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Autobiographical memory specificity and detailedness and their association with depression in early adolescence

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Abstract

Previous research with adults has shown mixed findings regarding the correlation between specificity and detailedness within autobiographical memories, and their associations with depressive symptoms. However, minimal research has tested these links in adolescents, despite the importance of this developmental period. The present investigation examined these associations in a sample of young community adolescents ($N = 768$; $M_{age} = 11.04$) by replicating methodology of existing studies. Cued recall was measured using the Autobiographical Memory Test and responses were subsequently coded for specificity (whether the memory referred to an event that lasted less than 24 hours) and amount of detail (time, place, sensory-perceptual information, etc.). Depressive symptoms were assessed using the Patient Reported Outcomes Measure Information System (PROMIS) measure. Two linear mixed models showed that young adolescents who retrieved more detail recalled a greater number of specific memories and that specific memories included a greater amount of detail than non-specific memories. However, neither memory specificity nor detail were associated with depressive symptoms. Our findings suggest that, in a population of young adolescents, memory specificity and detail are distinct, but interrelated, constructs. Further longitudinal research should examine whether specificity and detail predict depressive symptoms differentially over the course of adolescence; possible mediators and moderators within this association should also be investigated.

Keywords: autobiographical memory; memory specificity; episodic detail; depression; detailedness

Introduction

Specific autobiographical memories, those that refer to events that occur within a given time and place, lasting for less than 24 hours (*e.g., when I walked my dog last week*), are characterized by event-specific knowledge, or sensory-perceptual and contextual *details* associated with the autobiographical event (Conway & Pleydell-Pearce, 2000; Kyung et al., 2016; Roberts et al., 2018) (*e.g., when and where the dog walk took place*). Underlying Conway and Pleydell-Pearce's (2000) model of autobiographical memory is an assumption that memory specificity and memory detail are related constructs. Yet, of the minimal research that has tested this link, there have been mixed findings. A recent multi-site investigation by Hallford and colleagues (2021) found that healthy adults who recalled a greater proportion of specific memories also reported a greater number of details, suggesting that specificity and detail are interrelated constructs. An important contribution from Hallford et al.'s study (2021) showed that the association between detail and specificity was significant for internal detail (*i.e.* episodic detail, sensory-perceptual details), but inconsistent for that of external detail (*i.e.* semantic knowledge, metacognitive statements). In other words, those who reported more internal detail were also able to recall more specific memories. Contrastingly, Kyung et al.'s (2016) analysis found that the number of specific memories that participants retrieved did not correlate significantly with the amount of internal detail that appeared in these memories. Both studies were conducted in adult samples, yet little is known about the associations between memory detail, detail type and specificity in adolescents. Given that adolescents have a tendency towards retrieving internal details over external details, compared to older adults (Willoughby et al., 2012; Levine et al., 2002; Gott & Lah, 2014), it remains unclear whether such cognitive tendencies could affect the relationship between memory detail and specificity in adolescents. A

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recent study by Salmon et al. (2021) demonstrated the predictive role of memory detail, but not specificity, on later depressive symptoms in mid-late adolescents. However, the association between memory detail and specificity was not a focus of their investigation. As existing studies of autobiographical memory detail have primarily been conducted in late adolescent or early adult samples (e.g., Salmon et al., 2021; Kyung et al., 2016), the present study tested the associations between memory detail - both internal and external - and specificity in a sample of early adolescents in order to differentiate their memory features against that of later adolescents.

Examining the association between different features of autobiographical memory within adolescents is important not just as a matter of improving our understanding of the way that autobiographical memory differs across the lifespan, but also because of evidence that these features may be associated with psychopathology. Studies in adolescent samples have shown consistent findings about the role of reduced autobiographical memory specificity as a risk factor for the emergence of psychopathology (de Decker et al., 2003; Farina et al., 2019; Hitchcock et al., 2014; Kuyken et al., 2006; Rawal & Rice, 2012; Sumner et al., 2011) and predictor of psychiatric diagnoses across the lifespan (Barry et al., 2021). Indeed, recent research also suggests there may be an association between autobiographical memory specificity and psychopathology even in childhood and early adolescence (e.g. Valentino, McDonnell, Comas & Nuttall, 2018; Hitchcock et al., 2014). For example, Valentino et al. (2018) showed that preschool children with higher levels of autobiographical memory specificity showed fewer internalizing and externalizing symptoms. Despite this, the empirical evidence surrounding the relationship between memory detail and depressive symptoms in adolescents is limited.

In studies of community adults, Hallford et al. (2021) and Kyung et al. (2016) found a contrasting role of memory detail in relation to depressive symptoms, where Hallford's study

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(2021) indicated that higher levels of memory detail were related to fewer depressive symptoms, but Kyung et al. (2016) found that higher levels of memory detail predicted increased depressive symptoms. Salmon and colleagues (2021) presented the only existing study of memory detail and depressive symptoms in mid-late adolescents, where they demonstrated that higher levels of internal detail predicted later onset of depressive symptoms. These studies present an important distinction between internal and external detail, in that they indicate a differing role of detail type to depressive symptoms. Salmon and colleagues (2021) suggested that higher levels of internal detail could reflect a greater self-focus that could be linked to depressive symptoms. This is similar to Kyung et al. (2016)'s suggestion that those with greater rumination tendencies may have higher levels of memory detail, which contribute to emotional distress. As adolescence is characterized by an increase in internal detail recall (Willoughby et al., 2012; Levine et al., 2002; Gott & Lah, 2014), it may be that detail type - or internal, versus external details - would also be differently associated with depressive symptoms at this developmental stage, yet to our knowledge no study has explored the possible unique associations between internal and external detail and depressive symptoms amongst early adolescents. Moreover, as studies have primarily been conducted in adult or mid-late adolescent samples (e.g. Hitchcock, Nixon & Weber, 2014; Kyung et al., 2016; Salmon et al., 2021; Sumner, 2012; Williams et al., 2007), any generalizations about the differing roles of specificity, detail or detail type on psychopathology in early adolescents would be constrained.

It would therefore be valuable to examine how memory specificity and detail could be similarly or differentially related to psychopathology as soon as early adolescence. Evidence of rapid changes in autobiographical memory across adolescence, e.g. age-related increases in interpretive rather than factual recall (Pasupathi & Wainryb, 2010), suggest that the associations

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between specificity, detail and depressive symptoms may also vary across different stages of adolescence. Thus, an additional aim of our study was to examine whether memory detail (both types) and specificity were similarly or differentially associated with depression in early adolescents.

In keeping with an existing body of research that has examined associations between memory specificity, detail and depressive symptoms within the same study (e.g. Hallford et al., 2021; Kyung et al., 2016), we employed the Autobiographical Memory Test (Williams & Broadbent, 1986). Extant studies of autobiographical memory in adolescents have used different measures to elicit autobiographical detail, where participants were instructed to recall memories that occurred at a specific time and place (Willoughby et al., 2012; Gott & Lah, 2014). As our study took an additional step to examine memory detail in non-specific memories, the AMT was chosen to test associations between detail in specific and non-specific memories, in accordance with the procedure used by Hallford and colleagues (2021). The AMT is a cued recall test in which participants are asked to retrieve a single personally experienced past event for each of several positive and negative cue words. The AMT enables researchers to quantify the number of specific memories that participants retrieve and also the amount of detail that features within these and other less specific memories that are retrieved. Our study additionally coded the amount of *internal* and *external* detail that featured within a given memory (Levine et al., 2002), whilst also summing the amount of detail, across detail types, for each memory that was shared. This latter operationalization enabled us to capture something resembling a person's tendency to disclose more information about themselves and their memories. We then examined the association between this total detail and the tendency to retrieve specific memories and

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depressive symptomatology, whilst also identifying specific associations with particular types of memory details (internal vs. external).

This study therefore provides the most comprehensive analysis of early adolescent autobiographical memory specificity and detailedness to-date by examining the associations between internal and external detail with overall autobiographical memory specificity in a large sample of early adolescents who completed the AMT. We additionally examine whether memory detail (both types) and specificity are similarly or differentially associated with depression symptoms. Our analysis approaches this question from two directions using two linear mixed models. The first of these includes the number of specific memories participants retrieved as the dependent variable. This model examined whether the abilities to retrieve more internal and external details are uniquely associated with the ability to retrieve more specific memories. The second linear mixed model included amount of detail as the dependent variable. This model examined whether participants retrieved more internal, compared to external, details and whether this differed between specific and non-specific memories. In accordance with Kyung et al.'s (2016) analysis, cue valence was also included as an additional predictor, given evidence that this can influence memory retrieval processes (see also, Barry et al., 2018; Young et al., 2016). Also, each model was repeated with depression symptoms included as an additional predictor variable to examine whether these symptoms predict memory specificity (Model 1) and detailedness (Model 2) over and above the other predictors included in these models.

Methods

Participants

827 participants were recruited for a broader study of emotional wellbeing in young adolescents between 9 and 13 years of age. Participants with all missing responses in either the depression

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measure and/or the autobiographical memory task used in the present investigation were excluded from analyses ($n = 60$). Data from 767 participants ($M_{age} = 11.04$, $SD_{age} = 0.66$; Females = 49.3%) were used. Six participants did not report their gender but were included in analyses. Participants were recruited as part of an existing collaboration between the Schools of Teaching of the senior author's region and the local public schools where university lecturers from the senior author's department regularly collaborate in different research and intervention programs (e.g. didactics, new technologies, emotional intelligence, mindfulness). These public schools are located in the Southwest region of Spain, where Catholicism is the predominant religion. This region has an average income level and the ethnicity of students is generally not recorded in this and other research conducted within this context. Prior to any assessment, the protocol of the study obtained the approval from the Ethical Committee of the local hospital (Albacete Integrated Care Management), ensuring confidentiality, voluntariness and informed consent from participants and their parents (code: 2019/02/025). Collection was carried out in groups in students' own classrooms in regular school time with the collaboration of their tutors. Instructions were delivered test by test to ascertain students' comprehension of the tasks. Participants were prompted once to ensure that they understood each of the measures' instructions.

Measures

Autobiographical Memory Test

The AMT was used as a measure to assess memory specificity (Williams & Broadbent, 1986). Participants were presented with ten cue words, five positive cue words (happiness, friendship, hope, energy, smile) and five negative cue words (guilty, failure, worried, sadness, illness), alternating between positive and negative. Cue words were screened from the Brittlebank, Scott,

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Williams and Ferrier (1993) study and matched for frequency, imageability and familiarity using the standardized lexical program B-Pal (Davis & Perea, 2005). B-pal is the Spanish version of the original N-Watch program for English stimuli (Davis, 2005). The program includes a vocabulary of 31491 Spanish words and valence ratings for each. The validity and reliability of these words within autobiographical memory research was first tested by Ricarte et al. (2014) and has later been used in clinical and non-clinical samples (e.g. Barry, Hallford, Del Rey & Ricarte, 2019; Barry et al., 2021; Ros et al., 2018). Participants were instructed that they had 90 seconds to write down a specific memory in response to each cue word. Participants were told the definition of a specific memory - a unique event that occurred within the duration of 24 hours at least 7 days prior to the AMT – and they were given an example of a party using the cue word *good*.

PROMIS Depression Short Form

The Patient Reported Outcomes Measure Information System (PROMIS) Emotional Distress – Depression Short Form (Pilkonis et al., 2011) assessed participants' experience of the cognitive and affective symptoms experienced of depression over the past 7 days. This measure contained eight statements and participants selected a response from a five-point rating scale (1 = Never, 5 = Always) to indicate the extent to which these statements were relevant to their experiences. In the present study, Cronbach's alpha was .89. The PROMIS depression scale has been extensively validated in a range of different settings (e.g., pediatric samples: Kashikar-Zuck et al., 2016; Yan, Rychlik, Rosenman & Miller, 2020) and languages (Vilagut et al., 2019; Devine et al., 2018).

Procedure

Data processing and analysis

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Memory coding

Memories were coded for specificity and detailedness. There were four codes for memory specificity: a *specific* memory referred to a single event that occurred within the duration of 24 hours (e.g. my 21st birthday party); an *extended* memory referred to an event whose duration was longer than 24 hours (e.g. when I went to Japan); a *categorical* memory denoted an event that occurred on more than one occasion (e.g. when I go running); and, *omission* if no memory was retrieved in response to the cue. Specificity was calculated as the number of specific responses that participants retrieved. The number of non-specific responses was also measured, referring to the total number of categorical and extended memories that were retrieved.

The amount of episodic detail within each response was also measured. A detail is defined as a unique occurrence, observation or thought. A coding scheme by Levine et al. (2002) was used, consistent with previous work (Kyung et al., 2016) in which there were two categories of memory detail: *internal* and *external*. Internal details refer to those directly related to the described event, such as time, place or sensory information. External details refer to semantic information that did not require specific information about location or date, such as metacognitive statements or editorialising (e.g. I'm glad that happened). Total memory detail was then also computed for each participant by summing the number of internal details and external details. In addition, the total number of internal and external details for specific memories were also calculated.

Responses were coded by five researchers from the Department of Psychology associated with the senior author. Coders each had previous experience in AMT response coding. 15% of the total autobiographical responses (1720 memories) were second coded, blind, by a doctoral student that had been trained by the senior author to ensure the reliability of the original codes.

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Intraclass correlation coefficients for comparisons with each of the five raters and the second coder ranged from 0.83 to 1.00 (*Mean* = 0.92) for memory type, 0.92 to 1.00 (*Mean* = 0.97) for internal detail, and 0.90 to 1.00 (*Mean* = 0.98) for external detail.

Analysis strategy

Statistical analyses were conducted using R (3.6.0) (R Core Team, 2018), the *lmerTest* (Kuznetsova et al., 2017) and *lme4* (Bates, Maechler, Bolker & Walker, 2015) packages. This study was not pre-registered, however, the coding framework and analysis procedure mirrors that of Kyung et al. (2016) and Hallford et al. (2021) and our codebook, materials, analysis scripts and data are available at <https://doi.org/10.17605/OSF.IO/E85GP>.

The first set of analyses assessed the correlation between the number of specific memories recalled and total memory detail, as well as the correlations between memory specificity and detail type (internal and external). Next, the correlations between PROMIS depression scores, memory specificity and memory detail (internal and external) were examined.

Two linear mixed models were constructed using *lmerTest*. The first model tested whether the number of internal details, the number of external details and cue valence (positive vs. negative) were significant predictors of memory specificity. The fixed effects of the first model were the number of internal details, the number of external details and cue valence, whereas random effects were subjects. This model was then repeated but depression symptoms were also included as a predictor of specificity, in addition to the aforementioned predictors in the first model.

The second linear mixed model tested the contribution of cue valence (positive vs. negative), detail type (external vs. internal) and specificity (non-specific vs. specific) as predictors of the number of memory details retrieved. This model examined whether participants

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retrieved more internal, compared to external, details and whether this differed as a function of whether the memory retrieved was specific or not specific and if it was retrieved following a positive or negative cue. Again, this model was also repeated to examine the additional contributions of depression scores in predicting total memory detail.

Results

Data were screened for linearity, normality and homogeneity of variance before conducting analyses, and the assumptions of normality were met.

Correlations between memory specificity and memory detail

There was a significant positive correlation between the number of specific memories recalled and total memory detail ($r = .51, p < .001$). The correlations between detail type and the number of specific memories recalled were also consistent with these findings, where the number of specific memories recalled correlated significantly with the mean number of internal ($r = .47, p < .001$; see Figure 1) and external ($r = .25, p < .001$; see Figure 2) details reported within participants' memories.

Correlations with depression measures

Depression scores ($M = 13.31, SD = 6.48$) were not significantly correlated with the number of specific memories recalled ($r = .04, p = .32$). In addition, neither mean internal detail ($r = .06, p = .10$) nor mean external detail ($r = -.04, p = .27$) was significantly correlated with PROMIS depression scores.

Predictors of memory specificity

Results of the first linear mixed model demonstrated there was a significant effect of cue valence on specificity, $b = -0.117, SE = 0.049, p = .017, 95\%CI[-0.21, -0.02]$, such that participants recalled more specific memories related to positively valenced cues ($M = 2.04, SD = 1.67$) than

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negatively valenced cues ($M = 1.94$, $SD = 1.70$). Regarding the association between memory detail and specificity, internal details, $b = 0.741$, $SE = 0.052$, $p < .001$, 95%CI[0.64, 0.84], and external details, $b = 0.868$, $SE = 0.125$, $p < .001$, 95%CI[0.62, 1.11], both predicted significant, unique, variance in the number of specific memories that participants retrieved. When PROMIS depression scores were added in a second step in this model, depression scores did not explain a significant amount of variance, $b = -0.000$, $SE = 0.008$, $p = .958$, 95%CI[-0.02, 0.01].

Predictors of memory detailedness

In the second linear mixed model predicting the amount of detail that participants retrieved, there was a significant effect of detail type, $b = 1.058$, $SE = 0.039$, $p < .001$, 95%CI[0.98, 1.13] such that participants retrieved more internal ($M = 1.56$, $SD = 0.98$) than external ($M = 0.37$, $SD = 0.41$) detail. There was also a significant effect of specificity, $b = 0.211$, $SE = 0.042$, $p < .001$, 95%CI[0.13, 0.29] such that memories coded as specific were likely to include more detail than those coded as not specific. There was no significant effect of cue valence on total memory detail, $b = 0.022$, $SE = 0.039$, $p = .570$, 95%CI[-0.05, 0.10]. There was also no significant interaction between cue valence and detail type, $b = -0.009$, $SE = 0.055$, $p = .870$, 95%CI[-0.12, 0.10], or specificity, $b = -0.007$, $SE = 0.058$, $p = .910$, 95%CI[-0.12, 0.11]. There was, however, a significant interaction between detail type and specificity in predicting total memory detail, $b = 0.491$, $SE = 0.058$, $p < .001$, 95%CI[0.38, 0.60]. Pairwise Tukey comparisons with estimated marginal means showed that memories that were specific included more internal than external detail ($Estimate = 1.506$, $SE = 0.030$, $P < .001$), and memories that were not specific also included more internal than external detail ($Estimate = 1.053$, $SE = 0.028$, $P < .001$). Memories that were coded as specific also included more internal detail than those coded as non-specific ($Estimate = -0.660$, $SE = 0.030$, $P < .001$) and also included more external detail than those

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coded as non-specific ($Estimate = -0.207, SE = 0.030, P < .001$). There was no three-way interaction between cue valence, detail type and specificity, $b = -0.076, SE = 0.082, P = .350, 95\%CI[-0.24, 0.08]$.

Again, in a second step in this model when PROMIS depression scores were added, there was no significant effect of depression scores on predicting total memory detail, $b = 0.004, SE = 0.003, p = .110, 95\%CI[-0.00, 0.01]$.

Discussion

The present study examined associations between specificity, detailedness and depression in young adolescents. Previous research in adult samples has shown mixed findings regarding the relationship between specificity and detailedness (Kyung et al., 2016; Hallford et al., 2021); our analyses examined this association in an early adolescent population. Additionally, this study examined whether specificity and detailedness were differentially associated with depressive symptoms.

In line with existing theory (Conway & Pleydell-Pearce, 2000), but contrary to Kyung et al.'s (2016) findings, our results demonstrated a significant positive correlation between the number of specific memories recalled and memory detail (internal and external) reported by participants. The first linear mixed model similarly showed that young adolescents who retrieved more memory detail, both internal and external, recalled a greater number of specific memories. In other words, these data suggest that the ability to retrieve memories with more detail is related to the ability to retrieve memories that occur at specific times and places. This finding is perhaps unsurprising given that the specificity of a memory is in some respects a function of the internal detail that a participant reports. That is, the elements coded in a specific memory are themselves episodic temporal details related to when the event took place, which are less likely to appear in

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non-specific memories. In addition, our results replicate existing findings, which demonstrate a positive correlation between detail and specificity (Hallford et al., 2021). Although this relationship may be a function of the coding scheme used within AMT research, we may also consider sociocultural explanations for these results. Indeed, empirical studies evidence the effects of socialization (e.g., maternal reminiscing style, mother-child interactions) on autobiographical memory skills. Different studies show that children of mothers who adopted an elaborative memory style were able to contribute more details in their narratives (Reese, Haden & Fivush, 1993) and recall a greater number of specific memories (Valentino et al., 2014). The interrelationship between specificity and detail may thus not only be a function of the coding scheme, but also an outcome of the way some people are socialized to recall and share their memories in particularly rich detail. Such rich retrieval results from their having retrieved a specific past instance from which to elaborate on or it may be that the retrieval of more detail incidentally leads to the retrieval of the temporal detail that characterizes specific memories.

Results from the linear model also suggest evidence of detail-specific effects, as the amount of internal and external details in participants' memories explained significant, unique, variance in the number of specific memories retrieved. Additionally, there was a stronger association between the number of internal details reported and retrieval of more specific memories, compared to that of external details. This is consistent with Hallford et al.'s study (2021), which found that healthy adults who reported a higher number of internal details also recalled more specific memories (Hallford et al., 2021). Our findings also demonstrated a positive correlation between external detail and the number of specific memories recalled. This is partially consistent with findings from Hallford et al.'s (2021) meta-analysis, where they found positive correlations between external detail and specificity in their US and Hong Kong samples.

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However, their study also showed evidence of non-significant or negative correlations between external detail and specificity in samples from other cities. Our results thus contribute to the mixed evidence regarding external detail and specificity, although the reasons for this are unclear and particularly why these findings seem to differ between different countries in the world.

Results from the second linear mixed model showed that specific memories contained a higher number of details than non-specific memories. Notably, both specific memories and non-specific memories included more internal detail than external detail. This is consistent with existing findings that younger adults have a greater internal-to-total detail ratio during autobiographical memory recall, compared to older adults who produce more external detail (Levine et al., 2002; Addis, Wong & Schacter, 2008). Such results were previously found in small samples of healthy younger adults, but this preference for reporting internal detail within autobiographical memories was replicated here amongst a large sample of young adolescents. Although external detail, or semantic autobiographical memory, is thought to develop earlier than memory for internal or episodic information (Billingsley, Smith & McAndrews, 2002; Piolino et al., 2007), the evidence presented here suggests that there is a preference for retrieval of internal, over external, detail by early adolescence. This may be a result of the accelerated development of episodic memory throughout childhood, compared to that of semantic autobiographical memory that underlies external detail (Piolino et al., 2007; Willoughby et al., 2012). This difference may manifest as a tendency for adolescents to report the sensory-perceptual details of events rather than their reflections on or interpretations of them. Nonetheless, given that our sample was limited to early adolescents and existing research was primarily conducted in young adult samples, longitudinal research would be valuable for

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examining whether retrieval tendencies of internal and external detail remain consistent over the whole course of adolescence.

Our study found that neither specificity nor detail were significantly associated with depressive symptoms in this sample of young adolescents. While the former finding corroborates existing research (Farina, Barry, van Damme, van Hie & Raes, 2019; Gutenbrunner, Salmon & Jose, 2018), the latter finding contrasts evidence of significant associations between memory detail and depressive symptoms (Hallford et al., 2021; Kyung et al., 2016; Salmon et al., 2021). In response to these null findings, we may consider several possibilities.

First, there may be moderating variables that affect the association between specificity and detail on depressive symptoms. Existing literature shows that variables such as ruminative tendencies or chronic interpersonal stress moderate the relationship between specificity and depressive symptoms, particularly in non-clinical adolescent samples (Sumner et al., 2011; Hamlat et al., 2015; Gutenbrunner, Salmon & Jose, 2018). Likewise, as suggested by Salmon et al. (2021), self-related preoccupations could influence the relationship between internal detail and depressive symptoms of adolescents. Such moderators need to be further identified and tested in future studies.

A second and related point is that these aspects of memory may only be predictive of depressive symptoms at a later age. Our study found that early adolescents recalled fewer specific memories in response to negative valence cues compared to positive cues. This aligns with theoretical suggestions that individuals avoid retrieving specific memories related to negative cues as a means of avoiding the negative affect associated with those memories (Williams et al., 2007), a cognitive strategy which acts as a risk factor for later depression in adolescents (Rawal & Rice, 2012). Thus, it may be possible that the association between

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memory recall ability and depression emerges over time (Guttenbruner et al., 2019), but is not necessarily present cross-sectionally at this age. Similarly, the detail with which one retrieves autobiographical memories may not contribute to depressive symptomatology at early adolescence, due to the rapid development of episodic memory abilities at this stage (Willoughby et al., 2012). This may explain the discrepancy between our findings and that in adult samples (Hallford et al., 2021; Kyung et al., 2016). We may also speculate that the contrast to Salmon et al.'s (2021) findings in mid-late adolescents could be linked to varying levels of self-related preoccupations across adolescence, where these thoughts become particularly pronounced during mid-late, rather than early, adolescence (Rankin, Lane, Gibbons & Gerrard, 2004; Westenberg, Gullone, Bokhorst, Heyne & King, 2007). In sum, the predictive ability of specificity and detail on depressive symptoms could be a function of one's stage of adolescence, perhaps due to the additional transitional stress that occurs at that later stage. It would therefore be useful to investigate potential variables (e.g. interpersonal stress) that moderate any associations between specificity, detail and depressive symptoms longitudinally, and whether these vary as a function of one's stage of adolescence.

A third possibility is that our null findings may be due to the choice of measure used in this study. Recent findings indicate that different autobiographical memory tasks could have differential effects on the retrieval of various types of memories and that these effects may be further moderated by age (Mair, Poirier & Conway, 2021; Barry et al., 2021). In particular, the nature of the way in which memories are cued (e.g., emotion words or life periods), the perspective that participants' are asked to take during retrieval (e.g. first- versus third- person perspectives; King et al., 2022), and the response format and duration can all influence memory retrieval (Raes, Hermans, Williams & Eelen, 2007). This may, in turn, lead to differing

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associations between autobiographical memory and depressive symptoms (e.g. Raes et al., 2007; Salmon et al., 2021). For example, Salmon et al. (2021) found that episodic detail yielded by turning-point narratives, but not that of the cue words in the AMT, was significantly correlated with depression vulnerability. Thus, the effects of task demand may influence whether or not a significant relationship between autobiographical memory and depressive symptoms is observed, due to the aspect of autobiographical memory elicited by the task. Moreover, some empirical studies have found no significant association between autobiographical memory, as measured on the AMT, and depressive symptoms in community samples (e.g. Raes, Hermans, Williams & Eelen, 2007; Farina et al., 2019). Rather, depressive symptoms in nonclinical samples may only be correlated with reduced memory specificity when accompanied by other factors, such as high levels of rumination or adverse life events (Hamlat et al., 2015). Although our study did not assess these individual factors, we recommend that future research also account for these variables.

Finally, there are several methodological limitations of this study that warrant consideration. While the AMT is perhaps the most commonly employed measure in autobiographical memory research, and particularly that which involves an analysis of its association with psychiatric diagnoses (Barry, Hallford & Takano, 2021), it is important to acknowledge that it may only capture one facet of autobiographical memory performance. Compared to interview or narrative-based measures such as the Child Autobiographical Interview (CAI), the quantity of memory details reported in the AMT may be relatively low (Willoughby et al., 2012; Salmon et al., 2021, Addis et al., 2008). Thus, conclusions about the preference for recall of internal detail over external detail, as well as the non-significant correlation between detail and depressive symptoms should be considered in light of this

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constraint. Additionally, given that our results contrast Salmon et al. (2021)'s finding that memory detail is a significant predictor of depressive symptoms, future research should examine whether our present study's null finding is replicable in other adolescent populations when using narrative-based or interview measures. Although our design makes our findings more easily comparable to other studies within this domain, future research could also consider adopting different autobiographical measures, in addition to the AMT, to examine whether memory performance on alternative tasks are differentially related to depressive symptoms.

A related criticism is that, given the generative nature of the AMT and the lower quantity of details reported in the AMT, the positive relationship observed between specificity and detail may simply be an artifact of the coding scheme. Indeed, a memory requires at least one temporal, internal detail to be coded as "specific". Although our study shows that internal details are reported in non-specific memories and Kyung et al. (2016) demonstrate no association between detail and specificity even when employing the AMT, it would be useful to examine whether memory detail varies across specific vs. general or non-specific memories using measures that elicit more detail. One possible adjustment for future research is to tally memory detail of non-specific events in interview measures and make a comparison to that in specific memories. Moreover, employing other measures, such as the CAI, may allow for more sensitivity to psychological symptoms in adolescent community samples (Willoughby et al., 2012).

It is also important to acknowledge that verbal fluency was not measured in the present study. Since one's ability to be specific or report more details may be a consequence of their language skills (Salmon & Reese, 2016; Dalgleish et al., 2007), studies have included verbal fluency measures as a control to ensure a robust relationship between memory specificity/detail and depressive symptoms (e.g. Fisk, Ellis & Reynolds, 2019). Although our present study found

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a non-significant relationship between specificity and detail in relation to depressive symptoms, future research that tests the replicability of the associations from this study and Salmon et al. (2021)'s study should include verbal fluency measures to account for possible effects of executive functioning on memory recall.

As in previous investigations that have examined the association between the specificity and detailedness of autobiographical recall amongst adults (Hallford et al. 2021), the present findings suggest that specificity and detailedness are distinct, but interrelated, constructs in adolescents. In other words, our results suggest that adolescents who have difficulty recalling specific autobiographical events are also likely to have broader problems recalling the internal and external details associated with these memories. However, as findings from the present study contrast that of extant research, the relationship between memory detail and depressive symptoms in adolescents remains uncertain. Further longitudinal research should be conducted to elucidate the role, if any, of memory detail in predicting adolescents' depressive symptoms and possible mediators and moderators within this association.

Acknowledgments

None.

Declaration of interest

The authors report no conflict of interest.

Data availability statement

The data used for this study are openly available at: <https://doi.org/10.17605/OSF.IO/E85GP>.

References

Addis, D. R., Wong, A. T., & Schacter, D. L. (2008). Age-related changes in the episodic simulation of future events. *Psychological Science*, 19(1), 33-41.

<https://doi.org/10.1111/j.1467-9280.2008.02043.x>

Barry, T. J., Chiu, C. P. Y., Raes, F., Ricarte, J. J., & Lau, H. (2018). The Neurobiology of Reduced Autobiographical Memory Specificity. *Trends in Cognitive Sciences*, 22(11),

1038–1049. <https://doi.org/10.1016/j.tics.2018.09.001>

Barry, T. J., Gregory, J. D., Latorre, J. M., Ros, L., Nieto, M., & Ricarte, J. J. (2021). A multi-method comparison of autobiographical memory impairments amongst younger and older adults. *Aging & Mental Health*, 25(5), 856-863.

<https://doi.org/10.1080/13607863.2020.1729338>

Barry, T. J., Hallford, D. J., Del Rey, F., & Ricarte, J. J. (2020). Differential associations between impaired autobiographical memory recall and future thinking in people with and without schizophrenia. *The British journal of clinical psychology*, 59(2), 154–168.

<https://doi.org/10.1111/bjc.12236>

Barry, T. J., Hallford, D. J., & Takano, K. (2021). Autobiographical memory impairments as a transdiagnostic feature of mental illness: A meta-analytic review of investigations into autobiographical memory specificity and overgenerality among people with psychiatric diagnoses. *Psychological Bulletin*, 147(10), 1054–1074. <https://doi.org/10.1037/bul0000345>

Barry, T. J., Sze, W. Y., & Raes, F. (2019). A meta-analysis and systematic review of Memory Specificity Training (MeST) in the treatment of emotional disorders. *Behaviour*

EPISODIC DETAIL ADOLESCENCE

Research and Therapy, 116, 36-51. <https://doi.org/10.1016/j.brat.2019.02.001>

Bates, D., Maechler M., Bolker B., & Walker, S. (2015). Fitting Linear Mixed-Effects Models Using lme4. *Journal of Statistical Software*, 67(1), 1-48.

<https://doi:10.18637/jss.v067.i01>.

Billingsley, R. L., Smith, M. L., & McAndrews, M. P. (2002). Developmental patterns in priming and familiarity in explicit recollection. *Journal of Experimental Child Psychology*, 82(3), 251-277. [https://doi.org/10.1016/S0022-0965\(02\)00007-3](https://doi.org/10.1016/S0022-0965(02)00007-3)

Brittlebank, A. D., Scott, J., Williams, J. M. G., & Ferrier, I. N. (1993). Autobiographical memory in depression: State or trait marker? *British Journal of Psychiatry*, 162(JAN.), 118–121. <https://doi.org/10.1192/bjp.162.1.118>

Chiu, C., Griffith, J., Lenaert, B., Raes, F., Hermans, D., & Barry, T. (2018). Meta-analysis of the association between rumination and reduced autobiographical memory specificity. *Memory*, 26(10), 1323-1334. <https://doi.org/10.1080/09658211.2018.1474928>

Conway, M. A., & Pleydell-Pearce, C. W. (2000). The construction of autobiographical memories in the self-memory system. *Psychological Review*, 107(2), 261–288. <https://doi.org/10.1037/0033-295x.107.2.261>

Dalgleish, T., Spinks, H., Yiend, J., & Kuyken, W. (2001). Autobiographical memory style in seasonal affective disorder and its relationship to future symptom remission. *Journal of Abnormal Psychology*, 110(2), 335–340. <https://doi.org/10.1037//0021-843X.110.2.335>

Dalgleish, T., Williams, J. M. G., Golden, A. M. J., Perkins, N., Barrett, L. F., Barnard, P. J., ... & Watkins, E. (2007). Reduced specificity of autobiographical memory and depression: the role of executive control. *Journal of Experimental Psychology: General*, 136(1), 23. <http://dx.doi.org/10.1037/0096-3445.136.1.23>

EPISODIC DETAIL ADOLESCENCE

Davis, C. J. (2005). N-Watch: A program for deriving neighbourhood size and other psycholinguistic statistics. *Behavior Research Methods*, 37, 65-70.

<https://doi.org/10.3758/BF03206399>

Davis, C. J., & Perea, M. (2005). Buscapalabras: A program for deriving orthographic and phonological neighbourhood statistics and other psycholinguistic indices in Spanish.

Behavior Research Method, 37, 665-671. <https://doi.org/10.3758/BF03192738>

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 : The Official Journal for the Society of Clinical Child and Adolescent Psychology*, American Psychological Association, Division 53, 32(1), 22–31.

Psychology, American Psychological Association, Division 53, 32(1), 22–31.

https://doi.org/10.1207/S15374424JCCP3201_03

Devine, J., Klasen, F., Moon, J. et al. Translation and cross-cultural adaptation of eight pediatric PROMIS® item banks into Spanish and German. *Qual Life Res* 27, 2415–2430 (2018). <https://doi.org/10.1007/s11136-018-1874-8>

Farina, F. R., Barry, T. J., van Damme, I., van Hie, T., & Raes, F. (2019). Depression diagnoses, but not individual differences in depression symptoms, are associated with reduced autobiographical memory specificity. *British Journal of Clinical Psychology*, 58(2), 173–186. <https://doi.org/10.1111/bjc.12207>

<https://doi.org/10.1111/bjc.12207>

Fisk, J., Ellis, J. A., & Reynolds, S. A. (2019). A test of the CaR-FA-X mechanisms and depression in adolescents. *Memory*, 27(4), 455-464.

<https://doi.org/10.1080/09658211.2018.1518457>

Gott, C., & Lah, S. (2014). Episodic future thinking in children compared to adolescents. *Child Neuropsychology*, 20(5), 625-640. <https://doi.org/10.1080/09297049.2013.840362>

EPISODIC DETAIL ADOLESCENCE

Gutenbrunner, C., Salmon, K., & Jose, P. E. (2018). Do overgeneral autobiographical memories predict increased psychopathological symptoms in community youth? A 3-year longitudinal investigation. *Journal of Abnormal Child Psychology*, 46(2), 197-208.

<http://dx.doi.org/10.1007/s10802-017-0278-5>

Gutenbrunner, C., Salmon, K., & Jose, P. (2019). What predicts overgeneral memory in youth? Testing the CaR-FA-X model longitudinally in community adolescents.

Development and Psychopathology, 31(2), 759-770.

<https://doi.org/10.1017/S0954579418000457>

Hallford, D. J., Austin, D. W., Raes, F., & Takano, K. (2018). A test of the functional avoidance hypothesis in the development of overgeneral autobiographical memory. *Memory and Cognition*, 46(6), 895–908. <https://doi.org/10.3758/s13421-018-0810-z>

Hallford, D. J., Barry, T. J., Belmans, E., Raes, F., Dax, S., Nishiguchi, Y., & Takano, K. (2021). Specificity and detail in autobiographical memory retrieval: A multi-site (re) investigation. *Memory*, 29(1), 1-10. <https://doi.org/10.1080/09658211.2020.1838548>

Hamlat, E., Connolly, J., Hamilton, S., Stange, L., Abramson, J., & Alloy, J. (2015).

Rumination and Overgeneral Autobiographical Memory in Adolescents: An Integration of Cognitive Vulnerabilities to Depression. *Journal of Youth and Adolescence*, 44(4), 806-818.

<https://doi.org/10.1007/s10964-014-0090-2>

Hitchcock, C., Nixon, R. D. V., & Weber, N. (2014). A review of overgeneral memory in child psychopathology. *British Journal of Clinical Psychology*, 53(2), 170–193.

<https://doi.org/10.1111/bjc.12034>

Kashikar-Zuck, S., Carle, A., Barnett, K., Goldschneider, K. R., Sherry, D. D., Mara, C. A., Cunningham, N., Farrell, J., Tress, J., & DeWitt, E. M. (2016). Longitudinal evaluation of

EPISODIC DETAIL ADOLESCENCE

patient-reported outcomes measurement information systems measures in pediatric chronic pain. *Pain*, 157(2), 339–347. <https://doi.org/10.1097/j.pain.0000000000000378>

Kessler, R. C., & Bromet, E. J. (2013). The Epidemiology of Depression Across Cultures. *Annual Review of Public Health*, 34(1), 119–138. <https://doi.org/10.1146/annurev-publhealth-031912-114409>

King, C. I., Romero, A., Schacter, D. L., & St Jacques, P. L. (2022). The influence of shifting perspective on episodic and semantic details during autobiographical memory recall. *Memory (Hove, England)*, 1–13. Advance online publication.

<https://doi.org/10.1080/09658211.2022.2061003>

Kuyken, W., Howell, R., & Dalgleish, T. (2006). Overgeneral autobiographical memory in depressed adolescents with, versus without, a reported history of trauma. *Journal of Abnormal Psychology*, 115(3), 387–396. <https://doi.org/10.1037/0021-843X.115.3.387>

Kuyken, W., & Dalgleish, T. (2011). Overgeneral autobiographical memory in adolescents at risk for depression. *Memory*, 19(3), 241–250.

<https://doi.org/10.1080/09658211.2011.554421>

Kuznetsova, A., Brockhoff, P. B., & Christensen, R. H. B. (2017). lmerTest Package: Tests in Linear Mixed Effects Models. *Journal of Statistical Software*, 82(13), 1–26.

<https://doi.org/10.18637/jss.v082.i13>

Kyung, Y., Yanes-Lukin, P., & Roberts, J. E. (2016). Specificity and detail in autobiographical memory: Same or different constructs? *Memory*, 24(2), 272–284.

<https://doi.org/10.1080/09658211.2014.1002411>

[dataset] Lam, K., & Barry, T. J. (2020, April 29). Autobiographical memory specificity and detailedness and their association with depression in early adolescence.

EPISODIC DETAIL ADOLESCENCE

<https://doi.org/10.17605/OSF.IO/E85GP>

Levine, B., Svoboda, E., Hay, J. F., Winocur, G., & Moscovitch, M. (2002). Aging and autobiographical memory: Dissociating episodic from semantic retrieval. *Psychology and Aging, 17*(4), 677–689. <https://doi.org/10.1037/0882-7974.17.4.677>

Mair A, Poirier M, Conway MA (2021) Age effects in autobiographical memory depend on the measure. *PLoS ONE 16*(10): e0259279. <https://doi.org/10.1371/journal.pone.0259279>

Pasupathi, M., & Wainryb, C. (2010). On telling the whole story: Facts and interpretations in autobiographical memory narratives from childhood through midadolescence.

Developmental Psychology, 46(3), 735–746. <https://doi.org/10.1037/a0018897>

Pile, V., Smith, P., Leamy, M., Oliver, A., Blackwell, S. E., Meiser-Stedman, R., . . . Lau, J. Y. F. (2021). Harnessing mental imagery and enhancing memory specificity: Developing a brief early intervention for depressive symptoms in adolescence. *Cognitive Therapy and Research, 45*(5), 885-901. <http://dx.doi.org/10.1007/s10608-020-10130-3>

Pilkonis, P. A., Choi, S. W., Reise, S. P., Stover, A. M., Riley, W. T., & Cella, D. (2011). Item banks for measuring emotional distress from the patient-reported outcomes measurement information system (PROMIS®): Depression, anxiety, and anger. *Assessment, 18*(3), 263–283. <https://doi.org/10.1177/1073191111411667>

Piolino, P., Hisland, M., Ruffevelle, I., Matuszewski, V., Jambaqué, I., & Eustache, F. (2007). Do school-age children remember or know the personal past? *Consciousness and Cognition, 16*(1), 84–101. <https://doi.org/10.1016/j.concog.2005.09.010>

Rawal, A., & Rice, F. (2012). Examining Overgeneral Autobiographical Memory as a Risk Factor for Adolescent Depression. *Journal of the American Academy of Child & Adolescent Psychiatry, 51*(5), 518-527. <https://doi.org/10.1016/j.jaac.2012.02.025>

EPISODIC DETAIL ADOLESCENCE

Raes, F., Hermans, D., Williams, J. M., & Eelen, P. (2007). A sentence completion procedure as an alternative to the Autobiographical Memory Test for assessing overgeneral memory in non-clinical populations. *Memory (Hove, England)*, *15*(5), 495–507.

<https://doi.org/10.1080/09658210701390982>

Raes, F., Williams, J. M. G., & Hermans, D. (2009). Reducing cognitive vulnerability to depression: A preliminary investigation of memory specificity training (MEST) in inpatients with depressive symptomatology. *Journal of Behavior Therapy and Experimental Psychiatry*, *40*(1), 24–38. <https://doi.org/10.1016/j.jbtep.2008.03.001>

Rankin, J. L., Lane, D. J., Gibbons, F. X., & Gerrard, M. (2004). Adolescent self-consciousness: Longitudinal age changes and gender differences in two cohorts. *Journal of Research on Adolescence*, *14*(1), 1-21. <https://doi.org/10.1111/j.1532-7795.2004.01401001.x>

Reese, E., Haden, C. A., & Fivush, R. (1993). Mother-child conversations about the past: Relationships of style and memory over time. *Cognitive development*, *8*(4), 403-430.

[https://doi.org/10.1016/S0885-2014\(05\)80002-4](https://doi.org/10.1016/S0885-2014(05)80002-4)

Ricarte, J. J., Hernández, J. V., Latorre, J. M., Danion, J. M., & Berna, F. (2014). Rumination and autobiographical memory impairment in patients with schizophrenia. *Schizophrenia research*, *160*(1-3), 163–168. <https://doi.org/10.1016/j.schres.2014.10.027>

R Core Team. (2018). R: A Language and Environment for Statistical Computing. In *R Foundation for Statistical Computing: Vol. Vienna, Au*. <https://www.r-project.org/>

Roberts, J. E., Yanes-Lukin, P., & Kyung, Y. (2018). Distinctions between autobiographical memory specificity and detail: Trajectories across cue presentations. *Consciousness and Cognition*, *65*(January), 342–351. <https://doi.org/10.1016/j.concog.2018.08.004>

EPISODIC DETAIL ADOLESCENCE

Ros, L., Romero, D., Ricarte, J. J., Serrano, J. P., Nieto, M., & Latorre, J. M. (2018).

Measurement of overgeneral autobiographical memory: Psychometric properties of the autobiographical memory test in young and older populations. *PloS One*, 13(4), e0196073.

<https://doi.org/10.1371/journal.pone.0196073>

Salmon, K., Isler, L., Jose, P., Glynn, R., Mitchell, C., Dewhirst, M., . . . Reese, E. (2021).

Delving into the detail: Greater episodic detail in narratives of a critical life event predicts an increase in adolescent depressive symptoms across one year. *Behaviour Research and Therapy*, 137, 10. doi:<http://dx.doi.org/10.1016/j.brat.2020.103798>

<http://dx.doi.org/10.1016/j.brat.2020.103798>

Salmon, K., & Reese, E. (2016). The benefits of reminiscing with young children. *Current Directions in Psychological Science*, 25(4), 233-238.

<https://doi.org/10.1177/0963721416655100>

Sumner, J. A., Griffith, J. W., & Mineka, S. (2010). Overgeneral autobiographical memory as a predictor of the course of depression: A meta-analysis. *Behaviour Research and Therapy*, 48(7), 614–625. <https://doi.org/10.1016/j.brat.2010.03.013>

<https://doi.org/10.1016/j.brat.2010.03.013>

Sumner, J. A., Griffith, J. W., Mineka, S., Rekart, K. N., Zinbarg, R. E., & Craske, M. G.

(2011). Overgeneral autobiographical memory and chronic interpersonal stress as predictors of the course of depression in adolescents. *Cognition and Emotion*, 25(1), 183-192.

Sumner J. A. (2012). The mechanisms underlying overgeneral autobiographical memory: an evaluative review of evidence for the CaR-FA-X model. *Clinical psychology review*, 32(1),

34–48. <https://doi.org/10.1016/j.cpr.2011.10.003>

Valentino, K., Nuttall, A. K., Comas, M., McDonnell, C. G., Piper, B., Thomas, T. E., &

Fanuele, S. (2014). Mother–child reminiscing and autobiographical memory specificity among preschool-age children. *Developmental Psychology*, 50(4), 1197–1207.

EPISODIC DETAIL ADOLESCENCE

<https://doi.org/10.1037/a0034912>

Valentino, K., McDonnell, C. G., Comas, M., & Nuttall, A. K. (2018). Preschoolers' autobiographical memory specificity relates to their emotional adjustment. *Journal of Cognition and Development, 19*(1), 47–64. <https://doi.org/10.1080/15248372.2017.1418745>

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*(6), 731–743.

[https://doi.org/10.1016/S0005-7967\(03\)00194-3](https://doi.org/10.1016/S0005-7967(03)00194-3)

Vilagut, G., Forero, C. G., Castro-Rodriguez, J. I., Olariu, E., Barbaglia, G., Astals, M., Diez-Aja, C., Gárriz, M., Abellanas, A., López-Santín, J. M., Sanchez-Gil, C., & Alonso, J. (2019). Measurement equivalence of PROMIS depression in Spain and the United States. *Psychological Assessment, 31*(2), 248–264. <https://doi.org/10.1037/pas0000665>

Westenberg, P. M., Gullone, E., Bokhorst, C. L., Heyne, D. A., & King, N. J. (2007). Social evaluation fear in childhood and adolescence: Normative developmental course and continuity of individual differences. *British Journal of Developmental Psychology, 25*(3), 471–483. <https://doi.org/10.1348/026151006X173099>

Williams, J. M. G., Barnhofer, T., Crane, C., Herman, D., Raes, F., Watkins, E., & Dalgleish, T. (2007). Autobiographical memory specificity and emotional disorder. *Psychological bulletin, 133*(1), 122. doi:10.1037/0033-2909.133.1.122

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

Willoughby, K. A., Desrocher, M., Levine, B., & Rovet, J. F. (2012). Episodic and semantic

EPISODIC DETAIL ADOLESCENCE

autobiographical memory and everyday memory during late childhood and early adolescence. *Frontiers in Psychology*, 3(FEB). <https://doi.org/10.3389/fpsyg.2012.00053>

Yan, Y., Rychlik, K. L., Rosenman, M. B., & Miller, M. L. (2020). Use of PROMIS® to screen for depression in children with arthritis. *Pediatric rheumatology online journal*, 18(1), 92. <https://doi.org/10.1186/s12969-020-00482-1>

Young, K. D., Siegle, G. J., Bodurka, J., & Drevets, W. C. (2016). Amygdala activity during autobiographical memory recall in depressed and vulnerable individuals: Association with symptom severity and autobiographical overgenerality. *American Journal of Psychiatry*, 173(1), 78–89. <https://doi.org/10.1176/appi.ajp.2015.15010119>

EPISODIC DETAIL ADOLESCENCE

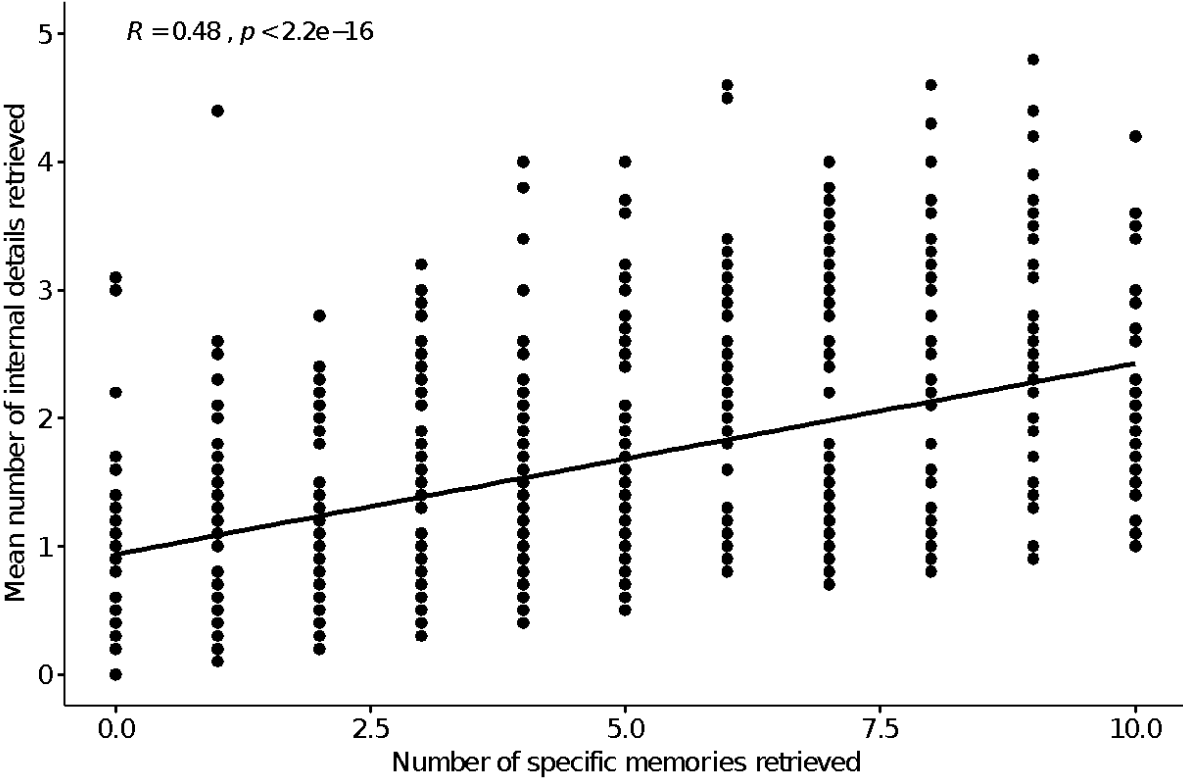
Table 1.

Memory type	Detail type	Cue valence	Mean	SD
Specific	Internal	Positive	1.98	1.04
		Negative	2.07	1.11
	External	Positive	0.52	0.56
		Negative	0.52	0.77
Non-specific	Internal	Positive	1.31	0.95
		Negative	1.31	0.98
	External	Positive	0.26	0.39
		Negative	0.25	0.39

Note. The mean number of details retrieved (and standard deviation; SD) for each memory (Specific and Non-Specific) and detail (Internal and External) type, for positive and negative cues presented in the Autobiographical Memory Test.

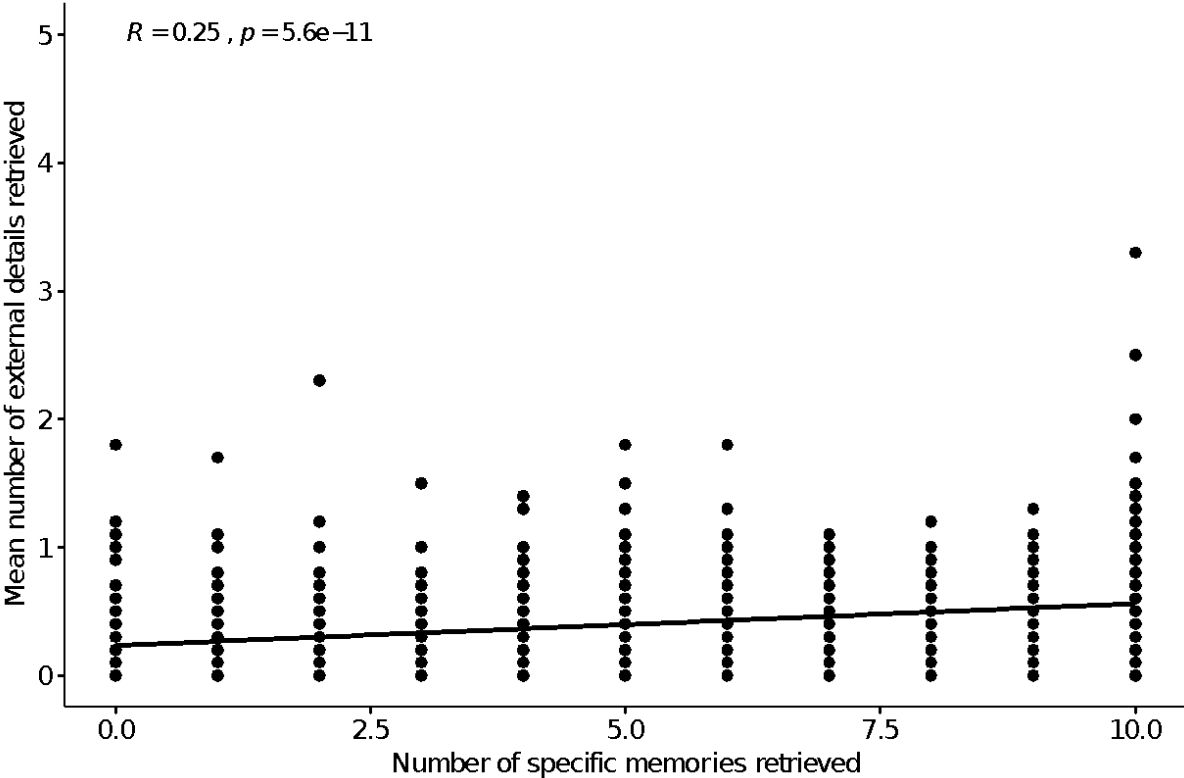
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Figure 1.



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Figure 2.



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Figure captions

Figure 1: Scatter plot (with line of best fit and confidence intervals) for the number of specific memories retrieved in the Autobiographical Memory Test and the mean number of internal details that participants retrieved across all memory types.

Figure 2: Scatter plot (with line of best fit and confidence intervals) for the number of specific memories retrieved in the Autobiographical Memory Test and the mean number of external details that participants retrieved across all memory types.