

## **Facets of autobiographical memory in adolescents with major depressive disorder and never-depressed controls**

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Adolescence is a crucial developmental window because it involves elaboration of the self-concept, the laying down of lifelong autobiographical memories, and the development of emotional resilience during a time of substantial risk for mood problems. Autobiographical memory retrieval plays an important role in depression both in adults (van Vreeswijk & de Wilde, 2004) and adolescents (Kuyken, Howell, & Dalgleish, 2005; Park, Goodyer, & Teasdale, 2002). This study examined facets of autobiographical memory associated with memory retrieval in never-depressed and currently depressed adolescents: personal importance, imagery, recency, source monitoring, and field-observer perspective. Compared with never-depressed adolescents, adolescents with depression were significantly more likely to retrieve memories from an observer perspective and more recent time period, preferentially rehearsed negative memories and rated their memories as more personally important. Depressed adolescents who reported a history of trauma retrieved more vivid autobiographical memories than depressed adolescents not reporting such a history, had rehearsed them more frequently, and reported more confidence in their veracity.

Adolescence is a crucial developmental phase during which a more explicit, stable, and coherent sense of self emerges (Harter, 1999). Adolescence is also the developmental window for the emergence of mood disorders from almost no point prevalence in early adolescence to point prevalence rates comparable to adults by late adolescence (Kessler, Avenevoli, & Merikangas, 2001). Several theoreticians have argued that adolescence is about pulling together autobiographical memories (AMs) with current experiences and future aspirations into a more coherent sense of self, a process that enhances resilience (Erikson,

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1968; Harter, 1999). There is accumulating evidence that a high density of personally important and vivid AMs are laid down in adolescence that endure into adulthood and are important for emotional health (Habermas & Bluck, 2000). Recent evidence suggests that in depressed adolescents emotional memories become less accessible in terms of their specificity (Park et al., 2002), a phenomenon that may compromise resilience. However, there is almost no research about other facets of autobiographical memory that we know are important in nonclinical populations (Baddeley, 1990). This study is an exploratory examination of some of the key facets of emotional and self-defining AMs in depressed and never-depressed adolescents.

In children and adolescents the development of meta-cognitive abilities, the ability to monitor the source of AMs and a more stable and coherent self-concept increasingly support the development of autobiographical memory (Welch-Ross, 1995; Welzer & Markowitsch, 2005). In adolescents' autobiographical memory functioning is likely to impact on their current functioning *and* their healthy psychological development. It is now a well-established finding that AM retrieval is compromised in depression, in particular through difficulty retrieving specific AM (e.g., "I felt ashamed when I cheated on my boyfriend") and instead generating a high proportion of memories that are categorical (e.g., "when I have let people down"). This is true for memories cued in response to emotion words (van Vreeswijk & de Wilde, 2004) and for self-defining memories (Moffitt, Singer, Nelligan, Carlson, & Vyse, 1994). Recently, this broad finding has been replicated with adolescents (Kuyken et al., 2005; Park et al., 2002), suggesting that difficulty accessing event specific autobiographical knowledge begins at least as early as adolescence.

A reported history of significant trauma also appears to compromise the ability to retrieve specific AMs (Hermans et al., 2004; Kuyken & Brewin, 1995), which has been replicated with adolescents reporting trauma (de Decker, Hermans, Raes, & Eelen, 2003). One theoretical account suggests that traumatic memories are not integrated with the current working self, nor integrated with more verbally accessible event specific knowledge, but are oriented by early warning schemas that are perceptually primed to threat and associated with fear (Ehlers et al., 2002). The way in which trauma affects other emotional or self-defining memories is as yet little understood.

While the specificity of AM has been extensively researched, the general memory research literature indicates several facets of AM that are important and are under-researched in depression. The valence, personal salience, vividness, age of memory, and frequency of rehearsal are key facets of AM retrieval (Baddeley, 1990). It is a well-replicated finding that people who are depressed find it easier to recall negative memories compared to people who are not depressed (e.g., Clark & Teasdale, 1982). In a nonclinical population, comparisons of positive, negative, and traumatic memories suggested positive memories were clearer and contained more visual material (Byrne, Hyman, &

Scott, 2001). To try and explain these effects, it has been suggested that to maintain a positive working self people selectively rehearse pleasant memories, an ability that is compromised in people experiencing high levels of dysphoria or distressing intrusive memories (Joormann & Siemer, 2004; Taylor & Brown, 1994; Walker, Skowronski, & Thompson, 2003). Selective rehearsal of positive memories ensures that these memories persist with more detail and are therefore more accessible than unpleasant memories. To date, no study has examined whether these effects are observable in depressed adolescents or among those depressed adolescents reporting a history of trauma.

More recent AMs are more likely to be recalled than distant AMs (the "recency effect") (e.g., Berntsen & Rubin, 2002). A range of explanations of the recency effect have been examined empirically. More recent memories are more vivid and detailed, probably simply because this detail is forgotten in older memories, are more closely linked with current goals, and have been more recently rehearsed (D'Argembeau & van der Linden, *in press*). To date, no research has examined if this tendency to preferentially retrieve recent memories is more pronounced for people experiencing depression, which would be a form of impoverished accessibility. This would be particularly important in adolescence where formative memories are being encoded and rehearsed.

In a seminal study a distinction was drawn between memories retrieved with the person seeing the memory as if with their own eyes (field perspective) and memories where the memory is retrieved with the person as a "fly on the wall" (observer perspective) (Nigro & Neisser, 1983). Field memories tended to be more frequent (field 51%; observer 36%, unclassifiable 12%), more recent and associated with more emotion. An emerging explanation has been that repeated retrieval and rehearsal transform field memories into observer memories (Robinson & Swanson, 1993). A variety of theorists have commented that adolescence is the period when the "I-self" begins to be more fully aware of an objectified "Me-self" with the potential to monitor and evaluate the Me-self (see Harter, 1999). In a series of correlational and experimental studies with young adults, dissonance between current and past self-concept was associated with a tendency to retrieve more observer memories (Libby & Eibach, 2002; Libby, Eibach, & Gilovich, 2005). There is also evidence that situations involving self-focus (e.g., a public presentation) invoke a higher likelihood of memories retrieved as observer memories (Robinson & Swanson, 1993). Adolescence is a time when the self-concept is undergoing significant change and development, a process that is likely to be disrupted in adolescents diagnosed with depression. If the thesis that a consonant self is associated with greater numbers of field memories, we should anticipate a higher proportion of observer memories in depressed adolescents, a group struggling to generate a consonant self.

Imagery is integral to effective AM retrieval, as the reconstructive process is thought to involve the building of mental images. Autobiographical memories,

particularly more recent memories, are often rated as highly vivid (Brewer & Pani, 1996), and memories rich in imagery have a shallower retention function (Rubin & Kozin, 1984). Memory cues that are easy to image make memory retrieval easier and are more likely to yield specific memories probably because imagery is a fast and efficient form of summarising large amounts of information (Williams, Healy, & Ellis, 1999). Trauma memories in particular tend to more vivid (Wenzel, Pinna, & Rubin, 2004), although we know little about how reported trauma affects facets of other emotional and self-defining memories. To date, no research has examined if the vividness of AMs is impoverished in people suffering depression let alone among adolescents suffering depression.

Autobiographical memory retrieval is fallible and vulnerable to a range of distortions and problems. Accurate AM depends critically on the ability to recall precisely when and where a specific event occurred, a process referred to as source memory (see Schacter, 1996). Being able to distinguish real from imagined events is in large part a function of how well source information is encoded (Johnson, Hashtroudi, & Lindsay, 1993). Imagined events (e.g., results of repeated ruminative thinking) lack detailed contextual detail (Johnson, Foley, Suengas, & Raye, 1988). Depression is a disorder marked by self-focused, repetitive thinking, divorced from event-specific autobiographical knowledge (Mor & Winquist, 2002), that might lead to source monitoring problems in AM retrieval. One way of identifying source monitoring problems is through reduced overall confidence in the integrity of memories and reduced ability to accurately date memories (Schacter, 1996). In parallel ways, intrusive traumatic memories, poorly integrated with the self-system, might also lead to source monitoring problems. Source monitoring is a faculty that develops during childhood and adolescence (Welch-Ross, 1995) and it is possible that depression could interrupt normal development of this ability.

While we have reviewed these memory characteristics separately, they are systematically interrelated. In many studies, the personal importance, vividness, and emotionality of memories are highly correlated (e.g., Rubin & Kozin, 1984; Wright & Nunn, 2000). Personally important memories become stable, vivid, and therefore intrinsically highly accessible. One classic view of highly accessible memories are "flashbulb memories" (Brown & Kulik, 1977), which tend to be personally consequential, vivid, and unique. Personal relevance and emotionality are two characteristics that make memories most accessible, and it is possible that self-defining memories have some of the qualities of flashbulb memories. To our knowledge no research has explored whether these established relationships in personally important memories between vividness and emotionality extend to adolescents diagnosed with depression.

## Focus of study and research questions

Autobiographical memory in adults and adolescents with depression tends to be characterised as over-general, a form of inaccessibility to event-specific autobiographical information. In nonclinical populations there are substantial individual differences in key facets of AMs: their personal importance, vividness, rehearsal, valence, recency, date accuracy, and confidence in accuracy. Surprisingly, we know very little about these facets of AM in adolescents with depression even though they may be crucial to the emerging self-concept and skills in emotion regulation. Our study sought to extend important findings from the general AM literature to better understand AM functioning in a group at a crucial stage in developing resilience/vulnerability for depression: 12 to 18-year-olds. Specifically, we examined the personal importance, vividness, rehearsal, memory valence, recency, date accuracy, and confidence of AMs among adolescents diagnosed with depression, comparing their memories with never depressed adolescents. Because trauma has also been shown to affect memory retrieval we wanted to examine among the depressed adolescents whether trauma compromised these facets of autobiographical memory.

## METHOD

### Participants

A total of 65 adolescents (aged 12–18) were recruited through schools, child and adolescent mental health services, children's homes, advertisements placed in libraries, youth centres, coffee bars, and local media (newspapers, radio, and television). Depression status was assessed against the *Diagnostic Statistical Manual for Mental Disorders*, 4th edition (DSM-IV; American Psychiatric Association, 1994) criteria for major depressive disorder. *The Beck Depression Inventory*, 2nd edition (BDI-II; Beck, Steer, & Brown, 1996) assessed depression severity. The sample comprised two groups: adolescents who currently met DSM-IV criteria for major depression ( $N = 34$ ), and adolescents who had never been depressed ( $N = 31$ ). Exclusion criteria were: substance abuse within the past 12 hours, and incapacity to participate because of an acute, unstable or severe mental or physical health problem. The two groups were comparable on age and sex: depressed age  $M = 16.12$ ,  $SD = 1.41$ , 29 (85%) female; never depressed age  $M = 15.71$ ,  $SD = 1.66$ , 22 (71%) female.

Participants' reports of trauma were screened using the Trauma History Questionnaire (THQ) and where necessary through follow-up questioning. A self-reported history of significant trauma was judged present if the event(s) met the DSM-IV Criterion A for posttraumatic stress disorder (PTSD), that is, "the person experienced, witnessed or was confronted with an event or events that involved actual or threatened death or serious injury, or a threat to the physical integrity of self or others and the response involved intense fear, helplessness, or

horror'' (American Psychiatric Association, 1994, p. 424). Reliability of ratings between research assistants' ratings of trauma and the first author for a random sample of 10 participants was 90% (Cohen's kappa = .8). Examples of trauma meeting Criterion A were involvement in serious car accidents, being physically assaulted, sexual abuse, witnessing deaths, accidents, or severe violence.

## Materials and measures

*Beck Depression Inventory.* The BDI-II (Beck et al., 1996) is a 21-item self-report instrument developed to measure severity of depression in adults and adolescents. Higher scores represent greater depression severity (range 0–63), and minimal, mild, moderate, and severe symptom severity ranges have been specified.

*Trauma History Questionnaire* (THQ; Green, 1996). This lists 23 traumatic events in three categories. For each event, participants indicate lifetime occurrence, frequency, and age at first occurrence, and where appropriate, relationship to the perpetrator. Psychometric data on the THQ has shown high test-retest reliability of items (mean 0.70). The THQ was used as an initial screen for traumatic stressors.

*Children's Impact of Event Scale* (CIES; Smith, Perrin, Dyregrov, & Yule, 2003; Yule, Tenbruggencate, & Joseph, 1994). This is an 8-item self-report measure of intrusion and avoidance of traumatic events for children. The CIES was adapted from the original 15-item Impact of Event Scale (Horowitz, Wilner, & Alvarez, 1979). Each item is scored on a 4-point scale: High scores indicate higher levels of intrusion and avoidance of the traumatic event, within the past week. The scale has been found to have criterion validity with the diagnosis of PTSD and has been used successfully with children as young as 9 years. Participants completed the CIES in relation to the event specified in the THQ which continued to trouble them the most. A cut-off score of 17 has been found to work efficiently at discriminating PTSD cases, with 90% of children correctly classified (Smith et al., 2003).

*Autobiographical Memory Test* (AMT; Williams, 2000). Participants were asked to retrieve memories in response to 10 emotionally valenced cue words: five positive (happy, hopeful, excited, proud, and loved) and five negative (lonely, frightened, sad, angry, and ashamed). To ensure cues were appropriately positively and negatively valent and appropriate to adolescents the words were selected from the list of cues used in previous AM research (Williams, 2000) and emotion words previously generated by children and adolescents (Doost,

Moradi, Taghavi, Yule, & Dagleish, 1998). This version of the AMT has been successfully used with adolescent clinical populations (de Decker et al., 2003; Swales, Williams, & Wood, 2001). Participants were shown the word on printed flash cards (black print on white paper) and given 30 seconds to retrieve a specific AM (a time and place when something happened to them in 1 day). Words were presented with positive and negative words alternating. If participants did not retrieve a specific memory they were prompted (“can you think of a specific time—one particular event”). If participants did not retrieve a specific memory in the time available (30 seconds), an omission was recorded and the experimenter proceeded to the next cue word. To ensure that participants understood the instructions, two practice cues were given (relieved and tired). Work to date with the AMT has largely restricted itself to examining the latency and specificity of memory retrieval. To address the aims of this study we asked participants after retrieving all the memories to go back and to rate each specific memory along a number of Likert dimensions: personal importance (1, not important to 7, one of the most important events *that has ever happened to me*), vividness (1, no image to 7, as if I were seeing it now), confidence of description (1, not at all to 7, completely confident), pleasantness (1, one of the most *unpleasant* events that has ever happened to me to 4, fairly neutral to 7, one of the most *pleasant* events that has ever happened to me), and the number of times they had thought about the memory since it happened (1, first time I’ve remembered it; 2, infrequently—about 5; 3 sometimes—about 10; 4 often—20; 5 very often—30 or more). Participants were asked to date their memory, and then indicate the accuracy of their dating (1, accurate to the day; 2, accurate to the week; 3, accurate to the month; 4, accurate to the season/quarter; 5, accurate to the year; 6, accurate to 5 years; 7 accurate to 10 years). Test-retest reliability and checks on dating accuracy suggest this method is effective (Rubin, Wetzler, & Nedes, 1986). In this sample, the median accuracy of dating memories was within 1 week. Participants were also asked if they recalled the event from a field (i.e., seeing scene through their own eyes) or observer perspective (seeing the scene from an observer’s perspective).

*The Self-defining Memory Task* (Singer & Moffitt, 1992), generates self-defining memories. Participants were asked to generate memories in response to the following instructions:

I would like you to think of a memory that defines you in some way. Try to think of this as the sort of memory you might tell someone who really wanted to get to know you. It is the sort of memory you think illustrates the kind of person you feel you really are inside. It is the sort of memory that you think tells powerfully how you have become the person you are at the moment. It might be the sort of memory from your life that you remember very clearly and that still feels important to you.

After they had generated a first memory, they were encouraged to think of another self-defining memory using the following prompt: "Now I would like you to think of another memory that defines you in some way". If a generic memory was recalled the participant was prompted for a specific memory with the following instruction: "Can you think of a particular time?". Memories were spoken out loud, and later transcribed verbatim. Self-defining memories were rated along the same dimensions as emotional memories (above), but in addition participants were asked to indicate on a 7-point scale how much the memory "defines you as a person" (1, not at all to 7, completely).

*Verbal Fluency Task* (VFT; Benton, 1968; Tombaugh, Kozac, & Rees, 1999). This was used as a measure of executive functioning. Participants were asked to generate as many words as possible beginning with the letter "B" in 60 seconds. Names, repeated words, and word variations (e.g., belonging, belongings) were not included in the final count.

## Procedure

Invitations to participate were made directly to young people as well as through parents and workers in health and social care. Recruitment targeted currently depressed adolescents and controls through the wording of advertisements and dialogue with referring services. Following informed consent and assent procedures to a broader study of "Adolescents at Risk for Depression", adolescents completed the face-to-face interviews normally at the University or occasionally at other locations, such as their homes. Interviews lasted between  $1\frac{1}{2}$  to 2 hours and participants were remunerated approximately \$10. After demographic and background information was collected, the memory tasks were completed. Participants' reports of trauma were screened using the THQ and where necessary through follow-up questioning. A self-reported history of significant trauma was judged present if the event(s) met the DSM-IV Criterion A for PTSD. If the THQ screened positive for trauma, then the CIES was completed. Next, the BDI-II was completed, followed by an interview to establish the presence/absence of current and past depression. Depression status was assessed using the modules for mood disorders from the *Structured Clinical Interview (SCID) for the Diagnostic Statistical Manual for Mental Disorders* (4th revised edition) (DSM-IV; American Psychiatric Association, 1994; First, Spitzer, Gibbon, & Williams, 1995). SCID interviewers were psychology graduates trained by doctoral level psychologists. Questions were asked about past number of psychiatric hospital admissions, past suicide attempts, and past self-injury. The procedure concluded with the verbal fluency task.



## RESULTS

### Preliminary analyses

Much of the AM data uses nominal but sequentially ordered scales representing quantitative continuous attributes (e.g., frequency of memory rehearsal) comprising either five (accuracy) or seven levels. Given the exploratory nature of this study a primarily nonparametric statistical approach will be taken. However, some analyses require a multivariate approach, and in these cases subsequent nonparametric approaches will be used to check the integrity of the main components of the analysis and are reported as a footnote if these are substantially different.

For emotion memories mean ratings for positive and negative memories were computed for each of the memory characteristics (personal importance, vividness, rehearsal, confidence, accuracy, pleasantness). In addition, the proportion of total number of memories recalled that were field memories was computed for both positive and negative cues. Finally, the ages of memories in days was computed. When approximate dates were given algorithms were used (e.g., a week ago  $\rightarrow$  7 days; 3 months ago  $\rightarrow$   $3 \times 30 = 90$  days; Spring 3 years ago, data collected in spring,  $\rightarrow$   $3 \times 365 = 1095$  days). The dataset was cleaned, and because missing data were rare and the study is exploratory no strategies for missing data were employed beyond reporting the accurate  $N$  for each analysis (Tabachnick & Fidell, 2001). To ensure that the five positive memory cues and five negative memory cues were generating memories subjectively rated as pleasant or unpleasant, descriptive statistics for pleasantness ratings were calculated for the two sets of cues (Table 1). The design was effective in differentially producing positive and negative memories Wilcoxon's  $T = 7.01$ ,  $p < .0001$ ,  $N = 65$ . For the two self-defining memories, mean ratings from the two memories were computed for each of the memory characteristics (personal importance, vividness, rehearsal, confidence, pleasantness). To ensure that the self-defining memory task did lead to retrieval of memories subsequently rated as "defined me as a person" descriptive statistics were computed,  $M = 5.03$ ,  $SD = 1.02$ , range 2–7, suggesting that participants regarded these memories as self-defining. Moreover, self-defining memories were rated as more personally important than memories generated in response to emotion cue words (Table 1), Friedman chi-square ( $df = 2$ ) = 95.2,  $p < .0001$ ,  $N = 64$ . The content of the self-defining memories was highly variable, spanning interpersonal (both family and friends), health, school, and hobbies.

As would be expected, the depressed group reported significantly more psychiatric history and trauma than the never depressed group. Within the depressed sample, 11 (32%) had experienced one episode of depression, 9 (27%) had experienced two episodes, and 12 (35%) had experienced three or more

TABLE 1  
 Descriptive statistics, means, (standard deviations), and 95% confidence intervals for emotion and self-defining memories in never-depressed (*N* = 31) and currently depressed adolescents (*N* = 34)

Memory characteristics	Never-depressed			Currently depressed		
	Emotion memories		Self-defining memories	Emotion memories		Self-defining memories
	Positive	Negative		Positive	Negative	
Age	521 (371) 385–657	829 (706) 570–1088	1251 (1093) 850–1651	216 (281) 118–315	400 (502) 225–575	1193 (1075) 812–1574
Personal importance	4.15 (0.99) 4.15–4.87	3.78 (1.01) 3.41–4.15	4.82 (1.16) 4.4–5.25	4.91 (1.04) 4.55–5.27	4.13 (1.18) 3.72–4.54	5.32 (1.59) 4.76–5.88
Vividness	5.54 (0.83) 5.24–5.85	5.37 (0.79) 5.08–5.66	5.39 (1.04) 5.01–5.77	5.53 (0.88) 5.22–5.83	5.37 (0.81) 5.05–5.68	5.08 (1.07) 5.42–6.18
Confidence	5.87 (0.76) 5.69–6.24	5.71 (0.89) 5.39–6.04	5.84 (0.84) 5.53–6.15	5.69 (0.88) 5.39–6.0	5.57 (1) 5.22–5.92	6.05 (1.06) 5.67–6.42
Pleasantness	5.55–0.88 5.34–5.76	2.47 (0.56) 2.27–2.68	3.71 (1.32) 3.23–4.19	5.52 (0.74) 5.26–5.78	2.21 (0.6) 2.0–2.42	3.36 (1.47) 2.84–3.88
Rehearsal	2.84 (0.84) 2.53–3.15	2.83 (0.80) 2.53–3.12	3.37 (1.10) 2.97–3.77	2.70 (0.87) 2.4–3.0	3.2 (0.87) 2.9–3.51	3.69 (0.96) 3.36–4.03
Accuracy	2.31 (0.78) 2.02–2.60	2.81 (0.87) 2.5–3.13	<i>a</i>	2 (0.83) 1.71–2.29	2.48 (1.71) 1.89–3.08	<i>a</i>

Note: Age in days; personal importance (1–7); vividness (1–7); confidence (1–7); pleasantness (1–7, 4 neutral), rehearsal (1–5), accuracy (1 = to the day to 7 = within 10 years).

<sup>a</sup>Data not collected.

episodes.<sup>1</sup> Four (12%) had been hospitalised for depression, 16 (47%) had made suicide attempts and 25 (74%) had self-harmed. The severity of depressive symptoms in the depressed sample was on the borderline between moderate and severe symptoms (BDI-II: *M* = 28.68; *SD* = 12.49), while in the never depressed group all were in the asymptomatic range (BDI-II: *M* = 4.58; *SD* = 3.81). The number and proportion of adolescents reporting significant trauma were as follows: depressed 22 (65%), never-depressed 3 (10%). Among the currently depressed sample reporting a history of significant trauma, the rates of trauma symptoms were significant with the mean Impact of Event Scale (IES) score falling significantly above the recommended cut-off for probable PTSD in 18 (53%) of the sample compared to none of the never depressed sample.

<sup>1</sup>Data on number of episodes was missing for two participants, because the SCID was not completed in full for previous episodes of depression.

The depressed and never-depressed samples were comparable on age, gender distribution and verbal fluency.<sup>2</sup> Any impact of demographic factors and verbal fluency on the AM variables was examined for the sample as a whole and for the depressed and never-depressed groups separately. For the sample as a whole, only one relationship reached significance. More pleasant self-defining memories were associated with greater verbal fluency,  $r_s = .26, p < .05, N = 65$ . There were no significant differences on any AM characteristics by gender. For the never-depressed group, younger participants tended to retrieve more field perspective self-defining memories,  $r_s = -.44, p < .05, N = 31$ . There were no significant differences on any AM characteristics by gender. For the currently depressed group, two relationships reached significance. Older participants recalled less unpleasant negative memories,  $r_s = .53, p < .01, N = 34$ . Also, older participants rehearsed negative memories less often,  $r_s = -.38, p < .05, N = 34$ . In the depressed group some interesting gender differences emerged. Male participants tended to rate the accuracy of the dates they gave for their positive memories higher, Mann-Whitney  $U = 28, p < .05, df = 33$ . Female participants tended to have rehearsed negative memories more, Mann-Whitney  $U = 29, p < .05, df = 33$ . Subsequent analyses addressing the study's research questions involving AM variables associated with age, gender, or verbal fluency statistically covaried age or verbal fluency or were rerun for female participants alone to ensure effects were not artefacts of these variables.

### Autobiographical memory characteristics and depression

The descriptive statistics for AM characteristics for the memories are shown in Table 1. A series of mixed 3 (memory type: positive, negative, self-defining)  $\times$  2 (Group: never depressed, currently depressed) ANOVAs were computed on the following dependent variables: memories' age, personal importance, vividness, confidence, pleasantness, rehearsal, and accuracy.<sup>3</sup> The ANOVA for *age of memory* revealed a significant effect of group,  $F(1, 62) = 4.5, p < .05$ , with the depressed adolescents retrieving more recent memories than the never-depressed adolescents. There was a main effect of memory type,  $F(2, 62) = 25.98, p < .0001$ , with the means suggesting that positive memories tend to be most recent, negative memories intermediate, and self-defining memories most remote. The memory type by group interaction was not significant,  $F(2, 62) = 1.15$ . Box plots of the recency finding showed very clearly that the depressed group tends to recall memories from within the last year while the never-depressed group tends

<sup>2</sup> Verbal fluency for the sample as a whole:  $M = 11.84, SD = 3.83$ .

<sup>3</sup>  $F$ -tests with values  $< 1$  are not reported.

to recall events from the previous three years. The ANOVA for *personal importance* revealed a significant effect for Group,  $F(1, 62) = 6.73, p < .05$ , and memory type,  $F(2, 62) = 18.35, p < .0001$ , but no interaction. Depressed adolescents rated their memories as more personally important than never depressed adolescents, and descriptive statistics suggest that self-defining memories and positive memories were rated as more important than negative memories.

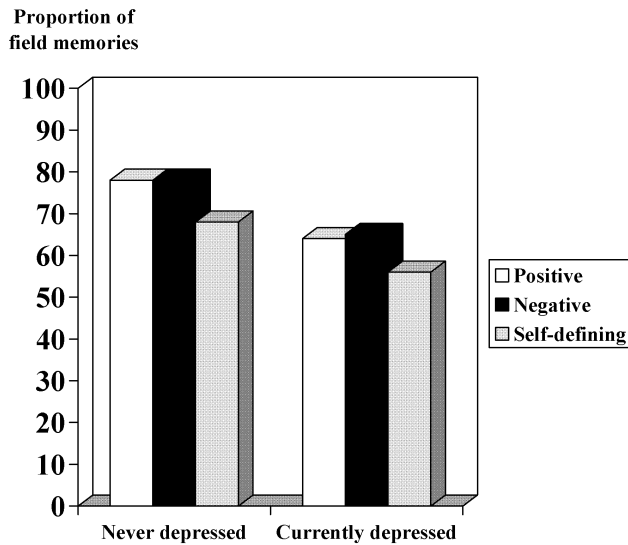
The ANOVA for memory *vividness* showed no significant effects for group  $F(1, 62) = 1.56$ , nor memory type  $F(2, 62) = 1.1$ , nor interaction  $F(2, 62) = 1.16$ . The descriptive statistics suggest that the majority of the memories are recalled rich in imagery, but not with the intensity of reliving it. The ANOVA for *confidence in memories* showed no significant effects for group, a trend for memory type,  $F(2, 62) = 3.01, p = .05$ , and no interaction,  $F(2, 62) = 1.76$ . The descriptive statistics suggest that rates of confidence in memories are high, but not absolute.

The ANOVA for *memory pleasantness* showed a trend for group  $F(1, 60) = 2.92, p = .09$ , a trend for memory type,  $F(2, 60) = 2.77, p = .07$ , and no significant interaction, with the currently depressed reporting marginally less pleasant memories and the positive, self-defining, and negative memories showing decreasing pleasantness ratings.<sup>4</sup> Interestingly, the descriptive statistics for pleasantness suggest that the mean rating of the self-defining memories was around or just below the neutral range. The ANOVA for *rehearsal* showed no effect for group,  $F(1, 62) = 4.5, p < .05$ , an effect for memory type,  $F(2, 62) = 3.88, p < .05$ , and a trend for an interaction,  $F(2, 62) = 2.93, p = .053$ . Self-defining memories were rehearsed most frequently. The plots of marginal means suggested a visibly marked interaction for positive and negative memories so a follow-up 2 (memory type: positive and negative)  $\times$  2 (group, depressed, never depressed) ANOVA was computed. This replicated the effect for memory type,  $F(1, 62) = 6.87, p < .05$ , and showed a significant memory type by group interaction,  $F(2, 62) = 8.08, p < .01$ . This analysis added that depressed participants rehearsed negative memories significantly more often than positive memories.<sup>5</sup> The descriptive statistics suggest that emotion memories tend to have been rehearsed relatively infrequently (about 10 times), while self-defining memories had been rehearsed more often, with depressed adolescents most frequently indicating they had rehearsed their self-defining memories "often" (about 20 times).

The ANOVA for *accuracy* showed a main effect for memory type,  $F(1, 63) = 6.83, p < .05$ , but no effect for group,  $F(1, 63) = 2.44$ , nor for the interaction. Positive memories were more likely to be rated as accurate to within a day than

<sup>4</sup> Age and verbal fluency were covaried in this analysis.

<sup>5</sup> Age was covaried in these two analyses. The analyses were replicated for only female participants, and the pattern of findings was identical.



**Figure 1.** The proportion of field memories for positive, negative, and self-defining memories in never-depressed and currently depressed groups.

negative memories, which were more typically rated as accurate within a month.<sup>6</sup>

The proportion of field memories for positive, negative, and self-defining memories are shown in Figure 1. The ANOVA for *proportion of field memories* suggested a significant main effect for memory type,  $F(2, 62) = 3.39, p < .05$ , and group,  $F(1, 62) = 4.49, p < .05$ , but no interaction. Emotion memories were significantly more likely to be field memories than self-defining memories and never-depressed adolescents were significantly more likely to report field memories than depressed adolescents. When adolescents' age was added as a covariate the main effect for memory type no longer reached significance, suggesting that the greater proportion of observer self-defining memories is an artefact of participants' age (older participants' memories are more often observer memories). Importantly, the main effect for group remained significant.

In summary, this series of analyses shows a pattern of findings consistent with some of the study's predictions. Compared with never-depressed controls, depressed adolescents' AMs tended to be from the observer perspective, more recent, marginally less pleasant, and rated as more personally important. Consistent with autobiographical memory research, positive memories were most recent

<sup>6</sup>This analysis was replicated for only female participants, and the pattern of findings was identical.

and accurately dated while self-defining memories were most important, frequently rehearsed, and reconstructed from an observer perspective. Depressed adolescents rehearsed negative memories more often than never-depressed controls, a pattern not seen with positive memories.<sup>7</sup>

The findings concerning the recency effect, field/observer perspective, personal importance, and group are striking. To examine how these memory characteristics are related to psychiatric symptoms and other memory characteristics two-tailed Spearman rank correlations were computed for the currently depressed adolescents. Because very few interaction effects were observed for memory type by group, and to avoid the possibility of false positives associated with excessive numbers of correlations, memory characteristics for positive, negative, and self-defining cues were combined (Table 2). These correlations suggest that more personally important memories are more vivid, remembered with more confidence and more likely to be dated accurately. In this sample of currently depressed adolescents neither depression history nor depression severity were associated with any characteristic of memory. When these same correlations were computed for the never-depressed sample, the pattern of findings was identical with two exceptions. Higher

TABLE 2  
Spearman correlations for autobiographical memory characteristics for currently depressed adolescents

	1	2	3	4	5	6	7	8	9	10
1. No. major depressive episodes	–									
2. BDI-II	.26	–								
3. Age of memories	.04	–.18	–							
4. Personal importance of memories	.06	–.11	–.13	–						
5. Vividness of memories	.07	.1	–.1	.37*	–					
6. Confidence in memories	–.08	.11	–.14	.42*	.61***	–				
7. Pleasantness of memories	.13	–.13	–.22	.20	–.04	–.21	–			
8. Rehearsal of memories	–.01	.24	–.1	.15	.43*	.19	.14	–		
9. Accuracy of memories	–.13	–.08	.11	.51**	–.09	–.11	–.15	–.08	–	
10. Proportion of field perspective memories	.27	–.01	–.15	–.04	0	–.28	.09	0	.14	–

Notes: BDI-II, Beck Depression Inventory (2nd ed.). \*\*\* $p < .001$ ; \*\* $p < .01$ ; \* $p < .05$  (2-tailed).

<sup>7</sup>Nonparametric Mann-Whitney tests with memory characteristics as the dependent variables and depression status as the independent variables confirmed all the main effects.

depressive symptoms were associated with more observer perspective memories,  $r_s = -.46, p < .05, N = 31$ , and more personally important memories were associated with more pleasant memories,  $r_s = .46, p < .05, N = 31$ .

### Autobiographical memory characteristics and trauma

To examine if a history of trauma affects the accessibility and quality of AM among the depressed adolescents a series of mixed 3 (memory type: positive, negative, self-defining)  $\times$  2 (Group: no reported trauma, reported significant trauma) ANOVAs were computed on the following dependent variables: memories' age, personal importance, vividness, confidence, pleasantness, rehearsal, and accuracy. The ANOVA for *age of memory* revealed no significant effect of group, but a main effect of memory type,  $F(2, 31) = 14.17, p < .0001$ . The descriptive statistics suggest that positive and negative memories tend to be dated most recent and self-defining memories dated as most remote. The memory type by group interaction was not significant. The ANOVA for *personal importance* revealed no significant effect for group, a significant effect for memory type,  $F(2, 31) = 6.07, p < .001$ , and no interaction effect.<sup>8</sup> Depressed adolescents rated their self-defining memories and positive memories as more important than their negative memories.

The ANOVA for memory *vividness* showed a significant effect for group,  $F(1, 31) = 13.65, p < .01$ , but not for memory type,  $F(2, 31) = 1.66$ , nor for the interaction. The descriptive statistics suggest that the adolescents reporting trauma rate their memories as more vivid than adolescents reporting no trauma. The ANOVA for *confidence in memories* showed a significant effect for group,  $F(1, 31) = 11.87, p < .01$ , no effect for memory type,  $F(2, 31) = 1.61$ , and no interaction,  $F(2, 31) = 1.2$ . The descriptive statistics suggest that the adolescents reporting trauma are more convinced of the veracity of their memories than adolescents reporting no trauma.

The ANOVA for *memory pleasantness* showed no effect for group, an effect for memory type,  $F(2, 29) = 3.13, p = .052$ , and no interaction,  $F(2, 29) = 1.31$ , with the descriptive statistics suggesting that pleasant memories were rated more pleasant than the self-defining memories, which in turn were rated as more positive than the negative memories.<sup>9</sup> The ANOVA for *rehearsal* showed a significant effect for group,  $F(1, 32) = 17.13, p < .001$ , no effect for memory type,  $F(2, 31) = 2.05$ , and no interaction. The traumatised adolescents had rehearsed their memories significantly more often than nontraumatised adolescents.<sup>10</sup> The ANOVA for *accuracy* showed no effect for memory type  $F(1, 32) =$

<sup>8</sup> Only  $f$ -values  $> 1$  are reported.

<sup>9</sup> Age and verbal fluency were covaried in this analysis.

<sup>10</sup> Age was covaried in these two analyses. The analyses were replicated for only female participants, and the pattern of findings was identical.

1.56, no effect for group, and no interaction of memory type by group.<sup>11</sup> A further ANOVA for proportion of field perspective memories suggested no main effect for memory type, no effect for group, and no interaction. In summary, adolescents reporting a history of significant trauma rated their memories as more vivid, were more confident of their veracity, and had rehearsed them more frequently.

Among the depressed plus trauma participants, the levels of trauma symptoms were marked with the mean CIES score falling significantly above the recommended cut-off of 17 for probable PTSD:  $M$  26.38 ( $SD$  11.06). To examine in the group of depressed adolescents reporting significant trauma the impact of trauma symptoms on these memory characteristics, Spearman two-tailed rank correlations were computed. Higher levels of PTSD symptoms (total IES score) were associated with more vivid positive ( $r_s = .52, p < .05, N = 21$ ) and self-defining memories ( $r_s = .45, p < .05, N = 21$ ) but not more vivid negative memories ( $r_s = -.13, N = 21$ ). Trauma symptoms were not significantly associated with confidence, veracity, or rehearsal of AMs.

## DISCUSSION

This is the first study that we are aware of that has extended an important line of research on the inaccessibility of specific autobiographical memory in depression through overgeneralisation (van Vreeswijk & de Wilde, 2004) to other facets of AM. We have shown that adolescents diagnosed with depression, compared to never-depressed controls, retrieve a higher proportion of observer perspective memories, recall more recent memories, rate their memories as more personally important, and preferentially rehearse negative memories. We found no evidence for source monitoring problems. Replicating the consistent findings from the nonclinical literature (Rubin & Kozin, 1984), depressed adolescents' AMs that are personally important also tend to be rated as more vivid and accurate. Among depressed adolescents a reported history of trauma appeared to make memories more vivid.

How can these findings be explained? Our finding that depressed adolescents report significantly more observer perspective memories can be reconciled with studies showing that when people retrieve memories that are dissonant with their working self-concept they are more likely to visualise them from an observer perspective (Libby & Eibach, 2002). Depression, and particularly adolescent depression, is characterised by: (1) heightened self-awareness; (2) objectifying the self; and (3) dissonance between the actual and ideal self (Beck, 1967; Garber, Weiss, & Shanley, 1993; Higgins, 1996). The "depressive paradox"

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<sup>11</sup>This analysis was replicated for only female participants, and the pattern of findings was identical.



involves attempts to resolve this dissonance using strategies that exacerbate negative mood such as ruminative self-focus on *an objectified self* (“I feel so bad, why do I feel so bad all the time, what is wrong with me?”) (Nolen-Hoeksema, 1991) and avoiding strategies that process negative feelings, such as “mindful experiencing” (“feeling down and tired, this will pass and I will be OK”) (Teasdale, 1999). The reconstruction of AMs depends on the influences of the current working self. Higher rates of observer memories have been linked to increased self-focus (Robinson & Swanson, 1993), a tendency towards dispositional attributions (Frank & Gilovich, 1989), and to dissonance between current and ideal selves (Libby & Eibach, 2002), conditions that are all present in depression. Why should this lead to reconstructing observer perspective memories? We propose that the modus operandi of the working self in depression tends towards objectifying the self as falling short and tends away from accepting the self as an active, experiencing agent. This modus operandi is more likely to prime retrieval to reconstruct memories from an observer perspective in which the objectified self can be evaluated. There is evidence that the negative working self in depression is maintained through a tendency to ruminate nonproductively on unpleasant, objectified, and dissonant memories (Park, Goodyer, & Teasdale, 2004; Teasdale & Green, 2004; Watkins & Teasdale, 2001). While in never-depressed populations preferential retrieval of positive memories maintains a positive working self it is plausible that in depression the converse is true, namely, that a negative working self is maintained through preferential retrieval of negative AMs in which the self is seen as falling short (Taylor & Brown, 1994; Walker et al., 2003). This explanation is consistent with our finding that depressed adolescents preferentially rehearse negative memories and that they rate their memories as particularly personally important, possibly because they are being used in the service of resolving dissonance. On the other hand, it could be that they have objectively experienced more personally consequential emotional experiences as part of their trajectory to depression, a finding consistent with the considerable evidence linking negative life events with depression (e.g., Kessler, Davis, & Kendler, 1997). Nonetheless, their relationship to these experiences will very likely impact on the course of depression.

How can we explain our finding of an exacerbated recency effect in depression? The recency effect in AM is a well-replicated phenomenon with one third to two thirds of all AMs retrieved typically being from the previous year (Rubin et al., 1986). The most parsimonious explanation is that cognitive resources are depleted in depression and because recent memories are easier to retrieve depressed adolescents’ retrieval strategy is set to “easiest mode of retrieval”. However, we did not find that verbal fluency was associated with memory recency, which might be expected if limited working memory was a limiting mechanism. Another explanation is that more recent memories are more likely to be consonant with current working goals, which in depressed

adolescents, are likely to have been shaped by recent events surrounding the current episode of depression. Whatever the explanation, our finding that the recency effect is particularly marked in depressed adolescents is important because it suggests that depressed adolescents are drawing on a more limited range of emotional memories. Moreover, these memories will be sampled from the period leading up to and part of the current episode. We would hypothesise that this would negatively affect their emotion regulation and problem solving.

Our study examined self-defining memories as a form of “flashbulb memory” in depressed adolescents. Self-defining memories were personally important, frequently rehearsed, relatively remote and likely to be observer perspective memories. Self-defining memories tended to be rated as either neutral or somewhat unpleasant, suggesting that they are personally consequential but affectively mixed events. Examples included coping with a school transition, the relief that followed Mum returning after walking out following an argument with dad and going on holiday with a friend for the first time. These characteristics of self-defining memories are likely to make them highly accessible in depressed adolescents and future work will need to examine in what ways these memories are related to self-monitoring, emotion regulation, the self-concept, and problem solving.

Consistent with what we know from the general AM literature, we found that depressed adolescents’ AM characteristics were highly interrelated. Personally consequential memories were more vivid and rehearsed more frequently. Previous research suggests that it is the personal importance ascribed to a memory that is primary in determining the richness of encoding and therefore its longer-term retention function (Wright & Nunn, 2000).

A history of trauma is common in depression (Kessler et al., 1997), and frequently associated with enduring PTSD symptoms that adversely affects AM functioning (Kuyken & Brewin, 1995). Among the adolescents diagnosed with depression, a history of significant trauma was associated with more vivid and well rehearsed memories, which were retrieved with greater confidence about their veracity. Intriguingly, it is as if reports of trauma are associated with reports of positive and self-defining memories rather like flashbulb memories, making them more rather than less accessible. It is possible that much of the emotional event-specific knowledge in AM is stored with stronger sensory-perceptual content, accounting for its vividness, rehearsal, and enhanced confidence. Young people exposed to trauma may have enhanced orienting schema to emotion in general and threat in particular and a survival strategy may be to encode emotional experiences particularly carefully as longer-term strategies for navigating emotional situations are being learned (Ehlers et al., 2002). The working self as a whole is a work in progress, and it is the working self that is thought to be able to integrate traumatic memories with other event-specific knowledge and inhibit unwanted memories from awareness (Ehlers & Clark, 2000). This preliminary finding is at odds with the adult literature (e.g., van der

Kolk & Fisler, 1995) and requires replication before a developmental hypothesis can be elaborated further. Moreover, our design did not include a group of never-depressed adolescents reporting significant trauma, which is crucial to establishing whether these putative mechanisms are particular to depression.

This work was conducted as an exploratory study and therefore raises further avenues of exploration. The novel findings require replication, and extension to an adult population of people diagnosed with depression. Further work could usefully examine the significance and role of self-defining memories in adolescent depression, perhaps linking them to the development of a coherent and elaborated self-concept, emotion regulation, and social problem solving. The hypotheses about the role of observer memories in the course of depression require empirical testing. Finally, experimental studies manipulating the factors thought to moderate memory retrieval (e.g., recency, rehearsal) and examining the impact on emotion regulation would begin to test the explanatory accounts of the functions of AM and pave the way for downstream clinical implications. Although we did not find any evidence for source monitoring errors in adolescents with depression, we used only one methodological approach (accuracy of dating), and further research should aim to triangulate this finding using alternative methods (Johnson et al., 1993).

This work extends the literature on memory in depression generally and adolescents specifically and suggests that the retrieval of event-specific knowledge may be compromised in a range of ways. Not only is the richness of event-specific knowledge inaccessible because of the high proportion of over-general memories (Park et al., 2002), but when specific memories are recalled they are more recent and seen from an observer perspective. Given that depressed adolescents also tend to rehearse their negative memories more often and regard them as particularly personally important it is possible that these other facets of AM play an important role in the development of the self-concept and emotional resilience. Adolescence is a crucial developmental window for a range of reasons: the self-concept goes through a period of crucial maturation, AMs are encoded which will be preferentially retrieved throughout life, and first onset of potentially lifelong mood disorders are troublingly common. The limited research in this area to date suggests that depressed adolescents' AMs are less accessible and when specific memories are retrieved they tend to be from a limited window of time and seen from the perspective of an objectified self.

## REFERENCES

- American Psychiatric Association. (1994). *Diagnostic and statistical manual of mental disorders*. (4th rev. ed.) Washington, DC: Author.
- Baddeley, A. (1990). Recollection and autobiographical memory. In A. Baddeley (Ed.), *Human memory: Theory and practice* (pp. 293–318). Hove, UK: Lawrence Erlbaum Associates Ltd.

- Beck, A. T. (1967). *Depression: Clinical, experimental and theoretical aspects*. New York: Harper & Row.
- Beck, A. T., Steer, R. A., & Brown, G. K. (1996). *The Beck depression inventory* (2nd ed.). San Antonio, TX: Psychological Corporation.
- Benton, A. L. (1968). Differential behavioural effects in frontal lobe disease. *Neuropsychologia*, *6*, 53–60.
- Berntsen, D., & Rubin, D. C. (2002). Emotionally charged autobiographical memories across the life span: The recall of happy, sad, traumatic, and involuntary memories. *Psychology and Aging*, *17*, 636–652.
- Brewer, W. F., & Pani, J. R. (1996). Reports of mental imagery in retrieval from long-term memory. *Consciousness and Cognition*, *5*, 287.
- Brown, R., & Kulik, J. (1977). Flashbulb memories. *Cognition*, *5*, 73–99.
- Byrne, C. A., Hyman, I. E., & Scott, K. L. (2001). Comparisons of memories for traumatic events and other experiences. *Applied Cognitive Psychology*, *15*, S119–S133.
- Clark, D. M., & Teasdale, J. D. (1982). Diurnal-variation in clinical depression and accessibility of memories of positive and negative experiences. *Journal of Abnormal Psychology*, *91*, 87–95.
- D'Argembeau, A., & van der Linden, M. (in press). Phenomenal characteristics associated with projecting oneself back into the past and forward into the future: Influence of valence and temporal distance. *Consciousness and Cognition*, *13*, 844–858.
- de Decker, A., Hermans, D., Raes, F., & Eelen, P. (2003). Autobiographical memory specificity and trauma in inpatient adolescents. *Journal of Clinical Child and Adolescent Psychology*, *32*, 22–31.
- Doost, H. T. N., Moradi, A. R., Taghavi, M. R., Yule, W., & Dalgleish, T. (1998). The development of a corpus of emotional words produced by children and adolescents. *Personality and Individual Differences*, *27*, 433–451.
- Ehlers, A., & Clark, D. M. (2000). A cognitive model of posttraumatic stress disorder. *Behaviour Research and Therapy*, *38*, 319–345.
- Ehlers, A., Hackmann, A., Steil, R., Clohessy, S., Wenninger, K., & Winter, H. (2002). The nature of intrusive memories after trauma: the warning signal hypothesis. *Behaviour Research and Therapy*, *40*, 995–1002.
- Erikson, E. H. (1968). *Identity, youth, and crisis*. New York: Norton.
- First, M. B., Spitzer, R. L., Gibbon, M., & Williams, J. B. W. (1995). *Structured clinical interview for DSM-IV. Axis I disorder with psychotic screen*. New York: New York Psychiatric Institute.
- Frank, M., & Gilovich, T. (1989). Effect of memory perspective on retrospective causal attributions. *Journal of Personality and Social Psychology*, *57*, 399–403.
- Garber, J., Weiss, B., & Shanley, N. (1993). Cognitions, depressive symptoms, and development in adolescents. *Journal of Abnormal Psychology*, *102*, 47–57.
- Green, B. L. (1996). The Trauma History Questionnaire. In B. H. Stamm (Ed.), *Measurement of stress, trauma, and adaptation* (pp. 366–369). Lutherville, MD: Sidran Press.
- Habermas, T., & Bluck, S. (2000). Getting a life: The emergence of the life story in adolescence. *Psychological Bulletin*, *126*, 748–769.
- Harter, S. (1999). *The construction of the self: A developmental perspective*. New York: Guilford Press.
- Hermans, D., van den Broeck, K., Belis, G., Raes, F., Pieters, G., & Eelen, P. (2004). Trauma and autobiographical memory specificity in depressed inpatients. *Behaviour Research and Therapy*, *42*, 775–789.
- Higgins, E. T. (1996). The “self digest”: Self-knowledge serving self-regulatory functions. *Journal of Personality and Social Psychology*, *71*, 1062–1083.
- Horowitz, L. M., Wilner, N., & Alvarez, W. (1979). Impact of event scale: A measure of subjective distress. *Psychosomatic Medicine*, *41*, 209–218.
- Johnson, M. K., Foley, M. A., Suengas, A. G., & Raye, C. L. (1988). Phenomenal characteristics of memories for perceived and imagined autobiographical memories. *Journal of Experimental Psychology: General*, *117*, 371–376.

- Johnson, M. K., Hashtroudi, S., & Lindsay, D. S. (1993). Source monitoring. *Psychological Bulletin*, *114*, 3–28.
- Joormann, J., & Siemer, M. (2004). Memory accessibility, mood regulation, and dysphoria: Difficulties in repairing sad mood with happy memories? *Journal of Abnormal Psychology*, *113*, 179–188.
- Kessler, R. C., Avenevoli, S., & Merikangas, K. R. (2001). Mood disorders in children and adolescents: An epidemiologic perspective. *Biological Psychiatry*, *49*, 1002–1014.
- Kessler, R. C., Davis, C. G., & Kendler, K. S. (1997). Childhood adversity and adult psychiatric disorder in the US National Comorbidity Survey. *Psychological Medicine*, *27*, 1101–1119.
- Kuyken, W., & Brewin, C. R. (1995). Autobiographical memory functioning in depression and reports of early abuse. *Journal of Abnormal Psychology*, *104*, 585–591.
- Kuyken, W., Howell, R., & Dalgleish, T. (2006). *Over-general Autobiographical Memory, Trauma, and Depression in Adolescence*. Manuscript under review.
- Libby, L. K., & Eibach, R. P. (2002). Looking back in time: Self-concept change affects visual perspective in autobiographical memory. *Journal of Personality and Social Psychology*, *82*, 167–179.
- Libby, L. K., Eibach, R. P., & Gilovich, T. (2005). Here's looking at me: The effect of memory perspective on assessments of personal change. *Journal of Personality and Social Psychology*, *88*, 50–62.
- Moffitt, K. H., Singer, J. A., Nelligan, D. W., Carlson, M. A., & Vyse, S. A. (1994). Depression and memory narrative type. *Journal of Abnormal Psychology*, *103*, 581–583.
- Mor, N., & Winquist, J. (2002). Self-focused attention and negative affect: A meta-analysis. *Psychological Bulletin*, *128*, 638–662.
- Nigro, G., & Neisser, U. (1983). Point of view in personal memories. *Cognitive Psychology*, *15*, 467–482.
- Nolen-Hoeksema, S. (1991). Responses to depression and their effects on the duration of depressive episodes. *Journal of Abnormal Psychology*, *100*, 569–582.
- Park, R. J., Goodyer, I. M., & Teasdale, J. D. (2002). Categoric overgeneral autobiographical memory in adolescents with major depressive disorder. *Psychological Medicine*, *32*, 267–276.
- Park, R. J., Goodyer, I. M., & Teasdale, J. D. (2004). Effects of induced rumination and distraction on mood and overgeneral autobiographical memory in adolescent Major Depressive Disorder and controls. *Journal of Child Psychology and Psychiatry*, *45*, 996–1006.
- Robinson, J. A., & Swanson, K. L. (1993). Field and observer modes of remembering. *Memory*, *1*, 169–184.
- Rubin, D. C., & Kozin, M. (1984). Vivid memories. *Cognition*, *16*, 81–95.
- Rubin, D. C., Wetzler, S. E., & Nedes, R. D. (1986). Autobiographical memory across the lifespan. In D.C. Rubin (Ed.), *Autobiographical memory* (pp. 202–221). Cambridge, UK: Cambridge University Press.
- Schacter, D. L. (1996). *Searching for memory: The brain, the mind, and the past*. New York: Basic Books.
- Singer, J. A., & Moffitt, K. H. (1992). An experimental investigation of specificity and generality in memory narratives. *Imagination, Cognition and Personality*, *11*, 233–257.
- Smith, P., Perrin, S., Dyregrov, A., & Yule, W. (2003). Principal components analysis of the impact of event scale with children in war. *Personality and Individual Differences*, *34*, 315–322.
- Swales, M. A., Williams, J. M. G., & Wood, P. (2001). Specificity of autobiographical memory and mood disturbance in adolescents. *Cognition and Emotion*, *15*, 321–331.
- Tabachnick, B. G., & Fidell, L. S. (2001). *Using multivariate statistics* (4th ed.). Needham Heights, MA: Allyn & Bacon.
- Taylor, S. E., & Brown, J. D. (1994). Positive illusions and well-being Revisited – Separating fact from fiction. *Psychological Bulletin*, *116*, 21–27.

- Teasdale, J. D. (1999). Emotional processing, three modes of mind and the prevention of relapse in depression. *Behaviour Research and Therapy*, *37*, S53–S77.
- Teasdale, J. D., & Green, H. A. C. (2004). Ruminative self-focus and autobiographical memory. *Personality and Individual Differences*, *36*, 1933–1943.
- Tombaugh, T. N., Kozac, J., & Rees, L. (1999). Normative data stratified by age and education for two measures of verbal fluency: FAS and animal naming. *Archives of Clinical Neuropsychology*, *14*, 167–177.
- van der Kolk, B. A., & Fisler, R. (1995). Dissociation and the fragmentary nature of traumatic memories: Overview and exploratory study. *Journal of Traumatic Stress*, *8*, 505–525.
- van Vreeswijk, M. F., & de Wilde, E. J. (2004). Autobiographical memory specificity, psychopathology, depressed mood and the use of the Autobiographical Memory Test: a meta-analysis. *Behaviour Research and Therapy*, *42*, 731–743.
- Walker, W. R., Skowronski, J. J., & Thompson, C. P. (2003). Life Is pleasant – and memory helps to keep it that way! *Review of General Psychology*, *7*, 203–210.
- Watkins, E., & Teasdale, J. D. (2001). Rumination and overgeneral memory in depression: Effects of self-focus and analytic thinking. *Journal of Abnormal Psychology*, *110*, 353–357.
- Welch-Ross, M. K. (1995). An integrative model of the development of autobiographical memory. *Developmental Review*, *15*, 338–365.
- Welzer, H., & Markowitsch, H. J. (2005). Towards a bio-psycho-social model of autobiographical memory. *Memory*, *13*, 63–78.
- Wenzel, A., Pinna, K., & Rubin, D. C. (2004). Autobiographical memories of anxiety-related experiences. *Behaviour Research and Therapy*, *42*, 329–341.
- Williams, J. M. G. (2000). *Autobiographical memory test*. 2000. Unpublished manuscript.
- Williams, J. M. G., Healy, H. G., & Ellis, N. C. (1999). The effect of imageability and predicability of cues in autobiographical memory. *Quarterly Journal of Experimental Psychology*, *52A*, 555–579.
- Wright, D. B., & Nunn, J. A. (2000). Similarities within event clusters in autobiographical memory. *Applied Cognitive Psychology*, *14*, 479–489.
- Yule, W., Tenbruggencate, S., & Joseph, S. (1994). Principal components-analysis of the impact of events scale in adolescents who survived a shipping disaster. *Personality and Individual Differences*, *16*, 685–691.