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Specificity in autobiographical memory narratives correlates with performance on the Autobiographical Memory Test and prospectively predicts depressive symptoms

Jennifer A. Sumner[a,*], **Susan Mineka**[a], and **Dan P. McAdams**[a,b]

[a]Department of Psychology, Northwestern University, 2029 Sheridan Road, Swift Hall, Suite 102, Evanston, IL 60208, USA

[b]School of Education and Social Policy, Northwestern University, 2120 Campus Drive, Evanston, IL 60208, USA

Abstract

Reduced autobiographical memory specificity (AMS) is an important cognitive marker in depression that is typically measured with the Autobiographical Memory Test (AMT; Williams & Broadbent, 1986). The AMT is widely used, but the overreliance on a single methodology for assessing AMS is a limitation in the field. The current study investigated memory narratives as an alternative measure of AMS in an undergraduate student sample selected for being high or low on a measure of depressive symptoms ($N = 55$). We employed a multi-method design to compare narrative- and AMT-based measures of AMS. Participants generated personally significant self-defining memory narratives, and also completed two versions of the AMT (with and without instructions to retrieve specific memories). Greater AMS in self-defining memory narratives correlated with greater AMS in performance on both versions of the AMT in the full sample, and the patterns of relationships between the different AMS measures were generally similar in low and high dysphoric participants. Furthermore, AMS in self-defining memory narratives was prospectively associated with depressive symptom levels. Specifically, greater AMS in self-defining memory narratives predicted fewer depressive symptoms at a 10-week follow-up over and above baseline symptom levels. Implications for future research and clinical applications are discussed.

Keywords

overgeneral autobiographical memory; autobiographical memory specificity; narrative; Autobiographical Memory Test; depression

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It is well established that individuals with depression are less specific and/or more overgeneral in their autobiographical memory recall than nondepressed controls (see Williams et al., 2007, for a review). Such reduced autobiographical memory specificity (AMS, also known as overgeneral autobiographical memory) has implications for psychological functioning, and it may represent a vulnerability factor for depression. For

*Corresponding author: Tel.: 1 847 491 3843; fax: 1 847 491 7859; Jennifer.Sumner@gmail.com.

example, reduced AMS predicts later increases in depressed mood in nonclinical samples (e.g., van Minnen, Wessel, Verhaak, & Smeenk, 2005), as well as a more prolonged course of depression (see Sumner, Griffith, & Mineka, 2010, for a meta-analysis). Reduced AMS has also been linked to decreased social problem-solving effectiveness (e.g., Goddard, Dritschel, & Burton, 1996) and to trouble with imagining future specific events (e.g., Williams et al., 1996). Consequently, reduced AMS may contribute to difficulties with resolving interpersonal problems and increased hopelessness.

The Autobiographical Memory Test

To date, most research has used one method for assessing AMS: the Autobiographical Memory Test (AMT; Williams & Broadbent, 1986). On the AMT, individuals are presented with cue words (generally positive and negative), and are asked to produce a specific autobiographical memory in response to the cue within a time limit (e.g., 30s). Specific memories refer to events that occurred at a particular time and place and lasted less than one day (e.g., “my college graduation;” Williams et al., 2007). In contrast, nonspecific memories can refer to a class of generic events (categoric memories, e.g., “parties with friends”) or to events lasting more than one day (extended memories, e.g., “my vacation to Italy”).

The AMT has several strengths that have likely contributed to its widespread use. It is relatively easy to administer in a research setting, and it allows researchers to assess memory responses to controlled stimuli. Several alternative AMS measures have been developed, such as the Sentence Completion of Events from the Past Test (SCEPT; Raes, Hermans, Williams, & Eelen, 2007) and Test Episodique de Mémoire du Passé autobiographique (TEMPau; Piolino, Desgranges, & Eustache, 2009), but they have not been employed as frequently as the AMT. Indeed, the extensive use of the AMT is striking: Of 83 articles identified in a PubMed search through October 2012 for the term “overgeneral autobiographical memory,” 88% used the AMT to assess the specificity of memory recollections.

Despite the strengths of the AMT, the almost exclusive use of this methodology is a limitation in the field that has been criticized. For example, Rottenberg, Joormann, Brozovich, and Gotlib (2005) noted that minor variations in the AMT procedure (e.g., the time limit) can influence results, and this may obscure interpretations of the literature. Furthermore, the AMT has some additional drawbacks that may limit its use. For example, several studies with higher functioning, nonclinical samples (e.g., undergraduate students) have found that the traditional AMT, with its instructions to retrieve specific memories in response to cue words, is insufficiently sensitive to detect differences in AMS (e.g., Griffith et al., 2009; Raes et al., 2007). Indeed, ceiling effects with respect to AMS are often observed in these samples when the traditional AMT is used. Consequently, some researchers have developed a more “minimal instructions” version of the AMT that does not explicitly ask individuals to retrieve a *specific* memory in response to each cue word (e.g., Debeer, Hermans, & Raes, 2009). The Minimal Instructions AMT methodology permits researchers to assess the degree to which individuals exhibit a more habitual style of retrieving memories in a specific way. A growing body of research suggests that the Minimal Instructions AMT may be a more sensitive and valid measure of AMS in nonclinical samples (e.g., Debeer et al., 2009; Griffith et al., 2009).

Another limitation of the AMT is that some memories are more “privileged” than others in the sense of being personally significant and possible candidates for inclusion in one’s narrative identity. Narrative identity refers to an internalized and evolving story of the self that provides individuals with a sense of purpose and meaning (McAdams, 2008). However, there has been little examination of AMS in such personally significant memories in research employing the AMT; individuals are typically told that the memory they recall can

be of an important or trivial event. Another limitation of the AMT is that responding on this task may not accurately reflect recollection processes as they occur beyond the research setting. Individuals can satisfy the requirements of the AMT by responding with brief, decontextualized accounts of their past (e.g., "Jane's party last Friday", Williams et al., 2007). However, humans are a social species, and we often recount our past experience in the form of stories told to others (McAdams, 2008)—a process not well-captured by the AMT. Thus, it is of interest to examine alternative measures of AMS that may better approximate naturalistic recollection processes.

Memory Narratives as an Alternative Measure of AMS

Memory narratives are a promising alternative method for assessing AMS. As described above, narrative identity is the internalized story that individuals generate to integrate their experiences and create meaning in their lives (McAdams, 2008). In particular, self-defining memories are thought to be a key component of narrative identity (Singer & Moffitt, 1991–1992). Self-defining memories help people to understand who they are as individuals, and they are thought to revolve around the most significant concerns and conflicts in individuals' lives (Blagov & Singer, 2004).

Self-defining memory narratives can take the form of specific or nonspecific memories. Narrative assessments of AMS could thus address several limitations of the AMT, and this may have implications for research and clinical applications. For example, self-defining memory narratives permit an examination of AMS in personally significant memories because they are a major aspect of narrative identity. Furthermore, narratives may reflect naturalistic memory recollection processes better than responses to cue words. Humans share their experience by telling stories, and narratives are the stories that we tell ourselves and others to create a sense of meaning (McAdams, 2008). Moreover, assessments of AMS in self-defining memory narratives may be more clinically relevant than responses on the AMT because self-defining memories are similar to the stories that clients tell in therapy (Blagov & Singer, 2004). There is growing evidence that interventions can increase AMS in depressed individuals (e.g., Raes, Williams, & Hermans, 2009), and future therapy for depression may include AMS training. Thus, monitoring AMS in a therapeutic context may be advantageous. If AMS in narratives relates to depression, then this may represent a potential avenue for translating AMS research to clinical settings.

To date, only a few studies have examined how AMS in memory narratives relates to depression. In one study (Moffitt, Singer, Nelligan, Carlson, & Vyse, 1994), dysphoric and nondysphoric undergraduates generated positive or negative self-defining memory narratives on the Self-Defining Memory Task (SDMT; e.g., Moffitt & Singer, 1994; Singer & Moffitt 1991–1992). Their responses were scored as specific/single-event narratives (i.e., events situated in a specific context and time) or nonspecific/summary narratives (i.e., narratives that describe multiple related events or an episode lasting more than one day). Compared to nondysphoric participants, dysphoric participants retrieved more nonspecific/summary positive (but not negative) self-defining memory narratives, thereby providing some support for reduced AMS in the self-defining memory narratives of dysphoric individuals.

There have also been some investigations of AMS in the memory narratives of individuals with major depressive disorder (MDD). For example, Hardtke (2008) examined the pre- and post-treatment memory narratives of individuals with MDD who underwent 16–20 weeks of client-centered or process-experiential treatment. Narratives were gathered using the Narrative Assessment Interview, an interview designed to assess self-story change in psychotherapy. As in the Moffitt et al. (1994) study, narratives were classified as specific/single-event or nonspecific/summary narratives. Participants who recovered from MDD by

the end of treatment retrieved significantly more specific/single-event narratives at pre-treatment than those who did not recover. However, in another investigation, the number of specific/single-event narratives coded from psychotherapy sessions did not significantly predict MDD recovery after 15–20 weeks of client-centered or emotion-focused therapy (Boritz, Angus, Monette, & Hollis-Walker, 2008). Differences in the studies' designs (e.g., coding narratives from interviews versus therapy sessions) may account for discrepant results. Additional work is therefore needed to examine whether AMS in memory narratives relates to change in depression over time.

Goals of the Current Study

In this study, we conducted an in-depth examination of AMS in the self-defining memory narratives of undergraduate students preselected for being high or low on depressive symptoms. We were especially interested in studying self-defining memory narratives because they are thought to have a privileged role in an individual's narrative identity (Blagov & Singer, 2001). Furthermore, memory narratives may better reflect naturalistic memory recollection processes than the AMT. In order to situate this research within the larger AMS literature, we compared narrative- and AMT-based assessments of AMS. Such within-subject multi-method comparisons are generally lacking in the literature, although one exception is the study by Gibbs and Rude (2004). In their undergraduate sample, overgeneral memories on the AMT were negatively correlated with the number of specific situations described in a personal essay about a significant experience. Multi-method studies may have theoretical implications for broadening our understanding of AMS. Thus, more research employing such designs is needed.

Because narrative assessments do not prompt for specific memories (as does the traditional AMT), a comparison of narrative- and AMT-based measures of AMS may help elucidate what contributes to overgeneral responding on these tasks. For example, reduced AMS on the AMT and in narratives might reflect a habitual overgeneral response style. Alternatively, some researchers (e.g., Dalgleish et al., 2007) have postulated that difficulty with remembering the instructions to retrieve a specific memory on the AMT may explain overgeneral responses on this task. Reduced AMS on the AMT, and not in narratives, would be consistent with this notion. The current study included two versions of the AMT in order to examine this issue: one with and one without the traditional instructions to retrieve specific memories (e.g., Debeer et al., 2009). We hypothesized that observing reduced AMS on both AMTs and in narratives would be consistent with reduced AMS as a habitual response style. However, observing reduced AMS on the Traditional Instructions AMT, but not on the Minimal Instructions AMT or in narratives, would suggest that difficulty with remembering the instructions to retrieve specific memories was the primary factor underlying reduced AMS.

Another goal of this study was to investigate whether AMS in self-defining memory narratives relates to a clinically relevant outcome: changes in depressive symptoms. We examined cross-sectional and prospective associations between AMS in narratives and depressive symptoms measured at the time of memory assessment and at 10-week follow-up, respectively. The literature is somewhat inconsistent on cross-sectional associations between AMS and depressive symptoms; some studies have observed significant relationships, whereas others have not (e.g., Debeer et al., 2009; Gibbs & Rude, 2004). Furthermore, Williams et al. (2007) note that depression diagnoses have been associated more robustly with reduced AMS on the AMT than depressive symptom severity. However, meta-analytic evidence suggests that reduced AMS predicts less of a decrease in depressive symptoms over time (Sumner et al., 2010). Unfortunately, most studies examining this predictive relationship used the AMT. Thus, we were interested in whether AMS in

narratives also predicted changes in depressive symptoms. We hypothesized that AMS in narratives would be inversely related to depressive symptoms at follow-up.

Method

Participants

Participants were 55 Northwestern University undergraduate students (31 female) who received credit toward a research participation requirement. Participants ranged in age from 17 to 21 years (M = 19.2, SD = 0.9). Individuals scoring in the top (n = 28) or bottom (n = 27) quartiles on the Diagnostic Inventory for Depression (DID; Zimmerman, Sheeran, & Young, 2004) at a mass testing session at the beginning of the academic quarter were randomly selected for the study. The mean DID total scores at the mass testing session were 2.56 (SD = 1.16) and 16.07 (SD = 4.78) for those in the bottom and top quartiles, respectively. As described below, the DID was also administered at the study session and at a 10-week follow-up assessment. The mean DID total scores (with *SDs* in parentheses) at the study session and follow-up assessments were 5.48 (3.26, n = 27) and 6.08 (7.81, n = 14) for those in the bottom quartile on the DID at mass testing, and 13.98 (7.34, n = 28) and 10.94 (8.41, n = 16) for those in the top quartile on the DID at mass testing. Mean DID total scores were indicative of minimal levels of depression. As is common in research on change in depressive symptoms (e.g., Gibbs & Rude, 2004; Raes et al., 2006), there was regression toward the mean over time in both groups. However, high dysphoric participants at mass testing still had higher depressive symptoms at the study session than low dysphoric participants, $t(37.57) = 5.59$, $p < .0001$.

Materials and Tasks

Diagnostic Inventory for Depression (DID)—The DID (Zimmerman et al., 2004) is a 22-item self-report scale assessing the *DSM-IV* symptom criteria for a major depressive episode. Symptom items are rated on a 5-point scale, where 0 indicates no disturbance, 1 indicates subclinical severity, and 2–4 indicate that the symptom is present. (Two exceptions are the loss of interest and loss of pleasure items, where a score of 3 or 4 indicates that the symptom is present). In this study, the DID was used as a measure of depressive symptoms. Two items on suicidality were excluded due to Institutional Review Board concerns; thus total scores could range from 0–80. The internal consistency of the DID was good (Cronbach's $\alpha > .85$ for all administrations). The DID has been found to have high levels of test-retest reliability, as well as good convergent and discriminant validity (Zimmerman et al., 2004).

Self-Defining Memory Task (SDMT)—The SDMT (Blagov & Singer, 2004; Singer & Moffitt, 1991–1992) is a well-validated measure of self-defining memory narratives. Participants were first provided with the definition of a self-defining memory (i.e., a memory that conveys powerfully how you have come to be the person you currently are). Participants were then presented with the following key attributes of a self-defining memory (both visually and orally). Consistent with prior research (cf. Blagov & Singer, 2004; Singer & Moffitt, 1991–1992), a self-defining memory: 1) is at least 1 year old; 2) is a memory from your life that you remember very clearly and that still feels important to you; 3) is a memory that helps you to understand who you are as an individual and might be the memory you would tell someone if you wanted that person to understand you in a more profound way; 4) is a memory that you have thought about many times; 5) evokes strong feelings; and 6) is important to an enduring theme, issue, or conflict. Each participant verbally provided one positive and one negative self-defining memory narrative. Both were audio-recorded. The order of narrative valence was counterbalanced across participants.

Narratives were scored as specific, episodic, or generic using the Classification System and Scoring Manual for Self-Defining Memories (Singer & Blagov, 2001). This coding system provides a categoric AMS measure that is similar to the approach used in prior research on AMS in narratives (e.g., Moffitt et al., 1994). Specific memory narratives are single-event narratives; they describe events that lasted less than one day and occurred during a single context. Episodic and generic memory narratives are examples of nonspecific memory narratives. Episodic memory narratives are narratives of sequential events that fit an extended timeframe. Generic memory narratives contain equivalent, repeated events from the past. In this study, we examined specific memory narratives. Across the positive and negative narratives, participants could have 0–2 specific memory narratives. Two trained undergraduates blind to participant characteristics each coded all narratives. Discrepancies were discussed with the first author to reach a consensus. In this study, narrative ratings were made reliably ($\kappa = .84$). Furthermore, the SDMT was found to be a reliable measure of AMS. A chi-square test comparing specific vs. nonspecific memory narratives generated on the first and second narrative of the SDMT was significant, χ^2 (1, $N = 55$) = 4.99, $p = .03$, thereby suggesting that if participants generated one specific memory narrative on the SDMT, they were more likely to generate another specific memory narrative than would be expected by chance. In this study, we used the proportion of specific memory narratives as our narrative-based AMS measure.

Autobiographical Memory Test (AMT)—As described above, the AMT (Williams & Broadbent, 1986) uses a cuing methodology to elicit autobiographical memories. In this study, all participants were administered two versions of the AMT: one with the traditional instructions to retrieve specific memories (Traditional Instructions AMT), and one with more minimal instructions that did not instruct participants to retrieve specific memories (Minimal Instructions AMT; see Debeer et al., 2009). On the Minimal Instructions AMT, participants were asked to think of an event that happened to them in response to each cue, without indicating that it should be a *specific* event.

Trained undergraduate and Bachelor's level research assistants administered the Minimal Instructions AMT and then the Traditional Instructions AMT to participants. For both tasks, research assistants presented each cue individually on a computer screen. There were no practice trials on the Minimal Instructions AMT, but there were up to four practice trials on the Traditional Instructions AMT. Participants only received feedback during practice trials. Each AMT version had 10 test trials (each with a 30s time limit) that alternated between positive and negative cue words. There were two word sets, each with five positive and five negative cues. Cues were equated on familiarity, frequency, and imageability across valence and word set.[1] The word set used in a particular version of the AMT was counterbalanced across participants.

For both AMTs, participants were asked to retrieve memories that were at least 1 year old. Some studies restrict the age of memories that are retrieved on the AMT, often to counter the tendency for individuals to recall more recent events, which tend to be more specific (Jansari & Parkin, 1996). Our 1-year memory age restriction was consistent with instructions for the SDMT and with other AMT research (e.g., D'Argembeau, Van Der Linden, Verbanck, & Nöel, 2006). Participants were also told to think of a different memory for each cue. Responses were made verbally and audio-recorded. Research assistants scored responses as specific memories, extended memories, categoric memories, semantic associates (responses containing semantic information, but no personal memory), or omissions. Response coding for 15 randomly selected participants had good inter-rater

[1]The cue words used were *peaceful*, *failure*, *safe*, *hurt*, *proud*, *frustrated*, *successful*, *regret*, *brave*, and *inferior* (Set 1), and *energetic*, *clumsy*, *ambitious*, *sad*, *surprised*, *tense*, *calm*, *disappoint*, *hopeful*, and *lonely* (Set 2).

reliability (mean κ's =.83 and .89 for the Minimal and Traditional Instructions AMTs, respectively). We used the proportion of specific memories as our AMT-based AMS measure. Consistent with prior AMS research (e.g., Crane, Barnhofer, & Williams, 2007), we counted omissions as nonspecific responses when calculating these proportions.

Procedure

Individuals scoring in the top or bottom quartiles on the DID at a mass testing session for an introductory psychology course at the beginning of two academic quarters were randomly selected for participation. During the study session, students first consented to participate, and then completed the SDMT, followed by the Minimal Instructions AMT, the Traditional Instructions AMT, and the DID. By participating in the study session, students earned credit toward their course research participation requirement. At the end of the academic quarter (approximately 10 weeks after mass testing), participants were given the opportunity to complete the DID online as a follow-up assessment of depressive symptoms. This assessment was optional (i.e., not part of the course research participation requirement). Participants were paid $10 for this assessment.

Analytic Strategy

By selecting participants scoring in the top or bottom quartiles on the DID, we employed an extreme groups approach (EGA). EGA is a cost-efficient approach that can be useful in early, more exploratory research, and it is associated with increased power compared to analyses of full-range data of the same sample size (Preacher, Rucker, MacCallum, & Nicewander, 2005). However, EGA has some limitations. For example, standardized (but not unstandardized) effect size estimates may be biased. Consistent with Preacher et al.'s (2005) recommendations, we did not interpret or compare the strength of effect sizes, but rather examined *whether* an effect was present. Furthermore, we present unstandardized effect size estimates when possible. As the first investigation comparing AMS on the SDMT and Minimal and Traditional Instructions AMTs, we were able to harness the advantages of this approach and examine whether effects were present.

Results

Descriptive Statistics

Descriptive statistics for AMS on the SDMT and Minimal and Traditional Instructions AMTs are presented in Table 1. Given recent strong support for a one-factor model of AMS (e.g., Griffith et al., 2012, 2009; Heron et al., 2012), we present AMS data collapsing across valence. There was a fair degree of variability in AMS on the SDMT: 27.3% of participants generated no specific memory narratives, 34.5% generated one specific memory narrative, and 38.2% generated two specific memory narratives. Additionally, consistent with previous findings (Debeer et al., 2009), a greater proportion of specific memories was generated on the Traditional Instructions AMT than on the Minimal Instructions version, $t(54) = -10.40$, $p < .0001$.

Correspondence between AMS in Narrative and AMT Assessments

We examined correspondence between AMS in narratives and AMT performance by correlating the proportion of specific memory narratives on the SDMT with the proportions of specific memories generated on the two AMTs (see Table 1). In the full sample, significant associations emerged between AMS on the SDMT and both AMTs. The more specific self-defining memory narratives described, the more specific memories retrieved on the Minimal and Traditional Instructions AMTs. There was also a significant positive correlation between AMS on the two AMTs. Overall, the patterns of associations between

the different AMS measures in the low and high dysphoric groups were similar to those in the full sample (see Table 1). In both groups, all AMS measures were positively correlated, although the correlation between AMS on the two AMTs in the low dysphoric group and the correlation between AMS on the SDMT and Traditional AMT in the high dysphoric group did not reach conventional statistical significance levels. However, the sample sizes for these groups were relatively small (*n*s = 27 and 28 for the low and high dysphoric groups, respectively), and so the significance tests were likely underpowered.

AMS in Narratives and Depressive Symptoms

In addition to examining AMS in self-defining memory narratives and how it relates to AMS on the AMT, we investigated whether AMS in narratives was cross-sectionally and prospectively related to depressive symptoms. No statistically significant cross-sectional relationships emerged between the proportion of specific narratives and depressive symptoms at the study session in the full sample ($r = .05$, $p = .70$, $N = 55$) or in the low dysphoric ($r = -.33$, $p = .09$, $n = 27$) or high dysphoric ($r = .03$, $p = .89$, $n = 28$) subsamples.

To examine whether AMS in self-defining memory narratives prospectively predicted follow-up depressive symptoms, we used data from the 30 individuals who completed the follow-up assessment that was administered approximately 10 weeks after mass testing (mean length of time between the mass testing and follow-up assessments = 10.18 weeks, $SD = 0.51$).[2] Participants who completed the follow-up assessment ($n = 30$) did not differ significantly from non-completers ($n = 25$) in terms of gender, depressive symptoms at mass testing or the study session, or AMS on the Minimal Instructions AMT or SDMT. Follow-up completers did retrieve a significantly higher proportion of specific memories on the Traditional Instructions AMT (.85) than non-completers (.76), $t(53) = 2.06$, $p = .04$. However, including AMS on the Traditional Instructions AMT in the regression model (reported below) did not change the pattern of results.

In a hierarchical linear regression, DID total score at mass testing was entered on the first step, and it significantly predicted the DID total score at follow-up, $F(1, 28) = 5.17$, $p = .03$, $R^2 = .16$. Greater depressive symptoms at mass testing predicted greater symptoms at follow-up, $b = 0.44$, $\beta = 0.40$, $t(27) = 2.27$, $p = .03$. Adding the self-defining memory narrative AMS measure on the second step significantly improved the model, $F\ change\ (1, 27) = 6.14$, $p = .02$, R^2 change = .16. A greater proportion of specific memory narratives predicted lower depressive symptoms at follow-up over and above mass testing symptoms, $b = -8.91$, $\beta = -0.40$, $t(27) = -2.48$, $p = .02$. We included depressive symptoms at mass testing as the baseline symptom measure because this resulted in approximately 10 weeks between baseline and follow-up for all participants. Participants completed the study session at varying times during the academic quarter (range for length of time between the mass testing and study sessions = 4.14–9.86 weeks). Thus, the length of the follow-up period would differ if we used the study session DID total score as our baseline measure of symptoms. Nevertheless, a greater proportion of specific self-defining memory narratives still predicted lower symptom levels at follow-up over and above depressive symptoms at the study session, $p = .06$. Furthermore, including the length of time between the mass testing and study sessions in the regression model (alone or in interaction with AMS on the SDMT) did not contribute significantly to predicting follow-up symptoms, *p*s > .64.

Although we were primarily interested in examining relationships between AMS in self-defining memory narratives and depressive symptoms, we also investigated potential cross-

[2]We did not conduct the prospective analyses separately for the low and high dysphoric groups due to small subsample sizes based on the subset of participants who completed the follow-up assessment ($n = 14$ and $n = 16$ for the low and high dysphoric groups, respectively).

sectional and prospective associations between AMS on the two AMTs and depressive symptoms. However, no significant relationships emerged between AMS on the AMTs and depressive symptoms at the study session for the full sample or dysphoric subsamples, *r*s < |.29|, *p*s > .14. There were also no significant prospective relationships, $b = -10.77$, $\beta = -0.18$, $t(27) = -1.03$, $p = .32$ for the Traditional Instructions AMT; $b = -5.08$, $\beta = -0.11$, $t(27) = -0.60$, $p = .55$ for the Minimal Instructions AMT.

Discussion

The goal of this study was to conduct an initial investigation of memory narratives as an alternative measure of AMS. To our knowledge, this is the first study to demonstrate that greater AMS in self-defining memory narratives relates to greater AMS on the AMT, the most frequently used AMS measure. Additionally, greater AMS in self-defining memory narratives predicted lower depressive symptom levels at 10-week follow-up. Furthermore, by examining personally significant self-defining memory narratives, our results suggest that AMS in memories that are thought to be a key component of one's narrative identity relates to AMT performance and changes in depressive symptoms.

Using a multi-method approach, we also demonstrated that greater AMS in self-defining memory narratives corresponds to greater AMS on a second version of the AMT: one without instructions to retrieve a specific memory. Together, these findings provide a direct link between two lines of AMS research: an established literature on AMS on the AMT, and a smaller—yet growing—literature on AMS in memory narratives. Furthermore, this is the first study to demonstrate a positive association between AMS on these two AMT versions because prior research has employed between-subjects designs (Debeer et al., 2009). Like Debeer et al. (2009), we also found lower mean levels of AMS on the Minimal Instructions AMT compared to the Traditional Instructions AMT. This pattern of results provides further evidence for the notion that researchers may be less likely to obtain ceiling effects when using the Minimal Instructions AMT (vs. the Traditional Instructions AMT) with higher functioning, nonclinical samples.

Such concordance across multiple measures suggests that reduced AMS is not merely an artifact of AMT methodology. Our results also suggest that overgeneral responding on the AMT does not solely reflect difficulty with remembering task requirements, such as the instructions to retrieve specific memories, because only the Traditional Instructions AMT asked participants to retrieve specific memories. The term "secondary goal neglect" describes this difficulty with maintaining task requirements in working memory during the AMT (Dalgleish et al., 2007). Although our results do not rule out a role for secondary goal neglect in contributing to reduced AMS, they suggest that this mechanism cannot entirely account for our findings. Moreover, the concordance between reduced AMS on the SDMT and AMTs is consistent with the notion that these measures may assess a habitual overgeneral retrieval style.

As in some prior studies (e.g., Gibbs & Rude, 2004), there were no significant associations between our AMS measures and concurrent depressive symptoms. There was a trend toward greater AMS on the SDMT correlating with lower depressive symptoms at the study session in the low dysphoric subsample, and statistically significant results may have been obtained with a larger sample. Nevertheless, the overall pattern of non-significant cross-sectional associations is consistent with some previous research. It is possible though that our use of the DID, a measure of depressive symptoms that is employed less frequently in the AMS literature, may have contributed to discrepancies between the present study and other investigations. However, greater AMS in self-defining memory narratives predicted lower depressive symptoms at 10-week follow-up, over and above baseline symptoms. These

findings suggest that reduced AMS may have negative implications for subsequent depressive symptoms even in the absence of associations with depressive symptoms at AMS assessment. Reduced AMS has been associated with impaired social problem-solving effectiveness (e.g., Goddard et al., 1996), and therefore it might relate to future depression by leading to difficulties with successfully resolving interpersonal problems, which could precipitate depression. Additionally, the lack of evidence for significant predictive relationships between AMS on the AMT and self-reported depressive symptoms is consistent with some previous research (e.g., Hermans et al., 2008). Despite meta-analytic support for an association between AMT performance and change in depressive symptoms (Sumner et al., 2010), the effect size is modest, and not all studies obtain significant results. Indeed, low statistical power may have been an issue because of our small sample size for the prospective analyses. Therefore, although we found evidence that AMS on only the SDMT significantly predicted lower depressive symptoms at follow-up, it should be noted that this is not the only AMS measure in the literature that prospectively predicts depression (e.g., Sumner et al., 2010).

Nevertheless, our finding with the SDMT provides initial support that AMS in self-defining memory narratives—a measure that may reflect naturalistic retrieval processes better than the AMT—may have potential for use in clinical practice. If narratives are used to assess AMS in clinical settings, then it is important that they relate to clinically relevant outcomes, including changes in depressive symptoms. Further work on how narrative assessments of AMS may translate to clinical settings is needed. For example, research on how interventions for improving AMS may change AMS in narratives will extend the work done using the AMT.

Limitations

Although the multi-method assessment of AMS and use of a prospective design are strengths of our study, it is important to acknowledge several limitations. First, the use of a nonclinical sample limits the generalizations that can be made to those with clinical depression. We also did not have data on whether participants had a current or past history of MDD. As noted above, depression diagnoses have been associated more robustly with reduced AMS on the AMT than depressive symptom severity (Williams et al., 2007). However, we could not examine how MDD history may have impacted the present findings. Thus, further research on narrative- and AMT-based AMS assessments in clinical samples, and on how these measures relate to the course of a depressive disorder, is needed. Second, because of the small sample size for the prospective analyses, these results are preliminary and warrant replication. Nevertheless, we believe that our findings can still provide initial support for a predictive relationship between AMS in self-defining memory narratives and depressive symptoms.

Summary and Conclusions

There is an extensive literature on AMS in depression, and the AMT has been instrumental in contributing to this research. Nevertheless, studies that employ other AMS measures will continue to expand this work. In this study, we demonstrated that AMS in self-defining memory narratives 1) correlated with AMS on the Minimal and Traditional Instructions AMTs, and 2) predicted depressive symptoms at 10-week follow-up. These findings help to increase our understanding of the AMS construct, and they can provide a foundation for how AMS research may extend to clinical settings.

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Table 1

Descriptive Statistics and Intercorrelations for Autobiographical Memory Specificity Measures

Full Sample (N = 55)						
	1	2	3	*M*	*SD*	Range in Sample
1. SDMT Proportion of Specific Memory Narratives				.55	.40	.00–1.00
2. Proportion of Specific Memories Minimal Instructions AMT	.48***			.53	.18	.10–.90
3. Proportion of Specific Memories Traditional Instructions AMT	.31*	.37**		.81	.17	.40–1.00
Low Dysphoric Group (n = 27)						
	1	2	3	*M*	*SD*	Range in Sample
1. SDMT Proportion of Specific Memory Narratives				.48	.38	.00–1.00
2. Proportion of Specific Memories Minimal Instructions AMT	.55**			.52	.17	.10–.80
3. Proportion of Specific Memories Traditional Instructions AMT	.41*	.27		.77	.16	.40–1.00
High Dysphoric Group (n = 28)						
	1	2	3	*M*	*SD*	Range in Sample
1. SDMT Proportion of Specific Memory Narratives				.63	.42	.00–1.00
2. Proportion of Specific Memories Minimal Instructions AMT	.43*			.55	.20	.20–.90
3. Proportion of Specific Memories Traditional Instructions AMT	.18	.44*		.84	.17	.50–1.00

Note. SDMT = Self-Defining Memory Task; AMT = Autobiographical Memory Test.

* $p < .05$,

** $p < .01$,

*** $p < .0001$