

Psychological Disorders and Autobiographical Memories: Examining Memory Specificity,
Affective Content, and Meaning-Making

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Abstract

This chapter offers a definition of healthy autobiographical memory within a larger framework of narrative identity. Healthy memory consists of memory specificity, a greater emphasis on positive affective content, and the capacity to engage in meaning-making based on memory narratives. Research on several major psychological disorders is reviewed for evidence of impairment in any of these three aspects of autobiographical memories, with particular emphasis on their disruption in “self-defining memories.” The findings demonstrate how severe psychological illness negatively impacts the most fundamental aspects of narrative identity with regard to experiential awareness, emotion regulation, and a coherent sense of self. In this way the research of subjective experience of narrative identity, autobiographical memory and its disruption in psychological disorders gives researchers and clinicians a much more powerful sense of the phenomenological impact and massive assault on well-being rendered by major psychological and neuropsychiatric disorders.

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In proposing an overall model of self and memory (Conway, 2010; Conway & Pleydell-Pearce, 2000; Conway, Singer, & Tagini, 2004), we have implicitly raised the question of what constitutes a “healthy” autobiographical memory system within individual personality. In a recent article (Singer, Blagov, Berry, & Oost, 2013), we suggest that an adaptive and flourishing autobiographical memory system is linked to a coherent and flexible narrative identity that provides an ongoing sense of unity and direction, linking the past, present, and future selves (McAdams, 2001; McLean, 2008; Pasupathi, Mansour, & Brubaker, 2007; Singer, 2004; Singer & Bluck, 2001). This narrative identity consists of the capacity to craft an evolving and coherent life story that connects significant episodes from one’s past to one’s most enduring and central goals. Within our society, these goals often reflect the individual’s relative balance between themes of agency (e.g., achievement, mastery, autonomy) and communion (e.g., intimacy, nurturance, affiliation). In the conscious representation of the self, both within the private psychological world and the presentation of the self to others, this life story is encapsulated in vivid, emotionally intense, and familiar “self-defining memories” that depict in brief narrative form the unique concerns of that individual’s personality (Singer, 2006; Singer & Bonalume, 2010; Singer & Conway, 2011; Singer & Salovey, 1993). Self-defining memories reflect enduring concerns or conflicts in the individual’s life and are linked to other similar memories that share these themes. In previous research, self-defining memories (SDMs) that are more *specific* and *positive in affective tone*, and which display greater incidences of *meaning-making*, have been correlated with healthier psychological adjustment and higher self-esteem (Blagov &

Singer, 2004; Wood & Conway, 2006; Singer, Rexhaj, & Baddeley, 2007; Sutin & Gillath, 2009; Sutin & Robins, 2005, 2008; Sutin & Stockdale, 2011; Tosun, 2006).

The capacity to access *specific* autobiographical memories and, in particular self-defining ones, provides individuals with compact narrative sequences that depict how they have responded in past situations that are critical to their central concerns or conflicts (Moffitt & Singer, 1994; Sutin & Robins, 2008). The ability to conjure up specific and detailed imagery within the memory allows the individual to engage more fully with the emotional impact of the memory and to achieve a more veridical mental simulation of the events and outcomes depicted in the memory. It is not surprising then that decreased memory specificity has been linked to higher levels of defensiveness (Blagov & Singer, 2004; Williams, 1996) and that individuals who have difficulty in retrieving specific positive memories report higher depression scores on the Beck Depression Inventory and show greater difficulty in repairing negative moods (Erber & Markunas, 2005; Harkness, 2010; Josephson, Singer, & Salovey, 1996; Moffitt, Singer, Nelligan, Carlson, & Vyse, 1994; Rusting & DeHart, 2000). If individuals' access to memory specificity is one indicator of a healthy narrative identity, then it would be valuable to review the autobiographical memory literature to examine relationships among major psychological disorders and difficulties in memory specificity.

In addition to memory specificity, the *affective content* of autobiographical memories has repeatedly been connected to psychological well-being and overall mental health. For example, Sutin and Robins (2005) found that individuals with more positive affective SDMs showed higher levels of self-esteem and stronger levels of achievement motivation, while Rasmussen and Berntsen (2010) found that the negative affective content of autobiographical memories was related to the Big Five trait of Neuroticism, which encompasses higher levels of anxiety, self-

consciousness, and hostility. Researchers have also established that memories with affective sequences that go from negative emotion to positive emotion in the course of the memory narrative (*redemption sequences*) are linked to healthy adjustment and personal growth, while memories with the opposite trajectory of positive emotion shifting to a negative outcome (*contamination sequences*) reflect more negative well-being and Neuroticism (Adler, Kissel, & McAdams, 2006; Baddeley & Singer, 2008; Lardi, D'Argembeau, Chanal, & Ghisletta, 2010; McAdams, Anyidoho, Brown, Huang, Kaplan, & Machado, 2004; McAdams & Bowman, 2001). In considering the relationship of psychological disorder to autobiographical memory, this chapter reviews findings regarding the general affective content of memories, but also evidence for increased rates of contamination sequences in connection to psychological dysfunction.

Finally, a major area of expanding research in narrative identity looks at the degree to which individuals engage in *meaning-making* or *autobiographical reasoning* about narrative accounts of their lives, including narratives of significant personal memories. That is, do individuals explicitly step back from these narratives and extract meanings or lessons from their experiences (Habermas & Bluck, 2000; McLean & Fournier, 2008; Singer & Bluck, 2001; Staudinger, 2001)? This ability to make “self-event connections” (McLean & Fournier, 2008; Pasupathi, Mansour, & Brubaker, 2007; Pasupathi & Weeks, 2011) has been linked to higher levels of psychological adjustment and maturity, as well as greater emotional well-being (Blagov & Singer, 2004; Lodi-Smith, Geise, Roberts, & Robins, 2009; McLean, Breen, & Fournier, 2010; Pals, 2006). These self-event connections can take the form of lesson-learning about the world in general, but can also be more specifically tied to efforts at establishing continuity or themes of change in individuals' life narratives (McLean & Pasupathi, 2011; McLean & Pratt, 2006; McLean & Thorne, 2003; Pals, 2006). Although some research has pointed to the potential

pitfalls of self-event connections and meaning-making about narratives (in the sense that they can contribute to self-verification and the perpetuation of negative attributions about the self or others; Lyubomirsky, Sousa, & Dickerhoof, 2006; McLean & Mansfield, 2011), in general, the capacity to step back and reflect on memory narratives has been a consistent marker of psychological health (Pennebaker & Seagal, 1999). How the capacity for meaning-making may be impaired in light of psychological disorder is the third domain of investigation for this chapter.

In reviewing the research literature on psychological disorders, we focus on Mood Disorders and Schizophrenia, but also consider disorders in which memory processes (including memory processes involving self) might be of particular relevance, such as Autism, PTSD and complicated grief. With regard to personality disorders, there is little systematic research on memory in personality disorders with the exception of a small body of work on Borderline Personality Disorders. The following review is limited to psychological conditions that are not caused by physical impairment (e.g., stroke, dementia, TBI) or substance use. Each section looks at the separate components of memory specificity, affective content, and meaning-making, whenever possible. Nevertheless, the research is not evenly distributed in these areas for each disorder, so necessarily sections vary in the depth of research coverage. In general, studies have ranged in methodology from looking at freely recalled autobiographical memories to cued and themed autobiographical memories to the more detailed requests for self-defining memories. We present both the more general research and those studies that have particularly focused on SDMs.

Mood Disorders*Memory Specificity*

Over two decades of research have revealed the significance and implications of mood-disordered individuals' difficulty with memory specificity. Williams and Broadbent (1986) first identified the clinical phenomenon of overgeneral memory in their study of suicide attempters. These results have been replicated and associated with differential activity in medial temporal and prefrontal lobe structures involved in autobiographical retrieval between individuals with major depressive disorder and controls as they engaged in recall using a computerized version of the Autobiographical Memory Test (AMT) (Bradley & Lang, 1999; Young et al., 2012). Furthermore, individuals with remitted depression display reduced activation of the ventrolateral prefrontal cortex and cuneus when attempting to repair an induced sad mood using positive autobiographical memories when compared to controls. Moreover, exploratory analysis found that the reduced activation in individuals with remitted depression during their attempt at mood regulation predicted a worsening of depressive symptoms at a 20-month follow-up (Foland-Ross, Cooney, Joormann, Henry, Gotlib, 2013).

Specificity deficits in autobiographical memory recall have been linked to impaired social-problem solving (Evans, Williams, O'Loughlin, & Howells, 1992; Goddard, Dritschel, & Burton, 1996; Goddard, Dritschel, & Burton, 1997; Raes, et al., 2005; Scott, Stanton, Garland, & Ferrier, 2000), difficulty in imagining future events (Williams et al., 1996), and delayed recuperation from episodes of psychiatric disorders (Brittlebank, Scott, Williams, & Ferrier, 1993; Dagleish et al., 2007; Harvey, Bryant, & Dang, 1998; Peeters, Wessel, Merckelbach, & Boon-Vermeeren, 2002). Research has revealed that the presence of overgeneral retrieval (outside of a depressive episode) can indicate a future vulnerability to later mood disturbance

(Mackinger, Loschin, & Liebeteseder, 2000; Mackinger, Pachinger, Leibetseder, & Fartacek, 2000; Williams & Dritschel, 1988; Williams et al., 2007). These findings demonstrate that the phenomenon is not restricted to experimentally manipulated mood states or current affective-episodes. In fact, autobiographical memory remains overgeneral in those with a history of affective disorder, even when not experiencing a current episode.

In their initial study of overgeneral memory, Williams and Broadbent (1986) introduced the AMT as a means of identifying differences in individuals' ability to recall specific memories when prompted. In the AMT participants are asked to respond to a series of cue-words of varying emotional valence (e.g., 'happy', 'frightening') with a specific event from their past. The event can be trivial or formative, from long ago or recent, but it must be a specific event that occurred at a particular place and lasted for a day or less. Participants are given examples and practice trials before actual measurement; responses must be given within certain time restrictions (e.g., 30s, 60s) and are coded or rejected according to the above definition of specificity.

Williams and Dritschel (1992) differentiated between commonly occurring types of non-specific responses as either categoric or extended memories, where categoric memories refer to clusters of events within a certain theme (e.g., "Every time I play tennis") and extended memories detail a series of events lasting longer than twenty-four hours (e.g., "My summer at tennis camp;" see Barsalou, 1988). Since the first findings by Williams and Broadbent, several studies demonstrated and replicated a tendency for suicidal patients to recall categoric memories, as well as show delayed response time(s) for positive cue words (Evans, Williams, O'Loughlin, & Howells, 1992; Pollock & Williams, 2001; Williams & Dritschel, 1988; Williams et al.,

1996). Research then shifted towards a wider examination of autobiographical recall in the affective disorders: Major Depressive Disorder, Bipolar Disorder, and the Anxiety Disorders.

An abundance of research (See Williams et al., 2007, for a review) has demonstrated that overgeneral autobiographical recall is a consistent characteristic of Major Depressive Disorder, persisting in periods of remission, and a stable predictive marker of future depressive symptoms. In particular, depressed individuals have demonstrated a propensity toward categorical overgenerality in their recall, having difficulty retrieving and detailing particular events occurring in one day or less (e.g., Anderson, Goddard, & Powell, 2010; Söderlund et al., 2014). Consistent with prior findings, Anderson et al. (2010) demonstrated that as the tendency toward this style of categorical-recall increases, so too does one's vulnerability to future depressive episodes, in both clinically depressed individuals and non-clinical populations (see also Gibbs & Rude, 2004). More recent research has found that non-remitted depressed individuals are less specific during voluntary, but not during involuntary recall when compared to partially-remitted and never depressed individuals (Watson, Bernstein, Kuyken, Watkins, 2013). Overgeneral autobiographical memory has been linked to a number of depressive conditions and dysphoric symptoms, including Postnatal Depression and Subclinical Depression (Williams et al., 2007). Interestingly, there is some evidence that overgeneral memory serves as a cognitive vulnerability to stress in Caucasian, but not African American adolescents (Strange, Hamlat, Hamilton, Abramson, Alloy, 2013). These researchers found that, after controlling of initial depressive symptoms, familial emotional abuse interacted with overgeneral memory to predict depressive symptoms eight months later, but only in Caucasian adolescents. Although overgeneral retrieval is a consistent characteristic of depressive symptoms and indicator of future vulnerability, it is not an inexorable feature of psychiatric pathology; such biases in autobiographical memory have

not been significantly linked to Generalized Anxiety Disorder (Burke & Matthews, 1992), Social Phobia (Wenzel, Jackson, & Holt, 2002), or Mixed-Group and High-Trait Anxiety (Richards & Whittaker, 1990) when co-morbid depression is controlled for in each of these disorders.

Affective Content

Non-clinical populations have been found to regulate negative mood states using positive memories (Joorman & Siemer, 2004; Joorman, Siemer, & Gotlib, 2007). However, autobiographical memories do not always serve to benefit the individual's sense of well-being: retrieval style can reveal cognitive vulnerabilities to the development and course of certain affective disorders (Williams et al., 2007). Depression is both exacerbated and perpetuated by rumination – a well-established cognitive trait of depression and dysphoria - (Lyubomirsky, Caldwell, & Nolen-Hoeksema, 1998); intrusive/unpleasant memories also can be a source of severe psychological distress (Brewin, 2007). Early studies, using the AMT, found that depressed participants demonstrate a delayed retrieval of positive memories (Williams & Broadbent, 1986b; Williams & Scott, 1988). It has been supposed that the depressed mood might reduce the availability of positive mnemonic material, and therefore account for the slowed retrieval (Eich, 1995; Williams, Watts, MacLeod, & Mathews, 1997). Further, consistent with predictions of the mood-congruent effect, individuals currently in an episode of major depression have demonstrated better recall of negative-valence information, relative to neutral or positive-valence (Watkins, Martin, & Stern, 2000; Watkins, Vache, Verney, & Mathews, 1996). This memory-bias towards retrieval of content that is affectively-congruent with current mood state has been well-established in depressed patients, dysphoric persons, and experimentally manipulated sad states (Murray, Whitehouse, & Alloy, 1999; Rholes, Riskind, & Lane, 1987). In fact, this pattern of biased memory for negative information is perhaps one of the most robust

findings in cognitive research of individuals with major depression (Blaney, 1986; Matt, Vazquez, & Campbell, 1992). More recently, Joormann, Teachman, and Gotlib (2009), using the Deese-Roediger-McDermott (*DRM*) paradigm, revealed a tendency for patients with major depressive disorder to recall false memories of negative material. The *DRM* task presents participants with various lists of words that cue the participants to potentially recall the *critical lure*: a word that is never actually presented, but is highly associated with the series of words that the participant sees and hears. For instance, if the *critical lure* of a particular cue-list is ‘flower,’ then the presented word-chain might be: *petals, water, seed, sunlight, blossom, photosynthesis, stem, etc.* Joorman et al. (2009), using *DRM* lists of neutral, positive, and negative valence, found that depressed participants ‘recalled’ a significantly higher proportion of negatively-valenced *critical lures*, relative to controls (see also Moritz, Glaescher, & Brassen, 2005). No group differences reached significance in the false-recall for positive and neutral lures. Joorman et al. (2009) suggested that depressed participants’ tendency toward false-recall results not only from a general cognitive-deficit, but from a processing-style specific to major depressive disorder characterized by a chronic activation of negative material. Consistent with prior findings (Burt et al., 1995), depressed participants also demonstrated a general deficit, compared to non-depressed controls, in their recall of presented word-lists, particularly with regard to those of positive valence.

Lyubomirsky, Caldwell, and Nolen-Hoeksema (1998), in four studies comparing the autobiographical memories of dysphoric and nondysphoric participants, demonstrated that dysphoric rumination is associated with the retrieval of negatively biased autobiographical memories. In each of the four experiments, dysphorics in the ruminative-condition consistently recalled a higher proportion of negative-memories, rated as such by the participants themselves

(Study 1) or investigators (Study 2), compared to both dysphorics in a distraction-condition and non-dysphoric controls. In Study 3, dysphoric-rumination was associated with elevated frequency ratings for negative events from depressed participants' lives and with diminished frequency ratings for positive events. In Study 4 requesting rumination aloud, dysphoric ruminators in a self-focused condition recalled the largest number of negative memories.

Meaning-Making

Despite the extensive coverage of memory specificity and affective content with regard to depressive symptomology, there has been sparse research by autobiographical memory researchers on meaning-making. Certainly, social psychologists have looked at self-verification processes (e.g., Swann, Wenzlaff, Krull, & Pelham, 1992) and demonstrated a tendency for depressed individuals to construct negative interpretations of stimuli and interpersonal situations. However, only one recent study has explicitly examined the self-event connections (or meaning-making linkages) produced in depressed individuals' memory narratives. In her dissertation, Harkness (2011) looked at memory themes, meaning-making phrases, and redemption/contamination sequences in depressed vs. control participants. Using cluster analysis to group the variables that differentiated depressed vs. non-depressed participants, she found that the depressed sample showed higher levels of contamination and negative affect, while the non-depressed sample showed a cluster that included a greater presence of meaning-making, redemption, agency themes, and positive affect. Regression analysis demonstrated that contamination and meaning-making were the two strongest predictors of BDI scores. This is the first study to show that depression may in fact impair individuals' ability to perform autobiographical reasoning when recalling self-defining memories.

Bipolar Disorder I-II*Memory Specificity*

There is a growing body of research examining autobiographical memory in Bipolar Disorder. This association has intuitive appeal, as there are a number of cognitive trait-similarities between individuals with Major Depression and Bipolar Disorder I-II (Mansell, Colom, & Scott, 2005). The available literature, however, does indicate that the tendency toward overgeneral retrieval so often reported in major depression is present in the autobiographical recall of bipolar patients, as well.

Scott, Stanton, Garland, and Ferrier (2000) found that patients with a diagnosis of remitted bipolar disorder reported a higher ratio of general to specific memories compared to a non-clinical control group, suggesting that even outside of depressive and manic episodes individuals with bipolar illness exhibit the overgeneral memory bias often associated with depression. A relationship between problem solving deficits and the tendency toward recalling overgeneral memories was also revealed. Scott, Stanton, Garland, and Ferrier's (2000) model, however, did not include a remitted unipolar comparison group. As Mansell and Lam (2004) discussed, this is necessary to rule out the possibility that their results could be accounted for by the past experience of depressive episodes in the bipolar group. So, expanding upon these results, Mansell and Lam (2004), using an adapted version of the AMT, prompted participants to recall and describe in detail one positive and one negative memory, and then asked them to rate these memories on several scales. Their study found that individuals with remitted bipolar disorder ($n=19$), compared to a remitted unipolar depression group ($n=16$) recalled significantly more general than specific negative memories, and that their general memories were much lower in mental imagery than their specific memories. The bipolar group reported more often recollecting

their identified negative memory in everyday life, as well, relative to the unipolar depression group. Similarly, Oertel-Knöchel et al. (2012) also found patients diagnosed with bipolar disorder had more frequent recollections of autobiographical events during everyday life, as well as stronger emotionality of autobiographical memories when compared to healthy controls.

More recently, also using the *AMT*, Moulds et al. (2010) assessed the AM retrieval specificity of fifty-two patients with bipolar illness. Their investigation, consistent with prior findings, also demonstrated that individuals with a diagnosis of bipolar disorder were less specific in their retrieval of autobiographical episodes than the means of three comparison groups (Control Group, Anxiety Disorder Group, and Major Depressive Group) taken from a previous study (Wessel, Merckelbach, & Dekkers, 2002). However, these researchers did not find a link between the severity of the disorder and the degree of memory specificity, nor did memory specificity serve as a moderator between childhood trauma and current levels of depression. Compared to healthy controls, individuals with bipolar disorder have also been found to recall fewer specific positive and negative future events and feel more emotional intensity to future events (Boulanger, Lejeune, & Blairy, 2013). In line with these findings, Dempsey, Gooding, and Jones (2013) used a sentence completion task to assess memory specificity in groups of students with low and high trait-based vulnerability for bipolar disorder. They found that students at high-risk for bipolar disorder recalled fewer specific positive memories and greater numbers of negative overgeneral memories than their low-risk peers.

Mansell and Lam (2004) suggest that perhaps these similar cognitive biases observed in both bipolar disorder and depression can be accounted for by research having demonstrated that patients with bipolar illness often considered to be in remission or currently euthymic are actually depressed or experiencing sub-syndromal depressive symptoms (Judd et al., 2003; Scott

et al., 2000). What can be said then of the associations among hypomania, mania, and autobiographical recall? Barnard, Watkins, and Ramponi (2006) predicted an increase in memory specificity, arguing that experiential processing should predominate during episodes of hypomania and mania. Consistent with this hypothesis, Lam and Mansell's (2008) single-case study of an individual with rapid-cycling bipolar disorder found that memories retrieved during hypomania and/or mania tended to be more pleasant and more specific than those recalled during periods of depression. Additionally, Robyn, Ghisletta, and Van der Linden (2012) found that a history of hypomania symptoms was related to enhanced retrieval of memories regarding positive relationships and to reduced self-defining future projections dealing with relationships. The authors interpret their findings as support for the presence of conflicting dysfunctional beliefs in hypomania. These findings are consistent with Eich, Macaulay, & Lam's (1997) predictions in mood-dependent memory biases. Barnard, Watkins, & Ramponi's (2006) theory was explicitly tested in a more recent study (Delduca, Jones, & Barnard, 2010) examining the effect of hypomanic personality on the specificity and speed of autobiographical memory recall. Using the original *AMT*, their investigation compared an analogue sample of non-clinical participants at high behavioral risk of hypomania to a group with low levels of hypomanic personality. The results only partially supported Barnard et al.'s (2006) experiential processing prediction, in that increased levels of specificity were present only in the analogue sample's recall of unpleasant memories. However, more recently, King and colleagues (2013) found that patients with bipolar disorder have difficulties re-experiencing past events encoded during mania. These studies highlight the need for further clarification in regards to understanding the link between processing and recall in episodes of bipolar mania.

Affective Content

Recent research has demonstrated that individuals with bipolar illness tend to recall self-defining memories, which are significantly higher in themes of Mental Illness, Life-Threatening Events, Self Being-Violated, Guilt, Disrupted Relationships, and a Disrupted Sense of Self (Raymond, Singer & Lam, 2011). Lam, Wright, and Smith (2004b) found that the primary memory concerns of persons with this diagnosis often revolve around the pursuit of challenging personal goals. Mansell and Lam (2004) examined this hypothesis, comparing the memory-content of patients with remitted bipolar illness to individuals with remitted unipolar depression. Participants with bipolar illness reported memories relating the failure of a highly-valued goal and/or previous episodes of depression. Mansell and Lam (2004) provided several first-person narratives gathered from participants with bipolar illness where these themes were present. For example:

"I went to [college to do] something completely different so it was a big challenge and I set myself up to work very, very, very hard for the whole year, but that was the only way I was going to get through and I did work very hard ... so I felt that I was capable at what I was doing but I was handicapped by lack of background, but also a lot of things to do with the environment that I was put in by other people rather than myself and the environment that existed already there and that I came off on the bad side of a lot of those things, so I felt that I succeeded in a lot of ways but in terms of actual recognition or results to go home with it wasn't, it didn't work out at all, and there were a lot of negative things I came away with in terms of the place and some of the people in it as well . . ." (Mansell & Lam, 2004, p. 445)

Meaning-Making

The drastic shifts in mood that characterize bipolar disorder have been supposed to lead to 'contradictory experiences of the self,' creating incompatibilities in memory, and disrupting a stable sense of identity. Inder et al.'s (2008) qualitative study investigated the manner in which bipolar disorder impacts how a sense of self is constructed. Their findings revealed that the often contrasting modes of experience and information processing that characterize bipolar disorder

can significantly disrupt integrative meaning-making and the formation of a cohesive, stable sense of identity. Thematic analysis of participant memories and self-evaluations revealed dominant themes associated with self-doubt, confusion, disrupted relationships, and a sense of discontinuity. BD had interfered with the development of interpersonal relationships, goal-attainment, and the maintenance of a consistent sense of self. Participants felt as if others understood them in terms of their diagnosis rather than as unique individuals, and a significant proportion expressed that their understanding of themselves was also more a product of their fluctuating mood than of a sense of consistent identity. This created difficulties for the group in differentiating between the self and the illness, a notion consistent with findings that BD individuals report SDMs where aspects of the self feel fragmented and alien (Raymond, Singer, & Lam, 2011).

Schizophrenia

Memory Specificity

Patients with schizophrenia tend to retrieve and describe past autobiographical events in a manner indicative of both types of overgeneral memory – categoric and extended (MacDougall, McKinnon, Herdman, King, Kiang, 2015; Neumann, Blairy, Lecompte, & Phillipot, 2007; Riutort et al., 2003; Warren & Haslam, 2007). Related research supports this notion that patients with schizophrenia demonstrate a clear deficit in providing specific memories (Neumann et al., 2007), tending to recall markedly fewer autobiographical memories than healthy individuals (Elvevag et al., 2003). (See also chapter by Flegla, Raganath and Ragland, this volume). More recently, these autobiographical memory deficits have been associated with hippocampal volume reductions (Herold et al., 2013).

Using both the Autobiographical Memory Fluency Task (Dritschel et al., 1992) and the Autobiographical Memory Inquiry (*AMI*: Kopelman et al, 1990), Riufort et al. (2003) investigated whether personal episodic and semantic memories were impaired in patients with schizophrenia. Twenty-four (24) individuals with diagnoses of chronic schizophrenia were compared to a control group of twenty-four (24) healthy control subjects on these measures. Their findings were consistent with previous and subsequent research (Feinstein et al., 1998; Kaney et al., 1999; Wood et al., 2006): Patients with schizophrenia were found to exhibit significant specificity-deficits in both episodic and semantic memory; their autobiographical memories were also significantly less detailed than the control group. Further, Riufort et al. (2003) found that the most significant retrieval-deficits were apparent at or immediately after the patients' periods of onset. This was consistent with their hypothesis that significant disruptions in encoding occur with clinical onset. Moreover, recent research has suggested that deficits in episodic, but not semantic details, of negative events predict impaired illness awareness in individuals with schizophrenia (MacDougall et al., 2015).

In contrast to the above findings, Taylor, Gooding, Wood, and Tarrier's (2010) study of individuals with non-affective psychosis linked to schizophrenia or schizophrenia-related disorders found that participants with increased suicide risk showed higher numbers of specific memories. Taking into account Williams's and others' findings of overgeneral memory in individuals with a history of mood-related suicidality, these researchers suggested that overgeneral memory may serve a defensive and protective function for individuals with chronic psychotic conditions. In comparison to the non-suicide attempters in the sample, the suicide attempters reported more distressing specific memories in response to cue-prompts; this finding suggests that the ability to avoid these distressing specific memories may be serving an adaptive

function for the non-suicide attempting individuals suffering from schizophrenia spectrum disorders.

Affective Content and Meaning-Making

In a study assessing participants' SDMs, Raffard et al. (2009) found that individuals with schizophrenia, compared to healthy controls, showed an earlier reminiscence bump, fewer achievement-themed memories, and more memories connected to stigma associated with their illness. Raffard et al. (2010) replicated and extended these findings, demonstrating that patients with schizophrenia, compared to a healthy control group, displayed an earlier reminiscence bump and memories that were less achievement-themed and more concerned with life-threatening events. In addition, they showed fewer self-event connections in their memories and their SDMs' overall quality was less coherent and lower in elaboration. The more negative symptoms they displayed, the less specificity and meaning-making were evident in their memories.

Berna et al. (2011) investigated meaning-making and affective content in 24 outpatients diagnosed with schizophrenia using the *SDM Questionnaire* (Singer & Moffitt, 1991), the *PANAS* (Gaudreau et al., 2006; Watson et al., 1988) the *Impacts of Events Scale* (Brunet et al., 2003), and the *Subjective Impact & Personal Significance Scales* (Wood & Conway, 2006), comparing them to 24 healthy controls. The individuals with schizophrenia once again showed lower levels of self-event connections and meaning-making in both their illness-related and more general SDMs than the controls. Almost 30% of their freely-recalled SDMs reflected illness themes. Of the illness-related SDMs recalled by individuals with schizophrenia, 83.9% referred to a psychotic episode and 16.1% were of past events that patients considered having contributed to their illness. Further, patients had generally more traumatic SDMs than controls. This is in keeping with previous research that persons with schizophrenia report a higher incidence of

trauma, and more often suffer from PTSD than the general population (Mueser et al., 2002, Resnick et al., 2003; Spence et al., 2006). Interestingly, their illness-related memories contained a larger number of redemption themes than the controls' memories. It seems, therefore, that these patients in active treatment for their illness were able to incorporate a more hopeful trajectory into the narrative sequences of the memories associated with their infirmity.

Autism Spectrum Disorders

Memory Specificity

Adults with ASD have been shown to take significantly longer than non-ASD controls in their retrieval of specific, but not general, events (Crane, Goddard, & Pring, 2009). Studies by the same researchers (Crane & Goddard, 2008; Goddard, Howlin, Dritschel, & Patel, 2007) have also found that adults with ASD consistently retrieve fewer specific memories than controls (Crane, Pring, Jukes, & Goddard, 2012). Individuals with ASD have been found to exhibit deficits in personal episodic memory, but not semantic memory, perhaps suggesting a pattern of remembering particular to this population (Crane & Goddard, 2008). These results are consistent with prior findings of personal episodic memory dysfunction in children with ASD (Millward, Powell, Messer, & Jordan, 2000), and perhaps unsurprisingly, since ASD individuals often display superior memory with more semantically-oriented information and profound weakness in other more episodic domains. More recently, these authors have suggested that deficits in theory of mind and working memory, but not elevated levels of depression and rumination, were associated with autobiographical memory performance in adults with ASD (Crane, Goddard, Pring, 2013). These researchers posit that depressed mood and rumination do not have the same influence on autobiographical memory in adults with ASD as they do in healthy controls.

Affective Content and Meaning-Making

Crane et al. (2009)'s qualitative analyses of memory content revealed that, thematically, the self-defining memories of adults with ASD differed from controls (Crane, Goddard, & Pring, 2009). Adults with ASD recalled memories with themes of recreation and exploration, whereas the control group's SDMs instead tended to refer to events of achievement and mastery. Group differences in memory content were observed with regard to the presence of sensory detail in SDM narratives. Similar to the reported sensory abnormalities reported in adults with ASD (White, Ratcliff, Vasey, & McKoon, 2009), their self-defining memories referred to sensory elements significantly more than controls, where no group differences in sensory detail emerged in everyday memory narratives.

Crane, Goddard, and Pring (2009) additionally found that adult controls demonstrated a significantly higher percentage of meaning-making trends in their SDM narratives than did adults with ASD. This seemingly reduced capacity for integrative meaning-making observed in the ASD group's self-defining memories may indicate a self-memory relationship more static than dynamic. However, the authors acknowledged that although the ASD group failed to report events of lesson-learning, this does not directly indicate an inability to extract insight from memory. Rather it might reflect difficulties that individuals with ASD have with open-ended cognitive tasks (White et al., 2009), as they were asked to merely *describe* the memory without explicit instructions asking them to report instances from which they have gleaned higher meanings. Individuals with ASD also demonstrated reduced retrieval for certain major developmental periods (Secondary School & Five-Years Post; Adolescence & Early Adulthood) that are generally linked to the most crucial periods of identity formation.

PTSD*Memory Specificity*

There is convergent evidence (See Moore & Zoellner, 2007, for a review) that individuals with post-traumatic stress disorder (PTSD) exhibit overgeneral retrieval in their recollection of autobiographical memories, as well as self-defining future projections, particularly when prompted to provide a positive memory (Brown et al., 2013; Harvey, Bryant, & Dang, 1998; McNally, Lasko, Macklin, & Pitman, 1995; McNally, Litz, Prassas, Shin, & Weathers, 1994;) A key symptom of PTSD is the intrusive and detailed recollection of the trauma event, usually in rich-sensory and emotive detail (Brewin, Dagleish, & Joseph, 1996). These memories often take on a phenomenology not unlike 'flashbacks,' whereby the individual has the sense of reliving the trauma. (See also chapter by Lanius, Kluetsch, Bluhm, Ros and Frewen, this volume). However, patients with PTSD often have difficulties retrieving details of autobiographical events unrelated to their trauma, displaying a tendency toward summary and generic recollection over specific detailed individual events (De Decker, Hermans, Raes, & Eelen, 2003; Hermans et al., 2004). Nevertheless, merely a history of trauma is not sufficient to account for the overgeneral effect. In research where comorbid major depression (MDD) was controlled for, specificity-deficits related to PTSD diminished to non-significance. It has been posited that individual differences, the nature of the trauma, and styles of coping moderate specificity levels in PTSD recall (Williams et al., 2007).

Affective Content

Sutherland and Bryant (2005) examined SDMs in patients with PTSD. These individuals reported significantly more negatively-valenced, trauma-related self-defining memories than non-PTSD and control participants. This tendency toward the recall of negative memories

coincides with research demonstrating that individuals with PTSD, like MDD patients, exhibit deficits in retrieving positive autobiographical episodes (Harvey et al., 1998; Kangas, Henry, & Bryant, 2005; McNally et al., 1994, 1995). Participants in Sutherland and Bryant's (2005) study preferentially recalled more self-defining memories from their adult years (during which their trauma occurred) than did non-PTSD controls. This is consistent with the notion that the identity and personal memories of individuals with PTSD become trauma-centered.

Meaning-Making

Research consistent with this trauma-centered perspective has shown that patients with PTSD often report feeling that their identity or current self-construct has been significantly influenced by their traumatic experience, indicating that the trauma has become a landmark or 'turning point' in their narrative identity (Bernsten, Willert, & Rubin, 2003). Further, a direct correlation has been consistently shown between the degree to which individuals understand their identity in terms of their traumatic event and the severity of PTSD symptoms (Berntsen & Rubin, 2006; Berntsen & Rubin, 2007). Research (Berntsen & Rubin, 2006, 2007; Berntsen, Willert, & Rubin, 2003) has shown that memories of trauma are often integrated into autobiographical memory with unusual accuracy and magnitude, as a result of the distinct and emotionally charged nature of the memory. On the other hand, Brewin, Gregory, Lipton, and Burgess (2010) suggested that PTSD flashbacks result from the creation of a sensation-based memory without the association to a corresponding contextual memory. Nevertheless, the traumatic-event memory then becomes a central feature of the autobiographical self, informing and providing an organizing framework for the interpretation of present and future non-traumatic events. Berntsen and Rubin (2007) found that integration of this kind can predict the severity of PTSD symptomatology, regardless of whether or not dissociation occurred during the trauma.

These findings suggest that this hyper-integration of the traumatic experience may be critical in promoting PTSD symptoms.

Complicated Grief/Bereavement
Memory Specificity and Affective Content

Complicated Grief, or Prolonged Grief Disorder, is a disorder of grief characterized by persistent yearning, preoccupation with the lost person, intrusive images, bitterness, distrust, and/or difficulty believing or accepting the loss to the point of functional impairment (Prigerson & Maciejewski, 2009). Interest in the Autobiographical Memory correlates of CG was sparked by the notion that reduced memory specificity may well result from attempts at regulating the uncomfortable affect associated with loss-related intrusive images and distressing memories, both key features of Prolonged Grief Disorder.

Golden and Colleagues (2007) investigated autobiographical memory in bereaved individuals with and without a diagnosis of CG. Patients with CG were found to be significantly less specific in their recall than controls following negative cue words. However, for cues of positive valence no group differences reached significance. Participants were also administered a Biographical Memory Test, where they were asked to recall memories about the life of the deceased individual. No significant between-group specificity differences reached significance on this task, but individuals with CG tended to retrieve more specific memories following negative cues. Golden et al. (2007) hypothesized that these findings were the product of the functional avoidance seen in other psychiatric disorders associated with overgeneral memory. In contrast, Robinaugh and McNally (2013) also compared autobiographical memory in individuals with and without CG, but found individuals with CG were not less specific than their bereaved controls when generating events that included the deceased. However, individuals with CG did display deficits in recalling specific past events, as well as envisioning future events that did not

include the deceased. The authors suggest that this deficit in generating past and future events without the deceased may influence the sense of lost identity and hopelessness often observed in individuals with CG.

Boelen et al. (2010) examined how demographic features mediated memory specificity and how reduced specificity related to symptom severity in 109 bereaved persons. Using both the standard version and trait-version of the AMT, their study revealed that older participants and participants with lower educational backgrounds provided less specific memories. Participants who had lost a partner rather than a relative, other than a child, demonstrated significant specificity deficits, as well (see also Wessel, Mercklebach, & Dekkers, 2002). In general, reduced specificity was significantly associated with increased severity of CG symptoms. However, Golden et al. (2007) hypothesized that the increased specificity in negative memories of the deceased person were 'immune' to overgenerality as a result of their being directly and habitually retrieved, rather than recalled through the generative retrieval processes underlying affect regulation. Boelen and Colleagues' (2010) results are consistent with this, as participant memories tied to their source of distress tended to be preferentially and specifically recalled.

Meaning-Making

Maccaullum and Bryant's (2008) investigation of SDMs in Complicated Grief found that, like PTSD, bereaved individuals meeting diagnostic criteria for CG perceived their loss as more central to their identity than those individuals without CG. The authors suggested that persons vulnerable to CG may have constructed their identity in a manner that is both intertwined with and heavily dependent upon the deceased, and, as a result, recall more loss-object related memories from this "self." Consistent with this notion, participants with and without CG were equally likely to report the loss of their loved one as a self-defining memory, although

participants with CG reported more self-defining memories that were related to the deceased. Perhaps the most crucial finding with regard to integrative-meaning making was that the non-clinical group demonstrated less negative affect in their recall and evidenced more benefit finding and redemption themes in their loss-related SDMs. No participants with CG displayed redemptive sequences in their death memories.

Borderline Personality Disorder

Memory Specificity, Affective Content, and Meaning-Making

Both **Borderline Personality Disorder (BPD)** and overgeneral AM are reliably associated with major depression, deliberate self-harm, suicidal behavior, and a history of trauma (Linehan, 1993; Maurex et al., 2010). One then might expect a lack of specificity in personal memories in individuals with BPD. Two early studies confirmed this hypothesis: Jones et al. (1999) and Startup et al. (2001) demonstrated that overgeneral retrieval was a feature of BPD. Further research attempting to clarify this relationship, however, has produced largely inconsistent findings (For a review, see Van den Broeck, Pieters, Claes, Hermans, & Raes, 2013).

Kremers, Spinhoven, and Van der Does (2004) examined AM in individuals with a diagnosis of BPD. Their results suggested that reduced specificity, when present in BPD, is better accounted for by a diagnosis of comorbid MDD. Contrary to these findings, Maurex et al. (2010) recently demonstrated that reduced specificity was associated with BPD, whether or not comorbid depression or PTSD, concurrent or past, was present. Other investigations have concluded that reduced specificity is not associated with BPD, with or without comorbid depression (Arntz, Meeren, & Wessel, 2002; Renneberg, Theobald, Nobs, & Weisbrod, 2005). Pointing to Dagleish et al.'s (2007) suggestion that autobiographical memory is associated with

cognitive ability, Reid and Startup (2010) proposed that these discrepant findings could well be the product of cognitive and demographic differences between participants with BPD (e.g., general intelligence, educational background) and variations in the AMT used in previous studies. This notion of demographic mediating factors is consistent with prior research (Arntz et al., 2002; Kremers et al., 2004), which determined that level of education is significantly associated with autobiographical recall specificity in patients with BPD.

Reid and Startup (2010) compared memory-specificity in individuals with BPD, with and without comorbid depression, to a group of non-clinical controls. Their results were consistent with Maurex and Colleagues' (2010) findings, in which reduced specificity was associated with a diagnosis of BPD, irrespective of concurrent or past comorbid depression. This relationship, however, was significantly mediated by group differences in level of education and IQ. In fact, these two variables accounted for 21% of the variance in memory-specificity in the BPD group. Nevertheless, the authors concluded that while cognitive abilities may play a significant role in AMT performance, they could not fully account for the specificity deficits observed therein. Considering the level of disturbance associated with the BPD diagnosis, it is unfortunate that no specific studies up to this point have targeted affective content and meaning-making processes in the autobiographical memories of clients suffering from this disorder. More recent research has also found that individuals with BPD exhibit overgeneral memory, but this relationship was not related to various levels of non-suicidal self-injury (Van den Broeck, Claes, Pieters, Berens, & Raes, September, 2014). Furthermore, Rosenbach and Renneberg (2015) demonstrated a relationship not only between overgeneral memory and BPD, but also degree of rejection sensitivity. Moreover, linguistic styles in individuals with BPD displayed themes of rejection that

had a high relevance to everyday life and emphasize disorder-specific cognitive and behavioral patterns.

Discussion

This chapter reviewed studies that have examined the relationships among major psychological disorders, autobiographical memory and self. It asserted that a healthy narrative identity consists of the ability to access specific autobiographical memories that tend to be more positive in affective content and that provide opportunities to draw meaningful inferences about the self, others, and the world in general. A subset of these memories - “self-defining memories” - plays a particularly critical role in articulating enduring central themes and conflicts for the individual.

In examining the autobiographical memories of individuals with a range of psychological disorders, certain overarching conclusions can be reached. Although overgeneral memory appears to be most closely linked to depressive disorders, it does seem to play a role in many other disorders, including bipolar illness, schizophrenia, autism, PTSD, complicated grief, and borderline personality disorder. However, its presence in many of these disorders may be more a reflection of efforts to block or avoid distress than an inherent property of these other illnesses. Overall, across these diverse disorders, there seemed to be strong support for the functional avoidance hypothesis as articulated by Williams et al. (2007). For example, even though suicide attempters with schizophrenia syndrome disorders were more likely to show memory specificity, they were also more likely to report more distressing autobiographical memories, suggesting less effective strategies for fending off negative affective content in their memories. In the case of autism, however, overgeneral memory may be more a result of cognitive impairment than linked to a defensive coping mechanism.

Affective content analyses of autobiographical memories across the various psychological disorders revealed a powerful effect of psychological illness on memory valence and theme. Not only individuals with depression, but also individuals with other life-altering disorders, reported higher levels of negatively-toned memories, more self-defining memories associated with illness, trauma, and loss, and more memories that conveyed themes of contamination. The research reviewed highlighted the degree to which individuals with chronic disorders locate the onset of their illnesses as touchstone memories in their narrative identity and as anchoring points around which prior and subsequent life experiences are located. On a positive side, there was some evidence in the Berna et al. (2011) study that individuals in active treatment for their disorder were able to incorporate redemptive sequences into their illness memories, indicating a more optimistic stance toward their disorder.

One of the more important and still under-researched questions regarding memory and psychological disorder is the degree to which the various disorders link to levels of impaired autobiographical reasoning. The ability to make self-event connections that inform individuals about the consequences of past actions, the pleasure or pain of previously attained or thwarted goals, and larger lessons about the world is a critical component of healthy narrative identity. The new research findings assembled in this chapter suggest that individuals suffering from depression, schizophrenia, and autism are more prone to show impaired autobiographical reasoning, indicating a significant challenge to recovery and growth. In addition, individuals suffering from disorders with particular cognitive deficits, such as schizophrenia and autism, were also more likely to show fragmented memory narratives; this inability to create coherent meanings from memories affects the sense of unity and consistency that are hallmarks of stable narrative identity. Related to this problem was the finding that the reminiscence bump, a critical

period of identity consolidation in late adolescence and early adulthood, was disrupted or came earlier for these individuals. More research, both cross-sectional and longitudinal, is necessary to determine the role of impaired meaning-making in the genesis, perpetuation, and relapse of these disorders.

Finally, in considering the methodologies of the various studies reviewed, it would be most beneficial if more uniformity in the collection and coding of autobiographical memories could be achieved in future work. The effective use of Williams's Autobiographical Memory Test to examine memory specificity in multiple studies has allowed for more consistent comparisons. In studies that seek to look at memory content through written protocols, the self-defining memory request has yielded reliable content coding and meaning-making comparisons among disorders as diverse as depression, schizophrenia, bipolar illness, PTSD, complicated grief, and autism. The Singer and Blagov (2002) coding manual for coding memory specificity and meaning-making, along with Thorne and McLean's (2001) content-coding system and the McAdams redemption-contamination coding guidelines (McAdams, 1999a, 1999b) have generated reliable and valid results.

Although the studies reviewed in this chapter have yet to address the causal direction of the relationship between disrupted autobiographical memory and psychological disorder, they do provide compelling evidence that narrative identity is significantly affected in individuals suffering from psychological illness and neuropsychiatric disorders. These disruptions are pervasive and manifest in the specificity, hedonic tone, narrative content, and meaning-making capacity of individuals' most important and self-defining memories. The study of narrative identity gives researchers and clinicians a much more powerful sense of the phenomenological impact and massive assault on well-being rendered by major psychological disorders. By taking

the subjective experience of these disorders into account, the roles of self and memory in the research and treatment of these disorders, will be clarified.

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