerality in PTSD is not accounted for by comorbid depression (McNally, Lasko, Macklin, & Pitman, 1995; McNally, Litz, Prassas, Shin, & Weathers, 1994).

Not only is overgenerality associated with depression and PTSD, it also appears to contribute to the onset and maintenance of these disorders. Overgenerality is associated with the development of PTSD after trauma (e.g., Harvey, Bryant, & Dang, 1998), vulnerability toward developing depression (van Minnen, Wessel, Verhaak, & Smeenk, 2005), and poorer prognosis in depression (Brittlebank, Scott, Williams, & Ferrier, 1993; Peeters, Wessel, Merckelbach, & Boon-Vermeeren, 2002; J. M. G. Williams & Dritschel, 1988), making this a particularly important area of study. Understanding the relationship between trauma and overgenerality, therefore, has the potential to elucidate processes that maintain psychopathology, particularly depression and PTSD, and may contribute to the generation of increasingly effective assessment, prevention, and treatment of these disorders. More broadly, investigating the role of trauma in overgenerality may improve knowledge of basic autobiographical memory processes, particularly factors that impact effortful autobiographical memory retrieval. Trauma has long been identified as a key mechanism of memory impairment; however, it remains unclear whether trauma exposure truly contributes to generalized memory difficulties such as autobiographical memory overgenerality.

Further contributing to the importance of investigating trauma in overgenerality is the increasing popularity of trauma-focused overgenerality theories among many memory and trauma researchers (e.g., Burnside, Startup, Byatt, Rollinson, & Hill, 2004; de Decker, Hermans, Raes, & Eelen, 2003; Henderson, Hargreaves, Gregory, & Williams, 2002; Kuyken & Brewin, 1995; Raes, Hermans, Williams, & Eelen, 2005) and some personality theorists (e.g., Conway & Pleydell-Pearce, 2000). However, research on the role of trauma in overgenerality is mixed and has not yet been subjected to an evaluative review. Accordingly, in this article, we review and evaluate studies investigating the relationship between exposure to traumatic events and overgeneral autobiographical memory. Specifically, we examine overgenerality and traumatic events in individuals with PTSD or acute stress disorder (ASD), individuals with depression, samples selected on the basis of event exposure, and other clinical groups. Finally, we briefly discuss theories proposing alternative mechanisms of overgenerality and present suggestions for future research.

The Overgenerality Paradigm

Across overgenerality studies, autobiographical memory specificity is examined using a cued recall task known as the Autobiographical Memory Test (AMT; J. M. G. Williams & Broadbent, 1986). In the AMT, positive and negative cue words (e.g., *joy*, *hurt*) are presented one at a time. In some versions, neutral words are also included to examine whether cue emotionality affects specificity. Participants are instructed to talk about the first specific memory that comes to mind in response to each cue word. Within these instructions, specific memories are defined (J. M. G. Williams & Broadbent, 1986). A specific autobiographical memory is a recollection of an event from one's life that involved a particular context and took place within one day (e.g., "When I went to the store yesterday, I had to stand in line for 30

minutes”; J. M. G. Williams & Broadbent, 1986). General autobiographical memories, on the other hand, can be categorized as either *categorical*, referring to groups of events that share common elements (e.g., “When I go to the grocery store”), or *extended*, referring to events lasting longer than one day (e.g., “I spent a week in Hawaii last winter”; J. M. G. Williams, 1996). Two or three practice words are usually given prior to beginning the AMT, with feedback about whether responses are appropriately specific.

Responses are scored according to their specificity, with the number or proportion of specific memories and the number or proportion of general or categorical memories as the most commonly used measures of specificity. However, these measures may not be equivalent, particularly depending on the handling of omissions (i.e., trials in which no autobiographical memory was retrieved; van Vreeswijk & de Wilde, 2004). Specifically, omissions may be disregarded or considered general, leading to differing estimates of overgenerality. Although studies vary in their use of the number or proportion of specific memories versus general or categorical memories on the AMT as the main dependent variable, we use the term *overgenerality* throughout this review to encompass both fewer specific and greater general memories. The particular scoring method used in each study is noted both within the review of individual studies and in Table 1.

The Trauma Hypothesis

The trauma hypothesis suggests that trauma exposure is critical in the development of overgeneral autobiographical memory. This theory is exemplified by Williams’s overgenerality theory (J. M. G. Williams, 1996) and is highly prominent in the current autobiographical memory literature (e.g., Burnside et al., 2004; de Decker et al., 2003; Henderson et al., 2002; Hermans et al., 2004; Kuyken & Brewin, 1995). However, it is based on limited empirical evidence and has not previously been subjected to a thorough evaluative review.

J. M. G. Williams (1996) proposed that trauma exposure is key to the development of overgenerality in the first comprehensive theoretical account of the overgenerality effect. Williams suggested that trauma-exposed children learn to avoid painful emotions by halting autobiographical memory retrieval before a recollection of a specific event can be retrieved. Accordingly, overgenerality is viewed as a functional response to traumatic childhood events and serves to regulate intense negative emotions. Over time, the tendency to truncate retrieval generalizes to other memory types (i.e., positive and neutral memories), leading to a pervasive overgeneral retrieval style. Emotionally sensitive or vulnerable individuals may also develop overgenerality in response to less severe negative events, and other factors restricting resources available in working memory also promote overgenerality (J. M. G. Williams, 1996); nevertheless, Williams highlighted the occurrence of traumatic events as the dominant path to overgenerality. Since this initial theory, many researchers have echoed this view, stating that trauma is likely crucial to overgenerality (e.g., Burnside et al., 2004; Dalgleish et al., 2003; de Decker et al., 2003; Henderson et al., 2002; Hermans et al., 2004; Kuyken & Brewin, 1995).

Review of the Empirical Literature

The studies we reviewed were found through PsycINFO and MEDLINE searches on the terms (a) *autobiographical memory*, (b) *specificity* or *overgeneral*, and (c) *trauma*, *abuse*, *assault*, *rape*, *combat*, or *accident* and, subsequently, by examining references in articles found initially for other relevant articles. We then selected studies that included assessment of exposure to potentially traumatic events and used standardized versions of the AMT.

When defining exposure to traumatic events, we used the definition of a Criteria A event given in the Diagnostic and Statistical Manual of Mental Disorders (4th ed., text rev. [*DSM—IV—*

TR]; American Psychiatric Association, 2000). Both criteria A1 (objective: individual must have experienced, witnessed, or been confronted by the threat of death or serious injury, or a threat to the physical integrity, of oneself or others) and criteria A2 (subjective: during the event, the individual must have experienced intense fear, helplessness, or horror) were included (American Psychiatric Association, 2000, p. 463). Because definitions of *trauma* across overgenerality studies were variable and often inconsistent with the definition included in the *DSM—IV—TR*, we chose to include two broad categories of events in the current review: *traumatic events*, that is, events that meet the *DSM—IV—TR* definition; and *potentially traumatic events*, that is, events that likely meet the objective stressor criterion but without assessment of the subjective criterion (see Kilpatrick & Resnick, 1992).

We also limited the review to studies using a standard AMT format to evaluate autobiographical memory specificity (J. M. G. Williams & Broadbent, 1986). In the standard AMT, positive and negative cue words are presented, participants are instructed to respond to each word with a specific memory, and only first responses are coded. Studies by Johnson, Greenhoot, Glisky, and McCloskey (2005) and Orbach, Lamb, Sternberg, Williams, and Dawud-Noursi (2001) were excluded owing to their use of nonstandard measures of specificity. Johnson et al. (2005) asked participants to recount numerous specific memories to each cue word with a set time limit, and Orbach et al. (2001) coded specificity of responses to an interview about family conflict. Studies using a nonstandard AMT are difficult to compare with the larger overgenerality literature, and it is unclear whether results from these paradigms are indeed measuring the same phenomenon as the standard AMT.

Using these criteria, we identified 24 studies. Table 1 describes the studies included in this review, delineating sample characteristics; assessment of traumatic events, posttraumatic or postevent stress, and depression; AMT cue type and scoring; and the main results of each study. We begin by examining studies investigating the role of potentially traumatic events in the two disorders commonly associated with overgenerality: PTSD and MDD. First, four studies investigating overgenerality in PTSD or ASD are reviewed; these studies have the potential to address key questions about the relative importance of exposure to traumatic events, posttraumatic stress, and depression in overgenerality. Second, we review seven overgenerality studies of individuals with MDD that include assessment of potentially traumatic events; these studies investigate whether such events critically link MDD with overgenerality. Next, we review eight studies in which the selection criteria focus on exposure to potentially traumatic events rather than particular clinical diagnoses, examining whether overgenerality is found in broader groups of individuals exposed to such events, and, if so, what factors account for this relationship. Finally, we examine five studies focusing on overgenerality and potentially traumatic events in clinical samples other than MDD or PTSD. Review of these studies is aimed at understanding whether exposure to potentially traumatic events is associated with overgenerality in individuals with psychopathology other than PTSD and MDD.

Overgenerality and Traumatic Events in PTSD and ASD

Studies examining overgenerality and PTSD focus on whether trauma-related symptoms are associated with overgenerality and whether this association is independent of the relationship between overgenerality and MDD, a commonly comorbid diagnosis (Kessler, Chiu, Demler, & Walters, 2005). McNally and colleagues conducted two studies that initially suggested the presence of overgenerality in PTSD (McNally et al., 1994, 1995). In the first study, war veterans with PTSD retrieved more general memories as compared with well-adjusted veterans, and the association between memory performance and PTSD remained after controlling for depression severity. This study suggests that overgenerality is present in PTSD and is independent of comorbid depression. However, degree of combat exposure was not strongly associated with overgenerality, suggesting that PTSD, not trauma severity, was associated with overgenerality.

The second study lent further support to a relationship between PTSD and overgenerality (McNally et al., 1995). Veterans with PTSD retrieved significantly fewer specific memories than those without PTSD, particularly in response to positive words (McNally et al., 1995). By comparing individuals with trauma exposure who meet PTSD criteria and those who do not, these studies highlight that PTSD is associated with overgenerality beyond the effects of trauma exposure alone.

More recently, Harvey and colleagues (1998) examined autobiographical memory specificity in survivors of motor vehicle accidents with and without ASD. By selecting individuals with and without ASD, Harvey and colleagues examined whether overgenerality in ASD predicts the development of chronic PTSD. Even after depression severity was controlled, participants with ASD retrieved fewer specific memories, and AMT performance predicted the development of PTSD at 6 months posttrauma, accounting for 25% of the variance in later PTSD symptomatology. This finding argues that overgenerality contributes to the maintenance of posttraumatic reactions over time and to the development of chronic PTSD. Similarly, Kangas, Henry, and Bryant (2005) conducted a study in patients with cancer with and without ASD. As in Harvey and colleagues' (1998) study, patients with ASD following cancer diagnosis retrieved fewer specific memories than patients without ASD, even after severity of depression was controlled. However, Kangas and colleagues found that specificity did not predict PTSD diagnosis 6 months later. One factor that may account for these discrepant findings is that whereas the motor vehicle accident survivors were clearly posttrauma at assessment, the cancer patients potentially experienced ongoing medical procedures related to their cancer diagnosis (Kangas et al., 2005) and accordingly may have been still in the midst of the trauma.

Taken together, these studies provide preliminary evidence suggesting that posttraumatic symptomatology is associated with overgenerality, but they cast doubt on the importance of trauma exposure per se in autobiographical memory performance. As shown in Table 1, consistent across studies, individuals with PTSD or ASD were more overgeneral as compared with trauma-exposed individuals without PTSD or ASD. Further, degree of trauma exposure was not strongly associated with overgenerality in McNally and colleagues' (1994) study; unfortunately, correlations between event severity and overgenerality were not reported in the other studies (Harvey et al., 1998; Kangas et al., 2005; McNally et al., 1995). Also noteworthy, these studies highlight the connection between the psychological response to adult trauma and overgeneral memory, suggesting that theories emphasizing childhood events in overgenerality may be too limited (e.g., J. M. G. Williams, 1996); however, information about childhood events was not reported. Although these studies represent some of the best controlled quasi-experimental studies examining the role of trauma in overgenerality, one limitation across all four studies was the absence of a comparison group without a history of trauma exposure. This comparison group is needed to clearly implicate posttraumatic symptoms over trauma exposure. In addition, future studies with individuals who meet criteria for PTSD should compare those with and without comorbid MDD, rather than solely controlling for severity of depression, in order to conclusively implicate PTSD in overgenerality above effects of comorbid MDD.

Overgenerality and Potentially Traumatic Events in MDD

The vast majority of overgenerality studies to date have focused on autobiographical memory functioning in depression. Across these studies, individuals with MDD tend to exhibit overgenerality at higher rates than those without MDD (for reviews, see van Vreeswijk & de Wilde, 2004; J. M. G. Williams, 1996). A subset of the studies assessed exposure to potentially traumatic events in addition to depression to examine the role, if any, that such events play in the relationship between depression and overgenerality. Studies in this area have been widely

cited as key evidence for a relationship between trauma exposure and overgenerality (e.g., de Decker et al., 2003; Henderson et al., 2002; Stokes, Dritschel, & Bekerian, 2004; J. M. G. Williams, 1996). These studies vary greatly in important aspects of their assessment of potentially traumatic events. In particular, whereas some studies focused on individuals' responses following such events (e.g., PTSD), others solely assessed characteristics of an event (e.g., event type or severity). Below, we first examine studies that focus on posttraumatic responses and then move our attention to studies emphasizing characteristics of the events themselves.

Consistent with the PTSD studies, studies examining posttraumatic responses and overgenerality in individuals with depression show an association between higher levels of overgenerality and PTSD-like reactions, such as intrusive memories or avoidance of reminders of potentially traumatic events. In the first of these studies, Kuyken and Brewin (1995) assessed abuse history in a group of women with depression. Women with both depression and a history of childhood sexual abuse (CSA) retrieved more general memories as compared with women with depression but no CSA history. In addition, overgenerality was associated with avoidance of reminders of the abuse but was not strongly associated with depression severity, suggesting that abuse history and/or avoidance of distressing memories may contribute to overgenerality. In a correlational study, Brewin, Reynolds, and Tata (1999) found that the number of general memories retrieved was associated with intrusive memories of potentially traumatic events in men and women with depression, even after controlling for depression severity. Individuals with PTSD were excluded, allowing for the examination of depression status and intrusive memories in the absence of PTSD diagnosis.

These studies suggest that subclinical posttraumatic reactions make a greater contribution to overgenerality than depression severity but say little about the effects of event exposure alone. Unfortunately, neither of these studies included controls for MDD diagnostic status or history of depressive episodes, a practice more consistent with the extant literature (see Brittlebank et al., 1993; Kuyken & Brewin, 1995; J. M. G. Williams, 1996). Accordingly, it is unclear whether MDD could account for the relationship between posttraumatic symptoms and overgenerality. In a third, well-controlled study, Brewin and colleagues compared overgenerality in patients with cancer, both with and without depression (Brewin, Watson, McCarthy, Hyman, & Dayson, 1998). Individuals with PTSD were excluded. Patients with cancer who exhibited severe depression reported more general memories as compared with those without depression, and avoidance of distressing memories was associated with overgenerality. Overgenerality was related to avoidance and depression rather than exposure to potentially traumatic events *per se*. Across these studies and consistent with the above PTSD studies, posttraumatic symptomatology (such as intrusions or avoidance), not necessarily exposure to potentially traumatic events, was associated with overgenerality in individuals with depression.

One exception to this pattern associating postevent symptoms and overgenerality in MDD is a small ($n = 18$) correlational study by Hermans and colleagues (2004). This study explored associations between overgenerality and potentially traumatic events in individuals with depression, with both characteristics of the event (e.g., severity) and severity of postevent reactions assessed. Partially consistent with the trauma hypothesis of overgenerality, severity of past physical abuse was associated with fewer specific memories, while other event types (e.g., sexual abuse) were not strongly associated with specificity. Contrary to expectations, intrusive memories were associated with greater autobiographical memory specificity rather than overgenerality. Differences in instructional set may account for these discrepant findings. Specifically, Brewin and colleagues (Brewin et al., 1999; Kuyken & Brewin, 1995) instructed participants to answer questions on the Impact of Events Scale (IES; Horowitz, Wilner, & Alvarez, 1979), a measure of posttraumatic intrusions and avoidance, about a specified event, whereas in the Hermans et al. study, no link between specific event exposure and IES symptoms

was made. Without this crucial link between symptoms and a particular event, the IES may not be a solid assessment of posttraumatic stress and may instead be measuring general tendencies to experience avoidance and intrusive thoughts. If this latter study is disregarded, the above studies suggest that both posttraumatic stress or postevent response and depression are implicated in overgenerality.

Results of studies focusing on characteristics of events (e.g., event severity) rather than posttraumatic stress reactions are more varied. These studies addressed the question of whether degree of exposure to potentially traumatic events, as opposed to intrusions or avoidance, is associated with overgenerality in depression. All of these studies focused on childhood events; no inquiries were undertaken about adult event exposure or symptoms following adult events. In a correlational study, Wessel and colleagues (Wessel, Meeren, Peeters, Arntz, & Merckelbach, 2001) examined the association among overgenerality and depression, anxiety disorders, and childhood events in psychiatric outpatients and controls. In order to examine event exposure, the authors excluded individuals meeting diagnostic criteria for PTSD. In addition, depression diagnostic status rather than depression severity was controlled. In multiple regression analyses, severity of childhood stressful life events did not explain a significant portion of the variance in specificity above that explained by depression status. The authors highlighted the importance of MDD diagnosis rather than severity of potentially traumatic events in overgenerality. In another correlational study, Peeters and colleagues (2002) provided additional evidence that the experience of potentially traumatic events in childhood is not crucial to the relationship between MDD and overgenerality. In this prospective study of individuals with depression, childhood event severity was associated with greater specificity, not generality, to negative cues at baseline; however, specificity at 7-month follow-up was not significantly associated with trauma severity.

In contrast, Burnside and colleagues (2004) reported an association between CSA characteristics and overgenerality. Women with both a history of CSA and past major depressive episodes were compared with women with a history of CSA but without past depressive episodes. None met criteria for current depressive episode, and PTSD was not assessed. In stark contrast with prior studies, sexually abused women with a history of depressive episodes retrieved fewer, rather than more, categorical memories than those who had never experienced a depressive episode. On the basis of the idea that categorical retrieval is a protective mechanism in trauma-exposed individuals (J. M. G. Williams, 1996), the authors suggested that overgenerality was greater in women without past depressive episodes because their overgeneral style protected them from depression. However, this notion contradicts studies suggesting that overgenerality increases vulnerability to psychopathology (e.g., Harvey et al., 1998; Peeters et al., 2002; van Minnen et al., 2005). In correlational analyses, increased categorical retrieval was associated with earlier age of onset and greater duration of CSA. These results are difficult to reconcile and are inconsistent with the larger overgenerality literature. The authors suggested that the findings may indicate that overgenerality fluctuates with the occurrence of depressive episodes and therefore the individuals with past depression may be more overgeneral during depressive episodes. The authors cited use of retrospective reports of depression and absence of a control group without CSA as important limitations. In addition, current depression severity rather than past depressive episodes was controlled for in the analyses, a practice difficult to justify given that participants were not depressed at the time of the study. The lack of thorough controls for PTSD also obscures the interpretation of the results.

Unfortunately, studies in this area vary widely in their assessment of key constructs, particularly with respect to their focus on psychological responses to events or the events themselves. Overall, for those studies that examined responses in depressed samples, findings are consistent with an association between postevent stress and overgenerality. As shown in Table 1, three of the four studies assessing posttraumatic symptoms found an association with

overgenerality (Brewin et al., 1998, 1999; Kuyken & Brewin, 1995). The contradictory findings from the fourth study (Hermans et al., 2004) are likely due to the limitations in their methods discussed above. On the other hand, studies investigating the relationship between event severity and overgenerality in depression are less instructive. Only two of the four studies that examined characteristics of potentially traumatic events reported an association between event characteristics and overgenerality (Burnside et al., 2004; Hermans et al., 2004). In addition, four of the seven depression studies focused particularly on events occurring in childhood (Burnside et al., 2004; Kuyken & Brewin, 1995; Peeters et al., 2002; Wessel et al., 2001). Two of these studies (Burnside et al., 2004; Kuyken & Brewin, 1995) reported an association between childhood stressful life events and overgenerality; the remaining two did not (Peeters et al., 2002; Wessel et al., 2001). It is notable that the studies by Burnside et al. and Hermans et al., which have serious limitations to their methods, provide the majority of evidence for the trauma hypothesis among studies of depression and overgenerality. Therefore, the overall pattern of results is much more consistent with an association between overgenerality and posttraumatic responses but not trauma exposure per se. In addition, results are difficult to reconcile with versions of the trauma hypothesis that focus particularly on childhood events (e.g., Burnside et al., 2004; de Decker et al., 2003; Henderson et al., 2002; Kuyken & Brewin, 1995; Stokes et al., 2004; J. M. G. Williams, 1996). If childhood adverse events are indeed a key factor in the development of overgenerality, these studies should show a strong and consistent pattern of results.

Overgenerality in Samples Selected on the Basis of Exposure to Potentially Traumatic Events

Eight studies investigated the relationship between potentially traumatic events and overgenerality by selecting samples primarily on the basis of event exposure rather than specific forms of psychopathology. Two of these studies examined overgenerality and potentially traumatic events in mixed clinical samples (de Decker et al., 2003; Wessel, Merckelbach, & Dekker, 2002), whereas the others focused on memory performance and potentially traumatic events in nonclinical samples in which psychiatric diagnoses were not assessed (Henderson et al., 2002; Nilsson-Ihrfelt et al., 2004; Raes et al., 2005; Stokes et al., 2004; van Minnen et al., 2005; Willebrand et al., 2002). Below, we first review studies with mixed psychiatric samples, followed by a review of the nonclinical studies. Whereas the previous studies reviewed are poised to address questions about factors that account for relationships between MDD or PTSD and autobiographical memory, this group of studies examines the importance of exposure to potentially traumatic events in broader samples.

In mixed psychiatric samples, results were consistent with greater overgenerality in individuals with psychopathology. First, Wessel and colleagues (2002) compared autobiographical memory specificity in a mixed psychiatric sample of trauma survivors with a healthy control sample exposed to similar events. All participants had endured war atrocities as children. Consistent with previous studies, psychiatric patients retrieved fewer specific memories on a written version of the AMT as compared with controls, with intrusion and avoidance scores on the IES predicting reduced specificity following negative cues. Depression severity was not strongly associated with specificity, and the relationship between MDD status and overgenerality was not reported. The authors concluded that exposure to childhood trauma alone did not explain their overgenerality findings, but they cautioned that the psychiatric group may have endured more severe or repeated atrocities, though this was not assessed. The second mixed psychiatric study examined the relationship among reactions to potentially traumatic events (as measured by the IES), characteristics of events, and overgenerality in a small sample of adolescents in an inpatient setting (de Decker et al., 2003). In this correlational study, greater event severity was associated with reduced specificity, whereas posttraumatic symptoms and

depression severity were not strongly associated with autobiographical memory specificity. Again, depression diagnostic status was not reported.

Both of these mixed psychiatric studies suffer from a number of problems that potentially limit their relevance. Most important, in both studies, the IES was not anchored to a particular event, making the IES less a measure of posttraumatic reactions than a measure of intrusive thoughts, avoidance, and general experience of stressful events. In addition, as mentioned above with studies of MDD and PTSD samples, depression diagnostic status was not reported. Given that mixed psychiatric samples are likely to include many individuals with MDD, overgenerality effects in these studies may be limited to the subset of individuals with current or past MDD. What these two studies have in common is evidence suggesting that overgenerality is greater when psychopathology and potentially traumatic events coexist. However, regarding the relative importance of event severity versus intrusion and avoidance symptoms, results are inconclusive.

Within nonclinical samples, we identified six studies examining individuals with and without exposure to potentially traumatic events, with contrasting results. Four of these studies suggest a relationship between event characteristics and overgenerality. First, Henderson and colleagues (2002) found that women with a history of CSA provided fewer specific responses on a written AMT as compared with those without CSA, with more severe abuse yielding less specificity. Furthermore, in individuals with CSA, posttraumatic symptoms (as measured by the IES) were not strongly associated with autobiographical memory specificity, arguing against the role of these symptoms. However, because the CSA group reported low IES scores overall, the authors urged caution in interpreting this finding. In addition, participants were given the written AMT to be completed at home and returned later in a sealed envelope, leaving the potential for wide variability in the amount of time spent on the AMT and in response latency. The second study (Nilsson-Ihrfelt et al., 2004) using a nonclinical sample compared AMT specificity in women who had recovered from breast cancer and women without a history of breast cancer. Former breast cancer patients retrieved fewer specific memories as compared with controls. Neither depression severity nor cancer-related intrusions or avoidance were associated with specificity. This study implicates potentially traumatic events rather than posttraumatic stress or depression severity in overgenerality. Notable limitations of the study include a lack of assessment of depression diagnostic status and administration of the AMT via telephone, a method that has not been established or compared with the in-person AMT.

In a third, primarily correlational study, Raes and colleagues (2005) divided a sample of undergraduate women into low- and high-specificity groups and, 1 month later, administered the AMT and a measure of potentially traumatic events (e.g., emotional, physical, and sexual abuse). Only 36% of individuals in the low-specificity group reported abuse of any type, suggesting that trauma exposure may not be a necessary factor in reduced specificity. In this low-specificity group, emotional abuse was associated with reduced specificity, and across specificity groups, individuals who had experienced emotional abuse were less specific than those who did not report emotional abuse. It is important to note that other types of events occurred at low frequency in the sample and were not strongly associated with specificity scores. Depression severity was also not strongly associated with AMT performance, and posttraumatic stress was not assessed. This study is partially consistent with the idea that negative experiences promote overgenerality; however, the relatively low rate of reported abuse among low-specificity individuals is difficult to reconcile with the hypothesis that trauma exposure represents the primary pathway to overgenerality. In a fourth study, Stokes and colleagues (2004) compared overgenerality in a small sample of adolescents with and without a past burn injury. Consistent with the above studies, individuals with a history of burn injury were less specific on the AMT than controls. Inconsistent with Henderson et al. (2002) and

Nilsson-Ihrfelt et al. (2004) but consistent with the larger literature, posttraumatic avoidance (as measured by the IES) was associated with specificity.

Of the remaining two studies with nonclinical participants, one did not find evidence consistent with a link between overgenerality and potentially traumatic events, and the other prospectively examined the role of overgenerality in the development of depression after a stressful life event. Willebrand and colleagues (2002) investigated the effects of past burn injury on autobiographical memory in adults. Participants with prior burn injury and matched controls without burn injury did not differ on proportion of specific memories retrieved. Neither event severity, posttraumatic stress, nor depressive symptoms were crucial in overgenerality. Depression diagnostic status was not assessed. Second, in a prospective study, van Minnen and colleagues (2005) investigated the role of overgenerality in the development of depression following a stressful life event. All participants had recently experienced a failed in vitro fertilization treatment. Reduced specificity prior to treatment was associated with a greater increase in symptoms of depression and anxiety following news of failed treatment. This study suggested that overgenerality might increase vulnerability to depression and anxiety following an event rather than implicating such events in the development of overgenerality. However, it is questionable whether failed in vitro fertilization meets the *DSM-IV-TR* definition of *trauma*, and it is unclear whether events that more clearly meet the Criteria A definition of trauma would lead to similar findings.

Overall, studies that used event-focused sampling are equivocal in their findings and inconsistent in their methods. As conveyed in Table 1, five of the eight studies (de Decker et al., 2003; Henderson et al., 2002; Nilsson-Ihrfelt et al., 2004; Raes et al., 2005; Stokes et al., 2004) suggest an association between potentially traumatic event exposure and overgenerality, with one other study (van Minnen et al., 2005) pointing toward overgenerality as preceding stressful events rather than resulting from them. However, most of these studies are beset by strong limitations in their methods that obscure detection of whether trauma per se is the critical factor or whether extraneous variables account for the results (de Decker et al., 2003; Henderson et al., 2002; Raes et al., 2005; Stokes et al., 2004). First, none of these studies report depression diagnostic status, an established factor associated with overgenerality. Second, Stokes et al. (2004) found evidence of an association with posttraumatic symptoms, potentially accounting for the relationship between trauma and overgenerality. Third, two of the studies (de Decker et al., 2003; Raes et al., 2005) used a version of the Traumatic Experiences Checklist (Nijenhuis, Van der Hart, & Vanderlinden, 1999), a measure assessing a broad scope of negative events, including those that are consistent with *trauma* as defined by *DSM-IV-TR* Criterion A1 (e.g., serious bodily injury, sexual abuse) and those that are less consistent with this definition (e.g., divorce, sexual harassment). Therefore, these results may reflect the impact of negative events in general rather than potentially traumatic events in particular. Overall, although they highlight potentially important features of childhood and adult events that may affect overgenerality, these studies are inconclusive, as alternative interpretations based on depression diagnosis remain viable.

Of the six studies assessing posttraumatic symptoms, two used the IES and did not link symptoms to specific events (de Decker et al., 2003; Wessel et al., 2002). Of the remaining four studies, one (Stokes et al., 2004) found a strong association between posttraumatic symptoms and overgenerality, whereas the remaining three (Henderson et al., 2002; Nilsson-Ihrfelt et al., 2004; Willebrand et al., 2002) did not. These results are inconsistent with those of overgenerality studies examining individuals with PTSD or ASD (Harvey et al., 1998; Kangas et al., 2005; McNally et al., 1994, 1995), all of which found greater overgenerality in individuals with PTSD or ASD versus trauma-exposed controls. The inconsistency in these findings may indicate that nonclinical and mixed psychiatric samples are not well suited for the study of overgenerality. It may be that overgenerality is a clinical phenomenon limited to

specific psychiatric diagnostic groups such as those with MDD or PTSD (e.g., Watkins & Teasdale, 2001; Watkins, Teasdale, & Williams, 2000). If characteristics of potentially traumatic events indeed stimulate the development of an overgeneral retrieval style, one might expect to find clear associations between overgenerality and event characteristics regardless of clinical status. However, this is not the case with the above studies.

Overgenerality and Potentially Traumatic Events in Other Clinical Groups

If trauma is indeed a critical factor in the development of overgenerality, individuals with clinical diagnoses characterized by high rates of exposure to potentially traumatic events other than PTSD or MDD would also be expected to evidence overgeneral memories. In this section, we review studies investigating exposure to potentially traumatic events and overgenerality in borderline personality disorder (BPD), eating disorders, and schizophrenia.

BPD is often associated with exposure to potentially traumatic events, PTSD, and depression (e.g., Goodman & Yehuda, 2002; Yen et al., 2002), making it a promising avenue to explore the relationship between trauma and autobiographical memory overgenerality (Arntz, Meeren, & Wessel, 2002; Kremers, Spinhoven, & Van der Does, 2004; Renneberg, Theobald, Nobs, & Weisbrod, 2005). In individuals with BPD, Arntz et al. (2002), Kremers et al. (2004), and Renneberg et al. (2005) found evidence that overgenerality is associated with the presence of MDD, not BPD. First, in a well-designed correlational study, Arntz and colleagues (2002) evaluated overgenerality using a written AMT in individuals with primary diagnoses of MDD, anxiety disorder, BPD, and other personality disorders. Of interest, only the diagnosis of depression predicted lower specificity; neither potentially traumatic childhood events, childhood sexual abuse specifically, nor PTSD or BPD predicted AMT specificity. In the second study, Kremers and colleagues (2004) compared specificity in individuals with BPD with and without MDD, individuals with MDD without BPD, and healthy controls. Participants with MDD and those with both BPD and MDD were less specific than controls, but nondepressed individuals with BPD were not. Similar to the first study, although depression diagnosis was related to specificity, depression severity, potentially traumatic childhood events, dissociation, PTSD diagnosis, and intrusions and avoidance (as measured by the IES) were not. The results of this study are particularly compelling in light of the use of important control groups, structured diagnostic interviews to assess MDD, PTSD, and BPD, adequate sample size, and inclusion of a variety of factors shown to be important in overgenerality. In a third study, Renneberg and colleagues (2005) compared overgenerality in psychiatric inpatients with MDD, in-patients with BPD, and controls. Whereas the MDD group retrieved significantly fewer specific memories and more categorical memories than controls, the BPD group did not differ significantly from controls on either measure of overgenerality. In contrast with the findings of Kremers et al., a subsequent analysis dividing the BPD group into those with and those without current MDD failed to find a significant difference in specificity. Individuals with BPD and PTSD and those without PTSD also did not differ in specificity. Like Kremers et al., Renneberg et al. used structured interviews to assess MDD, PTSD, and BPD; included important controls; and assessed numerous factors that are important to overgenerality, further bolstering the results.

The three studies examining overgenerality, potentially traumatic events, and reactions to such events in patients with BPD suggest that depression diagnosis, but not childhood events or PTSD, is associated with autobiographical memory overgenerality. However, these studies are inconsistent with previous studies that found an overgenerality effect in PTSD (McNally et al., 1994, 1995). This discrepancy may suggest that PTSD diagnosis is less important to overgenerality in individuals with BPD; alternatively, because PTSD studies to date have controlled for depression severity rather than diagnostic status (Harvey et al., 1998; Kangas et

al., 2005; McNally et al., 1994), it is also possible that MDD diagnosis could account for overgenerality in PTSD.

However, there are limitations in the methods of these studies that should be noted, and it would be premature to base strong conclusions about factors affecting overgenerality on the results of these studies. Arntz et al. (2002) used a correlational design, and the sample size was low, with presumably only a small subset of these individuals meeting criteria for PTSD, as the actual number was not specified. Sample size was also somewhat low in the study by Renneberg et al. (2005), particularly for follow-up analyses comparing women with BPD with and without MDD or PTSD. In the study by Kremers et al. (2004), event and postevent stress reaction measures were not given to participants in the depression-only group, leaving open the possibility that event exposure or posttraumatic stress reactions led to the group difference between individuals with and without depression. Kremers et al. also assessed posttraumatic stress reactions only for childhood events.

Still, the results of these studies are difficult to reconcile with the trauma hypothesis of overgenerality. Individuals with BPD have high rates of childhood trauma (e.g., Goodman & Yehuda, 2002; Yen et al., 2002), PTSD (McGlashan et al., 2000; Yen et al., 2002; Zanarini et al., 1998), and depression (McGlashan et al., 2000; Zanarini et al., 1998), suggesting that if traumatic events, particularly childhood events, are crucial to overgenerality, overgenerality should most likely be evident in BPD. However, studies to date have failed to demonstrate a strong relationship between overgenerality and BPD; in addition, Kremers et al. (2004) did not find evidence of a strong relationship between trauma and overgenerality within a BPD sample. Nevertheless, future work is needed in this area before strong conclusions can be drawn.

As with BPD, individuals with eating disorders often report exposure to potentially traumatic events (e.g., Dalgleish et al., 2003). Therefore, if such events are crucial to overgenerality, one would expect to observe overgenerality in individuals with eating disorders that is associated with event exposure. In a study by Dalgleish and colleagues (2003), AMT responses of individuals with current eating disorders were more general than those of healthy controls, and history of child abuse was associated with overgenerality. However, no significant association between childhood abuse and overgenerality was found in the control group, although there was a trend toward an association in the opposite direction between abuse and less general memories. Assessment of potentially traumatic events was limited to childhood events perpetrated by a primary caregiver. PTSD and MDD were not assessed; therefore, it may be that participants with a more severe abuse history were overgeneral owing to comorbid PTSD or that overgenerality findings in individuals with eating disorders were due to comorbid depression.

Whereas studies of BPD and eating disorders examined childhood events and overgenerality, a study by Harrison and Fowler (2004) examined associations among avoidance of psychosis/hospitalization memories (as measured by the IES), overgenerality, and negative symptoms in individuals with schizophrenia recovering from acute psychosis. Negative symptoms were associated with reduced specificity and with greater avoidance. However, no direct association between avoidance and overgenerality was found, and correlations between intrusions and overgenerality were not reported. Like many researchers, the authors assumed that the events were experienced as traumatic; however, it is likely that some individuals who endure such events do not experience them according to the *DSM—IV—TR* Criteria A definition of *trauma*. In addition, scores on the IES were low overall, suggesting that psychosis and hospitalization may be unlikely to produce extreme postevent reactions consistent with PTSD. This issue of how trauma is defined potentially obscures the relationships among these events, posttraumatic reactions, and overgenerality.

Whereas the trauma hypothesis of overgenerality would suggest that exposure to potentially traumatic events is implicated in overgenerality across clinical diagnoses, studies of clinical groups other than those with PTSD or MDD suggest that this is not the case. As shown in Table 1, traumatic events were not strongly predictive of overgenerality in BPD (Arntz et al., 2002; Kremers et al., 2004; Renneberg et al., 2005), and across studies of BPD, eating disorders, and schizophrenia, researchers did not find evidence for an association with posttraumatic reactions (Arntz et al., 2002; Dalgleish et al., 2003; Harrison & Fowler, 2004; Kremers et al., 2004; Renneberg et al., 2005). Only in the study of individuals with eating disorders were event characteristics associated with overgenerality (Dalgleish et al., 2003); however, in this study, a trend in the opposite direction, with abuse associated with less general memories, was evident in the control group. The trauma hypothesis of overgenerality would predict a strong and consistent association between trauma exposure and overgeneral retrieval, particularly within clinical groups characterized by high levels of trauma (e.g., BPD, eating disorders; Dalgleish et al., 2003; Goodman & Yehuda, 2002; Yen et al., 2002). Overall, these studies are more consistent with overgenerality as a clinical phenomenon limited to particular diagnostic groups (e.g., PTSD, MDD) rather than one associated with exposure to potentially traumatic events across individuals.

Inconsistencies in the Literature

As discussed in greater detail below, the pattern of results across the studies reviewed casts doubt on theoretical accounts of overgenerality that focus on the role of traumatic or potentially traumatic events, particularly childhood events. Overall, our understanding of overgenerality and exposure to potentially traumatic events is growing rapidly; however, inconsistencies are prominent and many areas remain unexplored. Limitations in the literature include a number of critical study design and conceptualization factors. In particular, we highlight the importance of variations in assessment of potentially traumatic events, assessment of depression, and use of the AMT as well as issues with comparison groups as important limitations to many of the studies included in this review.

Assessment of Events and Posttraumatic or Postevent Stress

One important factor that varies across this literature involves the question of how to define and measure “trauma exposure.” In the current literature, studies often fail to distinguish between characteristics of events themselves and individuals’ reactions following such events (e.g., posttraumatic stress). Even more crucial, studies also often fail to differentiate between “trauma” and “potentially traumatic events.” Furthermore, given the focus on childhood events, many studies to date have limited their examination of events to childhood; however, adult events may be equally important. Finally, many studies have used the IES to measure posttraumatic symptoms, and variations in the use of this measure may lead to divergent findings.

Event characteristics versus posttraumatic stress—Research on potentially traumatic events and overgenerality varies in whether characteristics of the event (e.g., severity, age when event occurred) or characteristics of an individual’s subsequent response to the event (e.g., intrusion and avoidance symptoms) are treated as the critical element in altering autobiographical memory processes. Studies that focus on event characteristics allow for the investigation of differences between individuals who have and those who have not experienced these events; unfortunately, posttraumatic stress reactions are often not assessed, making it difficult to discern whether effects are due to event characteristics or to undetected posttraumatic reactions. Conversely, by focusing on event-related symptoms, researchers examine the association between overgenerality and posttraumatic stress rather than the effects of event characteristics per se.

Of the 24 studies reviewed here (see Table 1), 5 focus primarily on characteristics of potentially traumatic events, 11 on posttraumatic symptoms, and 8 on a combination of these factors. If the 3 studies in which the IES was not tied to particular events are excluded (de Decker et al., 2003; Hermans et al., 2004; Wessel et al., 2002), 9 of the 16 total studies (56%) that involved assessment of posttraumatic symptoms found evidence of an association between intrusions and/or avoidance and AMT performance, and 7 of the 13 studies (50%) examining event characteristics found evidence associating these characteristics and overgenerality. On both fronts, the pattern of results is not conclusive, highlighting the need for additional well-controlled studies.

It may be that overgenerality is subject to a threshold effect, meaning that overgenerality is associated with posttraumatic stress once severity of traumatic events or severity of intrusions or avoidance exceeds a certain threshold. Because more severe events, particularly ones with life threat or injury, are more likely to lead to posttraumatic symptoms (Brewin, Andrews, & Valentine, 2000; Kessler, Sonnega, Bromet, Hughes, & Nelson, 1995), a threshold effect would lead to inconsistencies in findings relating event severity and overgenerality, depending on the particular relationship between posttraumatic symptoms and events within the sample under study.

Use of the IES—As seen in Table 1, 9 of the 18 studies that assessed posttraumatic stress reactions relied on the original version of the IES (Horowitz et al., 1979). The original IES is a self-report measure of two clusters of posttraumatic symptoms: avoidance and intrusions. This measure does not assess the occurrence of a traumatic event, does not request that responses to the items be based on any particular event, and fails to assess hyperarousal or functional impairment, all of which are needed for a PTSD diagnosis (American Psychiatric Association, 2000). Three of the studies using the IES ostensibly examined posttraumatic symptoms without explicitly connecting these symptoms to a particular event (de Decker et al., 2003; Hermans et al., 2004; Wessel et al., 2002). Without a target event, it is unclear what the IES is measuring. Participants may be responding on the basis of the event that is the focus of the study, another traumatic or stressful event, numerous events taken together, or general tendencies to have intrusive thoughts and avoid situations. In depressed samples, studies in which the IES was linked to an event consistently found an association between IES scores and overgenerality (Brewin et al., 1998, 1999; Kuyken & Brewin, 1995), whereas only a single study examining other clinical and nonclinical samples found evidence for a strong relationship between these factors (Stokes et al., 2004). This pattern of results is consistent with a conceptualization of overgenerality as a phenomenon limited to particular clinical groups (i.e., MDD, PTSD) rather than dependent on exposure to potentially traumatic events.

Measurement of traumatic events and PTSD symptoms using structured or semistructured interviews rather than brief self-report measures such as the IES may be more precise, allowing for the use of clinical judgment and flexibility (Foa, Cashman, Jaycox, & Perry, 1997). For example, depressed individuals may respond to self-report measures like the IES differently, perhaps confusing rumination about events with intrusive thoughts and failing to link general symptoms such as concentration problems to the traumatic event. If this is the case, these measures are potentially capturing a different clinical phenomenon in depressed and nondepressed individuals. Few of the reviewed studies examining overgenerality in MDD used interview measures to assess posttraumatic stress reactions (Brewin et al., 1998, 1999). Fortunately, as noted above, studies examining samples with PTSD, ASD, and BPD used solid interview measures to establish diagnoses (Arntz et al., 2002; Harvey et al., 1998; Kangas et al., 2005; Kremers et al., 2004; McNally et al., 1994, 1995; Renneberg et al., 2005). These studies provide consistent evidence that depression and/or posttraumatic stress disorder, not trauma exposure, is associated with overgenerality.

Traumatic versus potentially traumatic events—As mentioned above, many studies discuss the effects of purported trauma without explicitly assessing whether events are subjectively experienced with intense fear, horror, or helplessness (*DSM—IV—TR* Criterion A2). The inclusion of both A1 and A2 criteria is useful in that it does not assume that an event is traumatic on the basis of the event alone but instead incorporates one's experience of the event as extremely distressing in determining whether it is traumatic. Many of the studies reviewed, however, report no assessment of subjective response during the events and assume the event was perceived as traumatic. Only studies of PTSD or ASD (Harvey et al., 1998; Kangas et al., 2005; McNally et al., 1994, 1995) and BPD (Arntz et al., 2002; Kremers et al., 2004; Renneberg et al., 2005) used solid interview measures that included assessment of objective and subjective aspects of trauma. Consistent across studies of PTSD or ASD individuals with these disorders were more overgeneral than trauma-exposed individuals without PTSD or ASD, providing evidence that posttraumatic stress disorders, not trauma exposure, are associated with overgenerality.

However, an opposite pattern appears among the three studies of individuals with BPD. None of these studies found evidence suggesting a relationship between overgenerality and PTSD or trauma exposure in individuals with BPD, and all used strong interview measures to assess PTSD and exposure to potentially traumatic childhood events. The lack of comprehensive assessment and the inconsistent definitions of trauma in studies of other clinical and nonclinical populations may partially account for inconsistencies in their results. Furthermore, many studies also did not utilize standardized assessments of A1 criteria (e.g., Brewin et al., 1998; Burnside et al., 2004; de Decker et al., 2003; Harrison & Fowler, 2004; Hermans et al., 2004; Peeters et al., 2002; Raes et al., 2005; van Minnen et al., 2005; Wessel et al., 2001). In order to investigate questions related to trauma, it would be useful for researchers to use a consistent definition of *trauma* and limit participant selection to individuals who have clearly experienced a traumatic event with both objective (A1) and subjective (A2) components.

Trauma in childhood versus adulthood—Another potentially useful factor to consider is the examination of childhood versus adulthood events. Because theory on the development of overgenerality implicates childhood experiences (J. M. G. Williams, 1996), interest in potentially traumatic events during childhood in connection with overgenerality has flourished. Indeed, many of the studies reviewed here focused on childhood events, whereas adult exposure to potentially traumatic events is often overlooked. As shown in Table 1, of the 24 studies reviewed, 9 reported on adverse childhood events only and 7 on adulthood events only. Of the 8 studies that included some assessment of both child- and adulthood events, 3 focused almost exclusively on childhood events (Hermans et al., 2004; Raes et al., 2005; Wessel et al., 2002) and only 3 reported results from both adult- and childhood events (Arntz et al., 2002; Brewin et al., 1999; Renneberg et al., 2005). None reported direct comparisons between child- and adulthood events or reactions to such events in overgenerality, and few included thorough, detailed assessment of events occurring in childhood.

Results of studies assessing potentially traumatic childhood events do not support a strong, central role of such events or related posttraumatic reactions in overgenerality. Of the 12 studies including assessment of exposure to potentially traumatic events in childhood, only 7 (58%) found some support for an association with overgenerality. In 2 of these studies, findings were restricted to particular types of potentially traumatic events, with other event types not strongly associated with overgenerality (Hermans et al., 2004; Raes et al., 2005), and one study (Dalglish et al., 2003) found that childhood abuse in the control group was associated with more specific retrieval rather than overgenerality. Of the 7 studies assessing posttraumatic reactions to childhood events (excluding those in which the IES was not linked to a specific event), 3 (43%) found support for an association with overgenerality. Although conclusions remain tentative and additional well-controlled studies are needed, these findings cast doubt

on the importance of childhood trauma in overgenerality. If childhood trauma is indeed crucial to overgenerality development, findings should more strongly and consistently support this association. However, this is not the case with the above studies.

Conclusions made about the relationship between potentially traumatic events and overgenerality on the basis of childhood events alone often rely on the assumption that either (a) childhood and adulthood events tend not to coexist or (b) in the presence of childhood adversity, adulthood experiences are not as important to overgenerality. Both assumptions are likely faulty, as individuals with prior trauma history, particularly a history of childhood abuse, are at greater risk for adult event exposure (e.g., Marx, Heidt, & Gold, 2005) and subsequent PTSD (e.g., Breslau, Davis, & Andreski, 1995; Brewin et al., 2000), and responses to adult trauma are associated with overgenerality (Harvey et al., 1998; Kangas et al., 2005; McNally et al., 1994, 1995). Greater clarification of the relative importance of childhood trauma, adulthood trauma, and posttraumatic stress reactions in overgenerality will be achieved with thorough assessments of both child- and adulthood traumatic events and current posttraumatic stress reactions resulting from specific events. Only two of the studies in this review (Arntz et al., 2002; Renneberg et al., 2005) report this type of detailed assessment, and neither found evidence in support of an association between trauma and overgenerality.

Assessment of Depression: Diagnostic Status Versus Severity

Many of the studies reviewed here controlled for depression severity in their analyses (Brewin et al., 1999; Burnside et al., 2004; Harvey et al., 1998; Kangas et al., 2005; McNally et al., 1994). However, this practice may not be consistent with the emerging literature on the relationship between depression and overgenerality. Although the picture is not entirely clear, accumulating evidence suggests that the relationship between depression and overgenerality is predominantly accounted for by depression diagnostic status rather than severity. In fact, many conceptualize overgenerality as a trait rather than state phenomenon (Brittlebank et al., 1993; J. M. G. Williams, 1996; J. M. G. Williams & Dritschel, 1988).

Overgenerality may represent an underlying vulnerability factor for depressive episodes rather than a consequence of depressed mood. Specifically, overgenerality appears relatively stable over time, even as depressive episodes remit (Brittlebank et al., 1993; Peeters et al., 2002; J. M. G. Williams & Dritschel, 1988), and correlational analyses of currently depressed individuals typically do not find significant associations between AMT performance and depression severity (e.g., Hermans et al., 2004; Kuyken & Brewin, 1995; Peeters et al., 2002; Wessel et al., 2001; J. M. G. Williams & Dritschel, 1988). In addition, Watkins and Teasdale (2001, 2004) provided evidence of a “double dissociation” between factors affecting mood and AMT performance. Manipulation of analytical thinking style altered the retrieval of categorical memories but not depressed mood in individuals with depression, whereas manipulation of self-focused thinking impacted depressed mood but not memory performance (Watkins & Teasdale, 2001, 2004). Although these studies provide strong initial evidence that factors impacting depressed mood and overgenerality are distinct, other studies suggest that memory specificity can be altered by changes in mood (e.g., Brewin et al., 1998; MacCallum, McConkey, Bryant, & Barnier, 2000; Watkins et al., 2000). In a recent meta-analysis of overgenerality studies, van Vreeswijk and de Wilde (2004) suggested that depressed mood moderates the overgenerality effect. However, few of the individual studies included in the meta-analysis found strong associations between depression severity and overgenerality.

Because correlations between overgenerality and depression severity are not evident in the majority of studies and individuals with MDD continue to be overgeneral between depressive episodes, it seems that mood alterations associated with overgenerality, if present, are difficult to capture in individual studies. Therefore, controls for MDD status are important in overgenerality studies, and some inconsistencies in the results across studies may arise because

many researchers neglected to assess or control for the presence of MDD. Only 5 of the 24 studies reviewed here rigorously controlled for MDD diagnosis. All 5 of these studies point to the importance of MDD diagnosis over trauma exposure in autobiographical memory overgenerality (Arntz et al., 2002; Brewin et al., 1998; Kremers et al., 2004; Renneberg et al., 2005; Wessel et al., 2001).

In addition, a great deal of variation exists in measures used to assess depression severity (see Table 1), a factor that may impact whether strong associations with overgenerality are found. According to research by Dalgleish, Spinks, Yiend, and Kuyken (2001), somatic symptoms of depression (e.g., hypersomnia) rather than cognitive symptoms (e.g., thoughts of guilt, failure, disappointment) may be associated with overgenerality, explaining why the Beck Depression Inventory (Beck, Rush, Shaw, & Emery, 1979), a self-report measure assessing more cognitive symptoms, often is not associated with overgenerality. Dalgleish et al. (2001) found that an interview measure that included more somatic symptoms was associated with overgenerality in individuals with seasonal affective disorder whereas the Beck Depression Inventory was not. Of the studies reviewed here, only four used measures focusing on more somatic symptoms (Hermans et al., 2004; Peeters et al., 2002; Wessel et al., 2001; Renneberg et al., 2005). Using this type of measure, Peeters et al. (2002) found an association between depression severity and overgenerality whereas the other studies did not. In fact, Wessel et al. (2001) found that depression diagnostic status predicted overgenerality even when severity scores were controlled. On the basis of these studies, it appears the issue of cognitive versus somatic symptoms may be less important than that of self-report versus interview measures or other factors. In addition, studies by Watkins and Teasdale (2001, 2004) provide empirical evidence that rumination, a cognitive process associated with depression, contributes to overgenerality, suggesting that at least some cognitive aspects of depression may promote overgeneral retrieval. Still, the hypothesis that somatic symptoms are associated with overgenerality requires further assessment and has the potential to improve understanding of the relationship between overgenerality and depression.

Use of the AMT

Owing to our selection criteria, all studies included in this review used some version of the AMT (J. M. G. Williams & Broadbent, 1986); however, as shown in Table 1, there is substantial variation in the use of this measure across studies. Whereas the original AMT involves visual presentation of words and audio recording of responses for specificity coding, in some studies written versions were used (Arntz et al., 2002; Henderson et al., 2002; Peeters et al., 2002; Wessel et al., 2001, 2002), and in others AMT cues were presented audibly rather than or in addition to visually (de Decker et al., 2003; Hermans et al., 2004; Kremers et al., 2004; McNally et al., 1994, 1995; Raes et al., 2005; Willebrand et al., 2002). In addition, Nilsson-Ihrfelt et al. (2004) administered the AMT via telephone, and Stokes et al. (2004) did not report AMT presentation modality. When cues are presented audibly, the experimenter interprets the cues for the participant, potentially altering the meaning or emotionality of the cue (van Vreeswijk & de Wilde, 2004). Written and telephone versions of the AMT may introduce greater variability in maximum response latency and reduce the experimenter's ability to ensure that the participant understands the task. These variations have not been compared directly with the original AMT paradigm and may lead to divergent results (van Vreeswijk & de Wilde, 2004), with individuals potentially producing overgeneral responses owing to lack of task comprehension, or, alternatively, they may lead to greater impact of individual motivational or affective factors.

Perhaps most important, the measure of "overgenerality" varies across studies, with most studies reporting the number or proportion of specific responses as the dependent variable whereas others instead use the number or proportion of general or categorical responses. These

measures often are not functionally equivalent, depending in part on the handling of AMT cues for which the participant did not report a memory (van Vreeswijk & de Wilde, 2004). For each AMT cue, participants are typically given a set amount of time in which they can begin responding; when a participant does not respond within this time limit, the item is an omission—that is, the participant did not provide a scorable response. These omissions may be either removed from the scoring or considered overgeneral responses (van Vreeswijk & de Wilde, 2004). Either option may introduce systematic bias in overgenerality scoring depending on how omissions are conceptualized. Specifically, omissions may represent an extremely early truncation of memory retrieval (J. M. G. Williams, 1996); if this is the case, omissions are best considered overgeneral. Removing omissions from the scoring, then, would lead to an extraneous reduction in general responses or, in a proportional specificity score, to an artificial inflation of specificity. However, if omissions represent a separate type of response unrelated to overgenerality, then failing to remove omissions from scoring would lead to an extraneous reduction in specificity. It is unlikely that all omissions represent an overly general response. In addition, researchers comparing omissions between clinical and control groups typically do not find substantial group differences (e.g., Burnside et al., 2004; Stokes et al., 2004), whereas elevated omissions in clinical groups might be expected if they are indicative of overgenerality.

To minimize the latter type of scoring bias, some authors used proportional specificity scoring in which omissions are removed (Harvey et al., 1998; McNally et al., 1995); that is, the measure of specificity constitutes the number of specific memories divided by the total number of memories retrieved rather than by the total number of cues presented. Unfortunately, different scoring methods can lead to widely discrepant specificity scores. To take an extreme example, a participant who responded with a specific memory to 1 of 10 cues and did not respond to 8 cues would typically have a specificity score of 10% (1 of 10 cues); however, using the scoring method that removes omissions, the same participant would have a specificity score of 50% (1 of 2 memories). Despite the importance of this factor in AMT scoring, only a few of the studies reviewed here reported the handling of omissions (Burnside et al., 2004; Harrison & Fowler, 2004; Harvey et al., 1998; McNally et al., 1995; Stokes et al., 2004).

In addition, number and type of AMT words and maximum response time varied widely across studies. Word characteristics impact specificity, with words that more readily provoke mental images associated with more specific responses (J. M. G. Williams et al., 1996). Therefore, estimates of overgenerality may vary depending on the words used as cues. Finally, the maximum response time allowed after cue-word presentation varied between 30 s (Burnside et al., 2004; de Decker et al., 2003; Hermans et al., 2004; Willebrand et al., 2002) and 2 min (Arntz et al., 2002; Peeters et al., 2002; Wessel et al., 2001), with one exception: Henderson et al. (2002) provided an almost unlimited amount of time to respond by sending participants home with a written version of the AMT to be completed and returned. With enough time, even individuals with profound difficulty retrieving specific memories may produce specific responses, likely inflating estimates of specificity in studies with longer or unlimited response times (McNally et al., 1995; van Vreeswijk & de Wilde, 2004).

At this point, the extent to which this variation impacts results of overgenerality studies is unclear; however, it introduces variability in methods that likely obscures the detection of the relationships among overgenerality, psychopathology, and event-related factors. Clearly, AMT studies would benefit from the use of somewhat standardized AMTs and consistent reporting of results. Ideally, AMTs should include the following: positive and negative words matched on word imageability (J. M. G. Williams et al., 1996) and frequency of usage in the language of AMT administration (e.g., Francis & Kučera, 1982); scoring by blind coders; visual presentation of cues; audio-recorded, verbal responses to cues; and limited maximum response times. Also, in terms of standardized scoring, AMTs should report handling of omissions and,

because it is the most widely used measure of specificity, number or proportion of specific responses as a dependent variable.

Comparison Groups

In establishing whether traumatic events are essential to the overgenerality effect, the use of appropriate control groups is crucial. However, many of the studies reviewed here are either correlational in nature or limited by the exclusion of potentially valuable control groups. For example, on the basis of the literature to date (Harvey et al., 1998; Kangas et al., 2005; McNally et al., 1994, 1995), it appears that PTSD and ASD are associated with overgenerality and that individuals with these disorders are more overgeneral as compared with controls exposed to similar events. However, it is possible that the control groups with trauma exposure are still more overgeneral than individuals without trauma exposure. Without confirmation that trauma-exposed individuals without PTSD are more similar in overgenerality to individuals without trauma than to those with PTSD, we cannot conclude that posttraumatic stress symptoms and not trauma exposure alone lead to overgenerality. None of the studies examining ASD or PTSD used this crucial control. In a similar vein, comparisons of depressed samples with and without trauma exposure would provide more information if nondepressed samples without trauma exposure were included as a control group. Unfortunately, none of the overgenerality studies reviewed here compared these three groups (i.e., individuals with MDD and no trauma history, with MDD and trauma history, and with neither MDD nor trauma history). If individuals with MDD and no history of trauma exposure were to yield similar AMT performance to nondepressed controls, this would provide compelling evidence for the importance of trauma exposure over MDD in overgenerality.

Summary of Findings to Date

Overall, well-controlled studies of the association among trauma or potentially traumatic events, posttraumatic symptoms, and overgenerality are still needed, and therefore we cannot provide definitive conclusions based on the literature to date. However, the existing literature is not consistent with explanations of overgenerality that focus primarily on the occurrence of potentially traumatic events. In this review, we included only studies in which trauma was assessed; therefore, we are better poised to examine whether trauma is a sufficient factor, rather than a necessary factor, in overgenerality. Therefore, on the basis of the studies to date, it appears that trauma is most likely not sufficient to produce overgenerality. However, two recent studies, one not included in this review, further suggest that trauma is not necessary in overgenerality development (Drummond, Dritschel, Astell, O'Carrol, & Dalgleish, 2006; Raes et al., 2005). If trauma is indeed the crucial or primary factor leading to overgenerality development, the pattern of results across studies should be strongly and consistently in that direction; however, this is clearly not the case with the reviewed studies.

In light of this, the studies reviewed here suggest four important, albeit tentative, conclusions. First, and most relevant to this review, exposure to potentially traumatic events does not sufficiently account for overgeneral autobiographical memory effects. Second, studies of individuals with trauma-related psychological disorders (i.e., ASD, PTSD) suggest that posttraumatic symptoms, rather than trauma exposure per se, are associated with overgenerality. Third, studies examining depression diagnostic status suggest that MDD has a greater impact than characteristics of potentially traumatic events on autobiographical memory overgenerality. Fourth, and most tentative, inconsistent results across studies of childhood events and the presence of overgenerality in individuals with PTSD or ASD following adult trauma exposure suggest that the timing of these events within early development is not crucial for the development of overgenerality.

The pattern of results across studies included in this review cannot be easily reconciled with theories of overgenerality focused on the occurrence of traumatic events. These theories suggest that trauma exposure accounts for differences in overgenerality found between clinical samples and controls. However, this does not appear to be the case. If exposure to traumatic events is indeed crucial in the development of overgenerality, the pattern of results should be consistently and strongly in that direction. Across studies, results are equivocal regarding the importance of potentially traumatic events in overgenerality, calling into question the view that such events are a central or underlying mechanism in the development of overgenerality.

These conclusions are also consistent with the growing findings across the broader overgenerality literature. Whereas the overgenerality effect is an established phenomenon in depression (for reviews, see van Vreeswijk & de Wilde, 2004; J. M. G. Williams, 1996) and, to a lesser extent, in PTSD (McNally et al., 1994, 1995), overgenerality does not appear to be characteristic of BPD (Arntz et al., 2002; Kremers et al., 2004; Renneberg et al., 2005), obsessive—compulsive disorder (Wilhelm, McNally, Baer, & Florin, 1997), generalized anxiety disorder (Burke & Mathews, 1992), or social phobia (Rapee, McCallum, Melville, Ravenscroft, & Rodney, 1994). Two studies suggest that delusions (Kaney, Bowen-Jones, & Bentall, 1999) and eating disorders (Dalglish et al., 2003) may be associated with overgenerality; however, neither of these studies included thorough controls for depression diagnostic status, leaving it unclear whether comorbid depression could account for overgenerality. Taken together, the studies included in this review and the larger overgenerality literature point to the conclusion that factors specific to MDD and PTSD are likely responsible for overgenerality, and theories illuminating such factors are needed. Therefore, MDD- and PTSD-specific factors, rather than trauma exposure per se, are more likely the critical elements leading to the development of overgenerality. It is interesting to note that PTSD and depression share a great many features, including intrusions, problems sleeping, irritability, diminished concentration, a sense of foreshortened future or hopelessness, numbing or flat affect, and avoidance of or lack of interest in activities, and it is possible that any one or a combination of these may provide clues to causes of overgenerality.

Implications for Theories of Overgenerality

The trauma hypothesis of overgenerality is perhaps best exemplified by J. M. G. Williams's (1996) account of overgenerality, one of the most prominent theories to date explaining the development of overgeneral retrieval in depression. A key component of this theory is childhood trauma, and much of the literature to date has sought to understand whether this component is truly crucial to overgenerality. This review suggests that the experience or severity of such events alone does not have as strong a relationship with memory overgenerality as the trauma-based theories might predict. Therefore, alternative theories are needed to further elucidate the overgenerality effect. In the following section, we highlight a number of promising overgenerality theories. Specifically, we discuss theories focusing on cognitive resource allocation, emotion regulation, cognitive modes of processing, and overgenerality as a vulnerability factor, followed by discussion of potential modifications to J. M. G. Williams's (1996) theory.

Cognitive Resource Allocation

Resource allocation theories postulate that diminished cognitive resources may be responsible for difficulties retrieving specific memories (e.g., Brewin et al., 1999; Moses, Culpin, Lowe, & McWilliam, 2004; van Vreeswijk & de Wilde, 2004; J. M. G. Williams, 1996). Of note, in his trauma-focused theory, J. M. G. Williams (1996) suggested that diminished executive resources also impede efforts to move from categorical descriptions to specific memories. This group of theories suggests that effortful retrieval of specific memories is a cognitively costly and difficult task and that resource-consuming processes such as intrusions, avoidance or

suppression of thoughts or memories, and rumination interfere with this task (e.g., Brewin et al., 1999; van Vreeswijk & de Wilde, 2004). Indeed, intrusions and avoidance are common to depression and PTSD, and many of the studies reviewed report associations between autobiographical memory specificity and intrusions or avoidance (e.g., Brewin et al., 1999; Kuyken & Brewin, 1995; Stokes et al., 2004). Initial studies reporting overgenerality in individuals with known impairments in executive functioning, such as those with frontal lobe damage (W. H. Williams, Williams, & Ghadiali, 1998) and Alzheimer's disease (Moses et al., 2004), are consistent with this interpretation.

Strategic Inhibition

Philippot and colleagues (Philippot, Schaefer, & Herbert, 2003) proposed an overgenerality theory that emphasizes the importance of emotion regulation in purposeful autobiographical memory retrieval. Philippot and colleagues' strategic inhibition theory postulates that overgenerality in clinical groups is a result of absent or ineffective emotion regulation (Philippot et al., 2003). Here, intense emotion hampers specificity, and therefore, emotion regulation is necessary for the effortful retrieval of specific memories. Further, specific memories are less emotionally evocative than general memories because specific retrieval leads to the strategic inhibition of emotions, an idea that has received some empirical support (e.g., Philippot et al., 2003). This theory is consistent with studies showing that emotion regulation through distraction can increase memory specificity whereas rumination either has little effect or increases overgenerality (Park, Goodyer, & Teasdale, 2004; Watkins & Teasdale, 2004; Watkins et al., 2000). Strategic inhibition theory may also be consistent with some of the findings in this review regarding avoidance and intrusions. Avoidance of memories and intrusive memories were associated with overgenerality in many of the reviewed studies, and avoidance can be viewed as a form of ineffective emotion regulation, whereas intrusive memories may result from ineffective regulation strategies (e.g., thought suppression; Davies & Clark, 1998; Shipherd & Beck, 1999; Wegner & Erber, 1992).

Modes of Cognitive Processing

Combining elements of cognitive and emotion regulation theories, Watkins and Teasdale (2001, 2004) postulated that overgenerality is due to the operation of a particular cognitive processing mode. Watkins and Teasdale differentiate between analytical processing, which is self-focused and ruminative, and experiential processing, which involves mindful self-awareness of direct experience. Both modes of processing are self-focused, but only analytical processing is thought to exacerbate depression (Watkins & Teasdale, 2004). On the basis of evidence for differential effects of analytical versus experiential tasks, Watkins and Teasdale (2004) suggested that depressive cognition is characterized by analytical processing that helps maintain overgenerality. Following an experiential task, however, overgenerality is reduced in depressed individuals (Watkins & Teasdale, 2004). Further supporting analytical processing as an overgenerality mechanism, Ramponi, Barnard, and Nimmo-Smith (2004) reported that rumination in dysphoric individuals is predictive of memory specificity. In addition, tasks involving analytical self-focus and experiential self-focus have differential effects on social problem solving (Watkins & Moulds, 2005) and global, negative cognitions about oneself (Rimes & Watkins, 2005), providing additional evidence for the distinction between processing modes.

Although this theory has been subjected to limited empirical evaluation (e.g., Ramponi et al., 2004; Watkins & Teasdale, 2001, 2004), it is one of the few explanations to date that is amenable to overgenerality being specific to MDD and PTSD/ASD. In this theory, rumination is characteristic of an analytical processing mode, which encourages overgenerality. Therefore, overgenerality should be found only in disorders in which analytical, ruminative processing is dominant, which may be true of MDD and PTSD/ASD. By this account, overgenerality is

caused not by trauma but instead by analytical processing of events, a factor likely common to PTSD and MDD. In other words, it is the mode of processing of past events, not their severity or “traumatic” nature, that leads to overgenerality. Consistent with this notion, rumination appears to contribute to the maintenance of both MDD (see Nolen-Hoeksema, 2000, for a review) and PTSD (e.g., Ehlers, Mayou, & Bryant, 1998); however, rumination may also be associated with anxiety (Nolen-Hoeksema, 2000), whereas overgenerality typically is not (e.g., Burke & Mathews, 1992; Rapee et al., 1994; Wilhelm et al., 1997).

Overgenerality As Vulnerability

As noted above, overgenerality is associated with increased risk of future depressive episodes (e.g., Peeters et al., 2002) and with the development of PTSD after trauma (Harvey et al., 1998). Accordingly, one particularly promising hypothesis regarding overgenerality is that it represents a vulnerability factor that increases risk for the development of PTSD or depression following potentially traumatic events, thereby highlighting a potentially psychopathology-inducing process (e.g., van Minnen et al., 2005). When an individual encounters an intense stressor, the presence of an overgeneral retrieval style may increase his or her risk of ongoing psychological difficulties following the event. Like the theory described by Watkins and Teasdale (2004), the idea that overgenerality increases risk of psychopathology following a stressor is compatible with overgenerality being potentially specific to MDD and PTSD/ASD. To date, no published studies have examined pretrauma overgenerality and its relationship with postevent PTSD or MDD diagnosis; however, this hypothesis has the potential to explain associations found between potentially traumatic events and overgenerality and inconsistencies across the studies reviewed here. Still, this initial hypothesis is limited by the absence of a mechanism of overgenerality development.

Potential Modifications to Williams’s Theory and Summary

Finally, although J. M. G. Williams’s (1996) original trauma-focused theory is not well supported by the literature to date, a new, modified version of this theory incorporating the individual’s subjective response to a traumatic event (e.g., feeling terrified, horrified, helpless) and widening the scope to include exposure to traumatic events at any point across the lifespan could potentially better account for the findings in the literature. A revised theory could potentially emphasize the use of overgenerality to avoid intense emotion and increased vulnerability to depression as a result of ongoing truncation of the memory search at the categorical level.

To date, mechanisms of overgenerality remain uncertain, and although many promising theories have been suggested, few have been subjected to comprehensive empirical study. Owing to the predominant focus in the literature on the role of exposure to traumatic events, alternative theories have not been stringently evaluated. Considering that the emerging literature suggests that overgenerality is predominantly associated with PTSD/ASD and MDD, theories emphasizing more psychopathological processes may better account for overgenerality findings (e.g., van Minnen et al., 2005; Watkins & Teasdale, 2004).

Conclusion and Future Directions

In this article, 24 empirical articles that investigated the relationship between overgenerality and potentially traumatic events were reviewed. The foremost finding from this review is that exposure to potentially traumatic events is not consistently associated with autobiographical memory overgenerality. Thus, exposure to traumatic or potentially traumatic events alone is most likely not the central mechanism underlying autobiographical memory overgenerality. Only more rigorous quasi-experimental designs will help discern what other factors best account for observed overgenerality effects. Accordingly, an ideal autobiographical memory

study would feature thorough assessment of both childhood and adulthood trauma exposure, including assessment of event severity or life threat, appropriate control groups for both trauma exposure and depression, and standardized diagnostic interviews to assess severity and diagnostic status for both depression and PTSD. When feasible, prospective studies evaluating overgenerality before and after trauma exposure, with corroboration of event occurrence, would be ideally suited to investigate overgenerality as a consequence of exposure to traumatic events.

Clearly, factors other than exposure to potentially traumatic events may be of greater importance in determining the specificity of autobiographical memory. Consistent with this idea, another gap in the overgenerality literature to date is the lack of targeted evaluation of competing overgenerality theories. The trauma hypothesis stimulated much of the research reviewed here, with competing theories receiving relatively little empirical attention. In particular, many theories of overgenerality (Brewin et al., 1999; Kuyken & Brewin, 1995; Philippot et al., 2003; Watkins & Teasdale, 2004; J. M. G. Williams, 1996) implicate emotion regulation processes; however, few studies have directly investigated the role of specific emotion regulation strategies and their connection with overgenerality in PTSD. Future overgenerality studies using rigorous controls and examining previously unevaluated theories have great potential to improve our understanding of autobiographical memory processes in PTSD and depression.

Ultimately, by better understanding mechanisms underlying overgeneral autobiographical memory, we may improve our ability to prevent and treat depression and PTSD and also facilitate the identification of individuals at risk for these disorders. More broadly, investigations into the sources of overgenerality will enhance understanding of autobiographical memory processes and psychopathology. Although more rigorous future studies may shift the balance toward favoring the trauma hypothesis, the literature reviewed here suggests that this would be unlikely and that exposure to traumatic events alone is not crucial to the development of autobiographical memory overgenerality.

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References

- American Psychiatric Association. Diagnostic and statistical manual of mental disorders. Vol. 4th. Author; Washington, DC: 2000. text revision
- Arntz A, Meeren M, Wessel I. No evidence for overgeneral memories in borderline personality disorder. *Behaviour Research and Therapy* 2002;40:1063–1068. [PubMed: 12296491]
- Beck, AT.; Rush, AJ.; Shaw, BE.; Emery, G. Cognitive therapy of depression. Guilford Press; New York: 1979.
- Bremner JD, Shobe KK, Kihlstrom JF. False memories in women with self-reported childhood sexual abuse: An empirical study. *Psychological Science* 2000;11:333–337. [PubMed: 11273395]
- Breslau N, Davis GC, Andreski P. Risk factors for PTSD-related traumatic events: A prospective analysis. *American Journal of Psychiatry* 1995;152:529–535. [PubMed: 7694900]
- Brewin CR. A cognitive neuroscience account of posttraumatic stress disorder and its treatment. *Behaviour Research and Therapy* 2001;39:373–393. [PubMed: 11280338]
- Brewin CR, Andrews B, Valentine JD. Meta-analysis of risk factors for posttraumatic stress disorder in trauma-exposed adults. *Journal of Consulting and Clinical Psychology* 2000;5:748–766. [PubMed: 11068961]

- Brewin CR, Reynolds M, Tata P. Autobiographical memory processes and the course of depression. *Journal of Abnormal Psychology* 1999;108:511–517. [PubMed: 10466275]
- Brewin CR, Watson M, McCarthy S, Hyman P, Dayson D. Intrusive memories and depression in cancer patients. *Behaviour Research and Therapy* 1998;36:1131–1142. [PubMed: 9745798]
- Brittlebank AD, Scott J, Williams JM, Ferrier IN. Autobiographical memory in depression: State or trait marker? *British Journal of Psychiatry* 1993;162:118–121. [PubMed: 8425125]
- Burke M, Mathews A. Autobiographical memory and clinical anxiety. *Cognition & Emotion* 1992;6:23–35.
- Burnside E, Startup M, Byatt M, Rollinson L, Hill J. The role of overgeneral autobiographical memory in the development of adult depression following childhood trauma. *British Journal of Clinical Psychology* 2004;43:365–376. [PubMed: 15530207]
- Conway MA, Pleydell-Pearce CW. The construction of autobiographical memories in the self-memory system. *Psychological Review* 2000;107:261–288. [PubMed: 10789197]
- Corsini, RJ.; Wedding, D., editors. *Current psychotherapies*. Vol. 6th. F. E. Peacock Publishers; Itasca, IL: 2000.
- Dalgleish T, Spinks H, Yiend J, Kuyken W. Autobiographical memory style in seasonal affective disorder and its relationship to future symptom remission. *Journal of Abnormal Psychology* 2001;110:335–340. [PubMed: 11358027]
- Dalgleish T, Tchanturia K, Serpell L, Hems S, Yiend J, de Silva P, et al. Self-reported parental abuse relates to autobiographical memory style in patients with eating disorders. *Emotion* 2003;3:211–222. [PubMed: 14498792]
- Davies MI, Clark DM. Predictors of analogue posttraumatic intrusive cognitions. *Behavioural and Cognitive Psychotherapy* 1998;26:303–314.
- de Decker A, Hermans D, Raes F, Eelen P. Autobiographical memory specificity and trauma in inpatient adolescents. *Journal of Clinical Child and Adolescent Psychology* 2003;32:22–31. [PubMed: 12573929]
- Drummond LE, Dritschel B, Astell A, O'Carroll RE, Dalgleish T. Effects of age, dysphoria, and emotion-focusing on autobiographical memory specificity in children. *Cognition & Emotion* 2006;20:488–505.
- Ehlers A, Clark D. A cognitive model of posttraumatic stress disorder. *Behaviour Research and Therapy* 2000;38:319–345. [PubMed: 10761279]
- Ehlers A, Mayou RA, Bryant B. Psychological predictors of chronic posttraumatic stress disorder after motor vehicle accidents. *Journal of Abnormal Psychology* 1998;107:508–519. [PubMed: 9715585]
- Foa EB, Cashman L, Jaycox L, Perry K. The validation of a self-report measure of posttraumatic stress disorder: The Posttraumatic Diagnostic Scale. *Psychological Assessment* 1997;9:445–451.
- Francis, WN.; Kučera, H. *Frequency analysis of English usage: Lexicon and grammar*. Houghton Mifflin; Boston: 1982.
- Goodman M, Yehuda R. The relationship between psychological trauma and borderline personality disorder. *Psychiatric Annals* 2002;32:337–345.
- Harrison CL, Fowler D. Negative symptoms, trauma, and autobiographical memory: An investigation of individuals recovering from psychosis. *Journal of Nervous and Mental Disease* 2004;192:745–753. [PubMed: 15505518]
- Harvey AG, Bryant RA, Dang ST. Autobiographical memory in acute stress disorder. *Journal of Consulting and Clinical Psychology* 1998;66:500–506. [PubMed: 9642888]
- Henderson D, Hargreaves I, Gregory S, Williams JMG. Autobiographical memory and emotion in a non-clinical sample of women with and without a reported history of childhood sexual abuse. *British Journal of Clinical Psychology* 2002;41:129–141. [PubMed: 12034001]
- Hermans D, Van den Broeck K, Belis G, Raes F, Pieters G, Eelen P. Trauma and autobiographical memory specificity in depressed inpatients. *Behaviour Research and Therapy* 2004;42:775–789. [PubMed: 15149898]
- Horowitz M, Wilner N, Alvarez W. Impact of Event Scale: A measure of subjective stress. *Psychosomatic Medicine* 1979;41:209–218. [PubMed: 472086]

- Johnson RJ, Greenhoot AF, Glisky E, McCloskey LA. The relations among abuse, depression, and adolescents' autobiographical memory. *Journal of Clinical Child & Adolescent Psychology* 2005;34:235–247. [PubMed: 15901224]
- Kaney S, Bowen-Jones K, Bentall RP. Persecutory delusions and autobiographical memory. *British Journal of Clinical Psychology* 1999;38:97–102. [PubMed: 10212740]
- Kangas M, Henry JL, Bryant RA. A prospective study of autobiographical memory and posttraumatic stress disorder following cancer. *Journal of Consulting and Clinical Psychology* 2005;73:293–299. [PubMed: 15796637]
- Kessler RC, Chiu WT, Demler O, Walters EE. Prevalence, severity, and comorbidity of 12-month *DSM*—*IV* disorders in the National Comorbidity Survey. *Archives of General Psychiatry* 2005;62:617–627. [PubMed: 15939839]
- Kessler RC, Sonnega A, Bromet E, Hughes M, Nelson CB. Posttraumatic stress disorder in the National Comorbidity Survey. *Archives of General Psychiatry* 1995;52:1048–1060. [PubMed: 7492257]
- Kilpatrick, DG.; Resnick, HS. Posttraumatic stress disorder associated with exposure to criminal victimization in clinical and community populations. In: Davidson, JRT.; Foa, EB., editors. *Posttraumatic stress disorder: DSM–IV and beyond*. American Psychiatric Publishing; Washington, DC: 1992. p. 113–143.
- Kremers IP, Spinhoven P, Van der Does AJW. Autobiographical memory in depressed and nondepressed patients with borderline personality disorder. *British Journal of Clinical Psychology* 2004;43:17–29. [PubMed: 15005904]
- Kuyken W, Brewin CR. Autobiographical memory functioning in depression and reports of early abuse. *Journal of Abnormal Psychology* 1995;104:585–591. [PubMed: 8530760]
- MacCallum F, McConkey KM, Bryant RA, Barnier AJ. Specific autobiographical memory following hypnotically induced mood state. *International Journal of Clinical and Experimental Hypnosis* 2000;48:361–373. [PubMed: 11011497]
- Marx BP, Heidt JM, Gold SD. Perceived uncontrollability and unpredictability, self-regulation, and sexual revictimization. *Review of General Psychology* 2005;9:67–90.
- McGlashan TH, Grilo CM, Skodol AE, Gunderson JG, Shea MT, Morey LC, et al. The Collaborative Longitudinal Personality Disorders Study: Baseline Axis I/II and II/II diagnostic co-occurrence. *Acta Psychiatrica Scandinavica* 2000;102:256–264. [PubMed: 11089725]
- McNally RJ, Lasko NB, Macklin ML, Pitman RK. Autobiographical memory disturbance in combat-related posttraumatic stress disorder. *Behaviour Research and Therapy* 1995;33:619–630. [PubMed: 7654154]
- McNally RJ, Litz BT, Prassas A, Shin LM, Weathers FW. Emotional priming of autobiographical memory in posttraumatic stress disorder. *Cognition & Emotion* 1994;8:351–367.
- Moses A, Culpin V, Lowe C, McWilliam C. Overgenerality of autobiographical memory in Alzheimer's disease. *British Journal of Clinical Psychology* 2004;43:377–386. [PubMed: 15530208]
- Nijenhuis, ERS.; Van der Hart, O.; Vanderlinden, J. The Traumatic Experiences Checklist (TEC). In: Nijenhuis, ERS., editor. *Somatoform dissociation: Phenomena, measurement, and theoretical issues*. Van Gorcum; Assen, the Netherlands: 1999. p. 188–193.
- Nilsson-Ihrfelt E, Fjällskog M, Liss A, Jakobsson O, Blomqvist C, Andersson G. Autobiographical memories in patients treated for breast cancer. *Journal of Psychosomatic Research* 2004;57:363–366. [PubMed: 15518671]
- Nolen-Hoeksema S. The role of rumination in depressive disorders and mixed anxiety/depressive symptoms. *Journal of Abnormal Psychology* 2000;109:504–511. [PubMed: 11016119]
- Orbach Y, Lamb ME, Sternberg KJ, Williams JMG, Dawud-Noursi S. The effect of being a victim or witness of family violence on the retrieval of autobiographical memories. *Child Abuse and Neglect* 2001;25:1427–1437. [PubMed: 11766009]
- Park R, Goodyer IM, Teasdale JD. Effects of induced rumination and distraction on mood and overgeneral autobiographical memory in adolescent major depressive disorder. *Journal of Child Psychology and Psychiatry* 2004;45:996–1006. [PubMed: 15225341]
- Peeters F, Wessel I, Merckelbach H, Boon-Vermeeren M. Autobiographical memory specificity and the course of major depressive disorder. *Comprehensive Psychiatry* 2002;43:344–350. [PubMed: 12216009]

- Philippot P, Schaefer A, Herbette G. Consequences of specific processing of emotional information: Impact of general versus specific autobiographical memory priming on emotion elicitation. *Emotion* 2003;3:270–283. [PubMed: 14498796]
- Raes F, Hermans D, Williams JMG, Eelen P. Autobiographical memory specificity and emotional abuse. *British Journal of Clinical Psychology* 2005;44:133–138. [PubMed: 15826350]
- Ramponi C, Barnard PJ, Nimmo-Smith I. Recollection deficits in dysphoric mood: An effect of schematic models and executive mode? *Memory* 2004;12:655–670. [PubMed: 15615322]
- Rapee RM, McCallum SL, Melville LF, Ravenscroft H, Rodney JM. Memory bias in social phobia. *Behaviour Research and Therapy* 1994;32:89–99. [PubMed: 8135726]
- Renneberg B, Theobald E, Nobs M, Weisbrod M. Autobiographical memory in borderline personality disorder and depression. *Cognitive Therapy & Research* 2005;29:343–358.
- Rimes KA, Watkins E. The effects of self-focused rumination on global negative self-judgements in depression. *Behaviour Research and Therapy* 2005;43:1673–1681. [PubMed: 16239157]
- Shipherd JC, Beck JG. The effects of suppressing trauma-related thoughts on women with rape-related posttraumatic stress disorder. *Behaviour Research and Therapy* 1999;37:99–112. [PubMed: 9990742]
- Stokes DJ, Dritschel BH, Bekerian DA. The effect of burn injury on adolescents' autobiographical memory. *Behaviour Research and Therapy* 2004;42:1357–1365. [PubMed: 15381443]
- van der Kolk BA. The body keeps the score: Memory and the emerging psychobiology of post traumatic stress. *Harvard Review of Psychiatry* 1994;1:253–265. [PubMed: 9384857]
- van Minnen A, Wessel I, Verhaak C, Smeenk J. The relationship between autobiographical memory specificity and depressed mood following a stressful life event: A prospective study. *British Journal of Clinical Psychology* 2005;44:405–415. [PubMed: 16238885]
- van Vreeswijk MF, de Wilde E. Autobiographical memory specificity, psychopathology, depressed mood, and the use of the Autobiographical Memory Test: A meta analysis. *Behaviour Research and Therapy* 2004;42:731–743. [PubMed: 15081887]
- Watkins E, Moulds M. Distinct modes of ruminative self-focus: Impact of abstract versus concrete rumination on problem solving in depression. *Emotion* 2005;5:319–328. [PubMed: 16187867]
- Watkins E, Teasdale JD. Rumination and overgeneral memory in depression: Effects of self-focus and analytic thinking. *Journal of Abnormal Psychology* 2001;110:353–357. [PubMed: 11358029]
- Watkins E, Teasdale JD. Adaptive and maladaptive self-focus in depression. *Journal of Affective Disorders* 2004;82:1–8. [PubMed: 15465571]
- Watkins E, Teasdale J, Williams R. Decentering and distraction reduce overgeneral autobiographical memory in depression. *Psychological Medicine* 2000;30:911–920. [PubMed: 11037099]
- Wegner DM, Erber R. The hyperaccessibility of suppressed thoughts. *Journal of Personality and Social Psychology* 1992;63:903–912.
- Wessel I, Meeren M, Peeters F, Arntz A, Merckelbach H. Correlates of autobiographical memory specificity: The role of depression, anxiety, and childhood trauma. *Behaviour Research and Therapy* 2001;39:409–421. [PubMed: 11280340]
- Wessel I, Merckelbach H, Dekker T. Autobiographical memory specificity, intrusive memory, and general memory skills in Dutch—Indonesian survivors of the World War II era. *Journal of Traumatic Stress* 2002;15:227–234. [PubMed: 12092915]
- Wilhelm S, McNally RJ, Baer L, Florin I. Autobiographical memory in obsessive—compulsive disorder. *British Journal of Clinical Psychology* 1997;36:21–31. [PubMed: 9051275]
- Willebrand M, Norlund F, Kildal M, Gerdin B, Ekselius L, Andersson G. Cognitive distortions in recovered burn patients: The emotional Stroop task and autobiographical memory test. *Burns* 2002;28:465–471. [PubMed: 12163286]
- Williams, JMG. Depression and the specificity of autobiographical memory. In: Rubin, DC., editor. *Remembering our past: Studies in autobiographical memory*. Cambridge University Press; New York: 1996. p. 244–267.
- Williams JMG, Broadbent K. Autobiographical memory in suicide attempters. *Journal of Abnormal Psychology* 1986;95:144–149. [PubMed: 3711438]

- Williams JMG, Dritschel BH. Emotional disturbance and the specificity of autobiographical memory. *Cognition and Emotion* 1988;2:221–234.
- Williams JMG, Ellis NC, Tyers C, Healy H, Rose G, MacLeod AK. Specificity of autobiographical memory and imageability of the future. *Memory & Cognition* 1996;24:116–125.
- Williams WH, Williams JMG, Ghadiali EJ. Autobiographical memory in traumatic brain injury: Neuropsychological and mood predictors or recall. *Neuropsychological Rehabilitation* 1998;8:43–60.
- Yen S, Shea MT, Battle CL, Johnson DM, Zlotnick C, Dolan-Sewell R, et al. Traumatic exposure and posttraumatic stress disorder in borderline, schizotypal, avoidant, and obsessive—compulsive personality disorders: Findings from the Collaborative Longitudinal Personality Disorders Study. *Journal of Nervous and Mental Disease* 2002;190:510–518. [PubMed: 12193835]
- Zanarini MC, Frankenburg FR, Dubo ED, Sickel AE, Trikha A, Levin A, et al. Axis I comorbidity of borderline personality disorder. *American Journal of Psychiatry* 1998;155:1733–1739. [PubMed: 9842784]
- Zoellner LA, Foa EB, Brigidi BD, Przeworski A. Are trauma victims susceptible to “false memories”? *Journal of Abnormal Psychology* 2000;109:517–524. [PubMed: 11016121]

Table 1
Summary of Main Studies Examining Overgenerality and Potentially Traumatic Events

Authors (year)	Group (n)	Control group (n)	Assessment of traumatic event(s)			Assessment of PTSD or postevent reactions			Assessment of depression			Number and type of AMT cues			AMT scoring			Relevant AMT overgenerality results	Summary: Associated w/ overgenerality			
			Ch	Ad	Measure	Int	SR	Measure	Int	SR	Measure	+	-	0	Sp	Gen	Cat		PTS	MDD	TR	
Harvey et al (1998)	Motor vehicle accident w/ASD (12)	Motor vehicle accident w/o ASD (12)	✓		ASDI	✓		ASDI, CIDI		✓	BDI	5	5		✓			- ASD > Control - Overgenerality predicted PTSD severity	✓			
Kangas et al. (2005)	Cancer related ASD (20)	Cancer w/o ASD (20)	✓		ASDI	✓		ASDI, CAPS		✓	BDI-II	5	5		✓			- ASD > Control - Overgenerality did not predict PTSD severity	✓			
McNally et al. (1994)	Veterans w/PTSD (39); veterans w/other dx (20)	Well-adjusted veterans (23)	✓		CES, SCID III	✓	✓	M-PTSD, SCID-III	✓	✓	BDI, SCID-III	10	10	10		✓		- PTSD > Control - PTSD, but not combat severity, associated w/ overgenerality	✓			
McNally et al. (1995)	Veterans w/PTSD (19)	Veterans w/o PTSD (13)	✓		CES	✓	✓	CAPS, M-PTSD	✓	✓	BDI	10	10		✓			- PTSD > Control	✓			
MDD samples																						
Brewin et al. (1998)	Cancer & MDE (28), Cancer & mild depression (37)	Cancer w/o MDE (65)	✓	✓	LEMI	✓	✓	IES, LEMI, PSS-I	✓	✓	HADS, SCID-III	5	5			✓		- Cancer & MDE > Cancer w/o MDE - Avoidance associated w/ overgenerality	✓	✓		
Brewin et al. (1999)	MDD (62)	None	✓	✓	LEMI, SCID-III	✓	✓	IES, LEMI, SCID-III	✓	✓	BDI, SCID-III	5	5		✓			- Intrusions associated w/overgenerality	✓	✓		
Burnside et al. (2004)	CSA w/past MDEs (22)	CSA w/o past MDEs (19)	✓		CECAI				✓	✓	BDI, SADS	5	5	5			✓	- CSA w/ past MDEs < CSA w/o past MDEs - Duration of CSA & age at CSA onset associated w/overgenerality			✓	
Hermans et al. (2004)	MDD, inpatient (18)	None	✓	✓	TQ		✓	IES	✓	✓	BDI, HRSD	5	5		✓			- Severity of physical abuse, but not other event types, associated w/overgenerality			✓	
Kuyken & Brewin (1995)	MDD w/childhood physical and/or sexual abuse (37)	MDD w/o childhood abuse (19)	✓		CAI		✓	IES	✓	✓	BDI, MDD-I	5	5			✓		- MDD w/CSA > MDD w/o CSA - Avoidance associated w/overgenerality	✓		✓	

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			Ch	Ad	Measure	Int	SR	Measure	Int	SR	Measure	+	-	0	Sp	Gen	Cat		PTS	MDD	TR
Peeters et al. (2002)	MDD (25)	None	✓		CTQ				✓	✓	MADRS, SDS	5	5 Written		✓	✓			- Event severity not significantly associated w/overgenerality	✓	
Wessel et al. (2001)	Psychiatric outpatients (93)	Healthy controls (24)	✓		CTQ				✓	✓	SDS	5	5 Written		✓	✓			- MDD diagnosis, but not childhood events, associated w/overgenerality	✓	
Samples selected on the basis of exposure to potentially traumatic events																					
de Decker et al. (2003)	Inpatient adolescents (27)		✓		TQ		✓	IES	✓	✓	BDI	5	5			✓			- Event severity associated w/overgenerality		✓
																			- IES, BDI not significantly associated w/overgenerality		
Henderson et al. (2002)	Students w/CSA history (22)	Students w/o CSA history (57)	✓		CSA-SR		✓	IES	✓	✓	POMS	6	6	6	✓				- CSA history > No CSA		✓
																			- High = Low IES		
Nilsson-Ihrfelt et al. (2004)	Recovered from breast cancer (26)	No history breast cancer (13)					✓	BITS	✓	✓	HADS	6	6 Telephone	6	✓			✓	- Breast cancer > No breast cancer	✓	
																			- BITS not significantly associated w/overgenerality		
Raes et al. (2005)	Low AMT specific students (36)	High AMT specific students (36)	✓	✓	TEC				✓	✓	CES	5	5			✓			- In low specific group, emotional abuse associated w/overgenerality		
Stokes et al. (2004)	Adolescents w/ burn injury (12)	Adolescents w/o burn injury (12)					✓	IES	✓	✓	BDS	5	5		✓	✓		✓	- Burn injury > No burn injury	✓	✓
																			- Avoidance associated w/overgenerality		
van Minnen et al. (2005)	Failed in vitro fertilization (74)	None									BDI	✓	✓	✓	✓				- Greater increase in depression & anxiety associated w/overgenerality	✓	
Wessel et al. (2002)	War atrocities in childhood w/psychiatric dx (25)	War atrocities in childhood w/o psychiatric dx (15)	✓	✓	SCID-IV	✓	✓	IES, PSS-SR, SCID-IV	✓	✓	SCID-IV, SCL-D	10	10		✓				- Psychiatric dx > No psychiatric dx	✓	
																			- Avoidance & intrusions associated w/overgenerality		
Willebrand et al. (2002)	Burn injury (18)	W/o burn injury (18)	✓	✓	LTE Q		✓	IES-R	✓	✓	HADS	10	10		✓				- Burn injury = w/o burn injury		
																			- IES-R, HADS not significantly associated		

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			Ch	Ad	Measure	Int	SR	Measure	Int	SR	Measure	+	-	0	Sp	Gen	Cat		PTS	MDD	TR
Other clinical groups																					
Arntz et al (2002)	Primary dx of MDD (9); anxiety disorder (11); BPD (9); other PD (10)	None	✓	✓	CTQ, SCID-III		✓	SCID III		✓	SCID III	5	5	Written		✓		- MDD associated with overgenerality - BPD, PTSD, & child trauma not significantly associated w/overgenerality			✓
Dalgleish et al. (2003)	Eating disorders (39)	Healthy controls (21)		✓	MOPS					✓	HADS	5	5		✓			- In eating disorders, child abuse associated w/overgenerality			
Harrison & Fowler (2004)	Schizophrenia, not currently psychotic (38)	None				✓		IES-R		✓	CDS	5	5		✓			- Avoidance not significantly-associated w/overgenerality			
Kremers et al. (2004)	BPD (83), MDD (26)	Healthy controls (30)	✓		CTI	✓	✓	IES, SCID-IV	✓	✓	BDI, SCID-IV	5	5		✓			- Childhood trauma, PTSD, intrusions, & avoidance not significantly associated w/overgenerality			✓
Renneberg et al. (2005)	BPD inpatient (30), MDD inpatient (27)	Nonclinical controls (30)	✓	✓	SCID-IV		✓	SCID-IV	✓	✓	BDI, SCID-IV	5	5	5	✓	✓		- MDD > Control BPD = Control - BPD = w/PTSD = BPD w/o PTSD			✓

Note. Autobiographical Memory Test (AMT) overgenerality results are for either fewer specific memories retrieved or greater general memories retrieved. Ch = measure of childhood event(s); Ad = measure of adulthood event(s); PTSD = posttraumatic stress disorder; Int = structured interview; SR = self-report measure; + = positive AMT cue words; - = negative AMT cue words; 0 = neutral AMT cue words; Sp = number or proportion of specific memories; Gen = number or proportion of general memories; Cat = number or proportion of categorical memories; PTS = posttraumatic stress reactions; MDD = major depressive disorder; TR = characteristics or exposure to potentially traumatic events; ASD = acute stress disorder; w/ = with; w/o = without; dx = diagnoses; MDE = major depressive episode; CSA = child sexual abuse; BPD = bipolar disorder; PD = personality disorder. ASDI = Acute Stress Disorder Interview; CIDI = Composite International Diagnostic Interview; BDI = Beck Depression Inventory; CAPS = Clinician Administered PTSD Scale; BDI-II = Beck Depression Inventory—Second Edition; CES = Combat Exposure Scale; SCID-III = Structured Clinical Interview for the *DSM-III-R*; M-PTSD = Mississippi Scale for Combat-Related PTSD; LEMI = Life Events and Memories Interview; IES = Impact of Events Scale; PSS-1 = Posttraumatic Stress Scale-Interview; HADS = Hospital Anxiety and Depression Scale; CECAI = Childhood Experience of Care and Abuse—Interview; SADS = Schedule for Affective Disorders and Schizophrenia—Lifetime; TQ = Trauma Questionnaire; HRSD = Hamilton Rating Scale for Depression; CAI = Childhood Abuse Interview; MDD-I = Depression Interview; CTQ = Childhood Trauma Questionnaire; MADRS = Montgomery-Asberg Depression Rating Scale; SDS = Self-Rating Depression Scale; CSA-SR = CSA self-report questions; POMS = Profile of Mood States; BITS = Breast Impact of Treatment Scale; TEC = Traumatic Experiences Checklist; BDS = Birtleson Depression Scale; SCID-IV = Structured Clinical Interview for the *DSM-IV*; PSS-SR = Posttraumatic Stress Scale—Self-Report; SCL-D = Symptom Checklist—Depression Subscale; LTE-Q = List of Threatening Experiences; IES-R = Impact of Events Scale—Revised; MOPS = Measure of Parenting Style; CDS = Calgary Depression Scale; CTI = Childhood Trauma Interview.