The Relationship Between Parent and Adolescent Autobiographical Memory Specificity

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Abstract

The ways we remember our past have been demonstrated to have important implications regarding our psychological functioning (Waters, 2014). Research suggests parents scaffold early remembering skills which can shape the amount of specific detail children can recall from their autobiographical memories (Autobiographical Memory Specificity; AMS) (Reese & Fivush, 1993; Reese, Haden, & Fivush, 1993; Valentino et al., 2014). The current study investigated whether parents and their adolescent children display similar patterns of AMS. In addition, previous literature has predominately utilised only one measure of AMS – the Autobiographical Memory Test (Williams & Broadbent, 1986). A critique of this measure and an argument for adopting a new measure of AMS is provided. A secondary aim was to examine the relationship between parent and adolescent rumination which has been shown to share an important relationship with AMS (Williams et al., 2007) and, like AMS, is suggested to be socialised early in the life span (Nolen-Hoeksema, Wisco, & Lyuboirsky, 2008). Sixty-seven parent-adolescent dyads were recruited, and measures of AMS and rumination were administered. A significant positive relationship between parent and adolescent rumination was found, however, the relationships between parent and adolescent AMS were non-significant. Implications regarding existing theory, limitations, and ideas for future research are discussed.

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The Relationship Between Parent and Adolescent Autobiographical Memory Specificity

The Importance of Autobiographical Memory Specificity

Autobiographical memory refers to the recollection of personally-experienced events stored across time. It has been proposed to serve many functions including acting as a platform for problem solving, increasing social cohesion, as well as facilitating the formation of personal identity by providing a continuous life-narrative (Fivush, 2011). In addition, autobiographical memory often contains affective content (Pillemer, 1998). For example, recalling a time of joy or adversity can often elicit a re-experiencing of associated emotions. The affective nature of autobiographical memory means it plays an important role in adaptive human functioning, and as such compromised autobiographical memory has been implicated in some forms of psychopathology (e.g. depression and post-traumatic stress disorder) (see Williams et al., 2007 for review).

Research suggests a phenomenon known as overgeneral autobiographical memory (OGM) or reduced autobiographical memory specificity (rAMS) is one such compromise (Williams et al., 2007). rAMS occurs when a person has difficulty recalling specific autobiographical memories. Typically measured using the Autobiographical Memory Test (AMT) (Williams & Broadbent, 1986), which is a cued and timed recall test, responses that refer to events as categorical or extended when asked for a specific event are recorded as overgeneral. For example, an overgeneral response to the cue word “angry” may be “when I fail” which is a general category of events. This contrasts with a more specific response “when I failed my year 11 maths exam last year”.

Williams and Broadbent (1986) found that suicidal persons, who were administered the AMT, were less likely to produce specific autobiographical memories in response to both negative and positive cue words compared to community controls. They found roughly half the suicidal sample produced memories that summarised a category of events (e.g., “I used to

walk the dog every morning"). Following this, a large amount of research has consistently found that depressed persons, particularly those who have experienced traumatic events, are more likely to display rAMS (see Williams et al., 2007 for review).

The importance of studying rAMS rests on its close association with depression psychopathology as well as other important aspects of psychological functioning. Debeer, Raes, Williams, and Hermans (2011) suggest rAMS a) nourishes an abstract, analytical thinking style, typical of depressive thinking, and shares a close relationship with rumination which is a known vulnerability for depression; b) provides limited access to specific memories which impairs social problem solving; c) may foster feelings of hopelessness by impairing ability to conceptualise and imagine future events. Additionally, rAMS has been shown to be associated with poorer recovery from affective disorders (Peeters, Wessel, Merckelbach, & Boon-Vermeeren, 2002).

Theories of Autobiographical Memory Specificity

CaR-FA-X Model

Two notable theories have attempted to account for the development and maintenance of rAMS – the CaR-FA-X model (Williams et al., 2007) and the Developmental Psychopathology Model (Valentino, 2011). The CaR-FA-X model proposes that three core mechanisms work individually and/or in interaction to disrupt the retrieval of specific autobiographical memories. CaR (Capture/Rumination), FA (Functional Avoidance), and X (Executive Function). The model extends on work by Conway (2005), who suggests that autobiographical memory is organised as a hierarchical system consisting of broad themes of a life story at the top which then move down toward more specific episodic events.

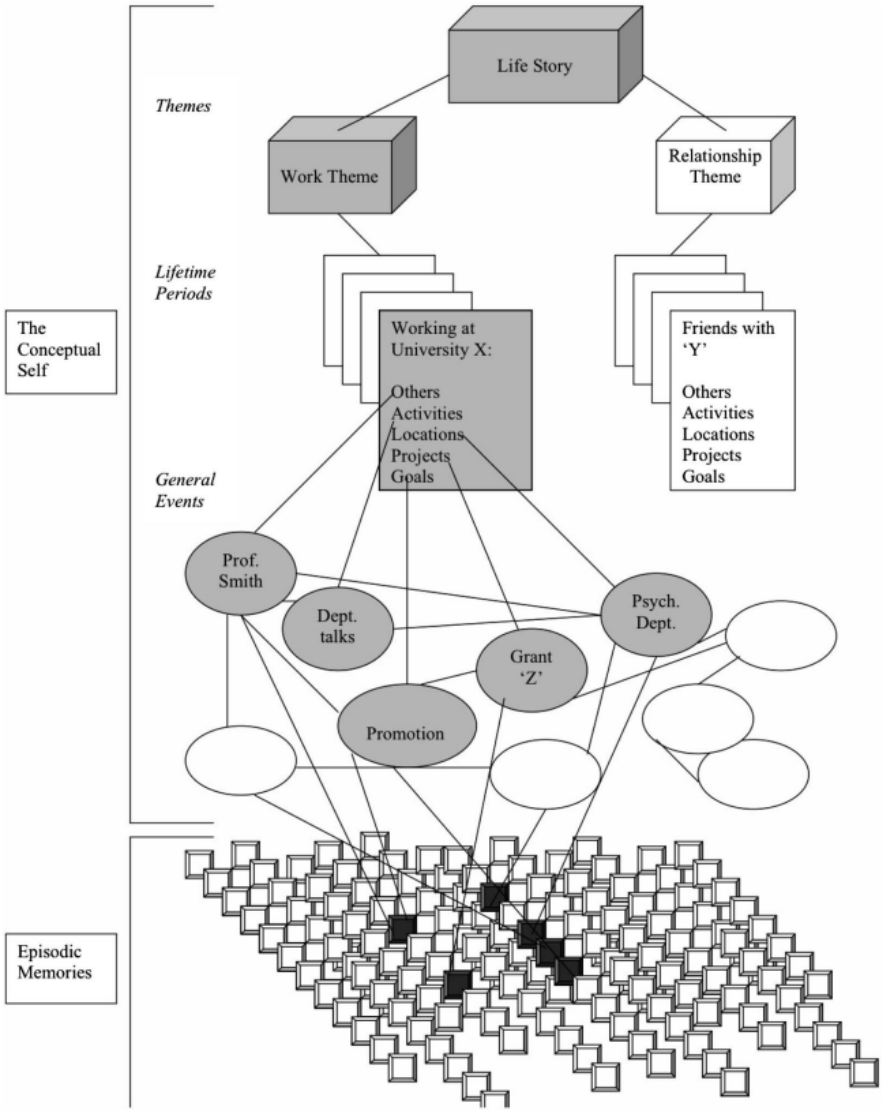

Figure 1. Hierarchical structure of autobiographical memory based on Conway (2005) and reproduced from Williams et al. (2007; p. 132).

CaR (Capture/Rumination) is proposed to contribute to rAMS, whereby a top-down retrieval search activates self-relevant information at the broader conceptual level. That is, individuals who have overactive negative self-representations (e.g. those who are depressed) become "captured" at this broader theme-based level. This may trigger ruminative thought processes concerning negative aspects of the self and prevents the search and retrieval of more specific autobiographical memories. Experimental research by Watkins and Teasdale (2001) adds support to this component of the CaR-FA-X model. They found that inducing

rumination in depressed individuals lead to them producing less specific autobiographical memories compared to them being distracted.

FA (Functional Avoidance) is proposed to contribute to rAMS whereby a person is thought to terminate retrieval of autobiographical memory at the broader 'theme' level to avoid negative affect associated with more specific episodic memories. Thus, the cycle of retrieving less specific autobiographical memories is maintained via negative reinforcement. Debeer and colleagues (2011) conducted experimental research that found when the AMT was administered under threat instructions (whereby participants were warned it may elicit uncomfortable memories) participants retrieved less specific autobiographical memories compared to the non-threat condition. Such work suggests that rAMS does indeed act as a protective mechanism for regulating affect but what is more, rAMS may be employed flexibly and remain context dependent in some individuals.

X (Executive Function) is suggested to play a role whereby reduced executive capacity is thought to contribute to rAMS. The retrieval process as proposed by Conway (2005) requires an individual to search through the hierarchical structure, inhibit irrelevant information, and hold the final search result in working memory. All such steps are suggested to rely on executive processing thus reduced capacity in this domain may result in rAMS. Dalgleish and colleagues (2007) found when examining the relationship between rAMS and executive function that the relationship remained after controlling for depressive symptoms. This is important as depression is often associated with reduced executive functioning and rAMS, so teasing the two apart is difficult. Furthermore, the relationship between rAMS and depression was shown to be partially mediated by executive control.

Developmental Psychopathology Model

The Developmental Psychopathology Model of Overgeneral Memory (Valentino, 2011) emerges from Bronfenbrenner's (1979) ecological-developmental systems theory and

proposes that rAMS may be influenced by many risk and protective factors occurring at various levels of a young person's ecological system. These factors range from more distal influences such as cultural practices and perspectives to more proximal factors such as parent-child interaction and emotional regulation and knowledge.

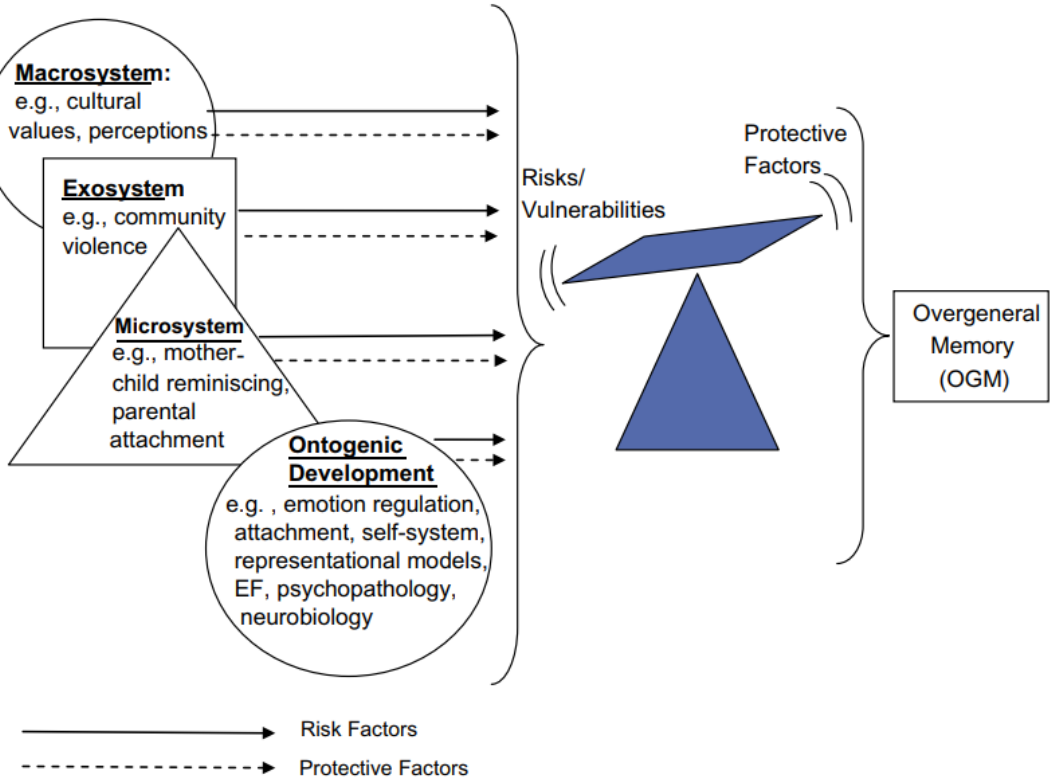

Figure 2. Developmental psychopathology model highlights both risk and protective factors at multiple ecological levels from Valentino (2011; p. 38).

Consistent with other sociocultural developmental perspectives, this model suggests that both intra- and inter- personal processes contribute to the development of rAMS and that young people internalise the skills of remembering by socially interacting with their world (Vygotsky, 1978; Valentino, 2011). These processes may be reciprocal, exert differing levels of influence (e.g. proximal vs. distal factors), and work in interaction to contribute to the development of rAMS.

While the Developmental Psychopathology Model is primarily speculative, there exists some compelling evidence to suggest processes at these levels may contribute to the development of rAMS in young people. For example, parent-child shared reminiscing (Reese, Haden, & Fivush, 1993), parental attachment (Alexander et al., 2002), and parent-child relationship quality (Valentino et al., 2014). Further, Goodman, Quas, and Ogle, (2010) argue rAMS is closely related to avoidant emotional regulation strategies. Additionally, the model is unique in that, from a developmental perspective, it considers a wide range of factors which are often neglected from other theories.

The Relationship Between Parent and Adolescent AMS

Parent-child joint reminiscing plays a key role in the development of a young person's autobiographical memory skills (Fivush, 2011; Reese, Haden, & Fivush, 1993). However, parent-child joint reminiscing is variable. Research shows that mothers who adopt a supportive and elaborative shared reminiscing style which exhibits features such as asking open questions of the child, aiding in identifying/labelling emotions, and encouraging the child to add more information about the experienced event have children who can discuss past events more elaboratively with their caregiver (Reese & Fivush, 1993; Reese, Haden, & Fivush, 1993) and in other contexts (e.g. with an experimenter) (Leichtman, Pillemer, Wang, Koreishi, & Han, 2000). Further, elaborative reminiscing has been demonstrated experimentally to influence the autobiographical memory skills of young people. Van Bergen, Salmon, Dadds, and Allen (2009) coached a group of mothers to use an elaborative and emotion-rich reminiscing style with their young children (ages 3.5 to 6 years), whereby they adopted techniques such as asking *Wh-* questions (e.g. *who, what, where, when*) and discussing emotional content in a constructive manner (e.g. labelling emotions and discussing their causes). This *reminiscing* group were compared against a *control* group who were encouraged instead to spend time attending fully to their child and to follow their child's lead

in play. The elaborative *reminiscing* group saw their children produce more elaborative utterances during shared reminiscing, offer more emotional references, and displayed greater emotional causal knowledge over time compared to the *control* group.

It is noteworthy, however, that almost all the research investigating parent-child reminiscing and its relationship to child development occurs within a Western cultural context. This is important, as differences in autobiographical memory content, specificity, and form have been observed between different cultures (Wang, 2004; Wang, Hou, Koh, Song, & Yang, 2018). For example, Western culture has been suggested to place more emphasis on individual autonomy and agency compared to Asian cultures. This then has implications regarding the facilitation and formation of more specific autobiographical memories and should be considered when evaluating the literature.

To date, little research has examined parent-child reminiscing on the development of AMS in young people and none have examined this in adolescents. Further, only one study has looked at the relationship between parent AMS and child AMS. Jobson, Burford, Burns, Baldry, and Wu (2018) investigated whether parent AMS was associated with child AMS through joint reminiscing. They recruited a sample of 40 mother-child dyads with the children's mean age at 5.0 years. They found support for a moderately positive (although non-significant) relationship between parent and child AMS. Additionally, support for an indirect pathway between maternal AMS and child AMS through the quality of maternal guidance and support when jointly reminiscing was found. This suggests that mother's AMS is positively associated with the way they guide and support their children during joint reminiscing (i.e. level of task focus, genuine interest, guiding their child towards positive resolutions, and facilitating rich and coherent narratives from their children). These practices in turn are positively associated with child AMS. Interestingly, the quantity of maternal

elaborative reminiscing was not associated with either maternal nor child AMS, nor did it mediate a pathway between these two variables.

Jobson, Burford, Burns, Baldry, and Wu (2018)'s findings are consistent with Valentino and colleagues (2014) who found that child AMS was related to maternal guidance and support (elaborative quality) and not maternal elaborative reminiscing (elaborative quantity). Collectively, these two studies suggest that parental guidance and support has a greater influence on the development of a young person's autobiographical memory specificity over the amount of parental elaborative reminiscing.

When considering such research, it invites the question 'what are the contributing factors for a parent to engage in a supportive, emotionally rich, and elaborative reminiscing style with their young child?' It may be speculated that to support, guide, and encourage a child to explore their autobiographical memories a parent must themselves possess developed autobiographical memory skills (e.g. able to elaborate and recall specific episodic events). This forms the basis for the primary research question of the current study - what is the relationship between parent and adolescent AMS? If parent AMS is implicated in their own ability to support and guide their children through joint reminiscing, which is suggested to scaffold a child's early skills in remembering, then it may be expected that a parent and their adolescent children will display similar patterns of AMS. Therefore, a positive association between parent and adolescent AMS is hypothesised.

Evaluating Autobiographical Memory Test. Why Adopt an Alternative Measure?

Historically AMS has primarily been measured using the Autobiographical Memory Test (AMT) (Williams & Broadbent, 1986). It is a cued and timed recall test whereby participants are provided with emotional cue words and asked to provide a specific memory associated with each cue word. The requirement that the memory be specific is stated numerous times, participants are provided with examples (i.e. specific vs. non-specific

memory), and in some cases even provided with trial runs. Responses are then coded for specificity for subsequent analysis.

However, despite its widespread use, the AMT is not without critique. Raes, Hermans, Williams, and Eelen (2007) highlighted that adolescence as being a time of increased risk for depression, one would expect to find higher levels of rAMS within this population. However, low levels of rAMS in community adolescent samples are often reported when measuring AMS with the AMT (Debeer, Hermans, & Raes, 2005; Raes & Hermans, 2002; 2003). In addition, rAMS assessed with the AMT is not often associated with depressive symptomatology (e.g. rumination) in community populations. Raes, Pousset, and Hermans (2004) found no association between scores on the AMT and the Becks Depression Inventory (BDI) using a university sample. Similarly, Gutenbrunner, Salmon, and Jose (2017) found relatively low levels of rAMS within a community adolescent sample and no association between their rAMS, rumination, and depression. In fact, contrary to what would be expected by CaR-FA-X (Williams, et al., 2007) sometimes the opposite pattern is observed (i.e. more specific memories are associated with higher depression) (e.g. Salmon et al., submitted). Thus, it may be argued that the standard AMT is not sensitive enough to detect rAMS in community samples.

Additional support for this argument comes from Debeer, Hermans, and Raes (2009), Raes and colleagues (2006), and Romero, Vazquez, and Sanchez (2014) who found rAMS and rumination were not associated in persons experiencing lower levels of depression. However, these results appeared to depend on what measures were adopted to measure AMS. While no relationship between AMS and rumination in subclinical samples were found using the AMT, when using sentence completion tasks (Raes et al., 2007), minimal instruction AMT (Debeer et al., 2009), or free-recall task (Romero, et al., 2014) to measure AMS, a positive relationship between rAMS and rumination was found.

This also raises questions about the way in which rAMS is conceptualised in these contexts. rAMS has typically been a question of ability and is considered as a measure of an individual's difficulty or even inability to retrieve specific memories when asked. Alternatively, it may be conceptualised as a general tendency, meaning participants *tend* not to recall specific memories but can override this tendency if instructed specifically. In a similar way, the AMT with its numerous instructions, examples, and trial runs may be 'overriding' a person's normal tendency to remember less specifically and thus not rendering an accurate representation of their AMS. Debeer and colleagues (2011) found that rAMS was able to be employed flexibly in some individuals when threat instructions were presented (e.g. participants were warned the exercise may elicit uncomfortable memories) again suggesting rAMS is a tendency that may be overridden. Further, research suggests that free-recall of events (e.g. turning point narratives) are more specific than those produced in response to cue words (e.g. AMT) (see Berntsen, 2009, for review). Thus, it may be reasoned that free-call methods serve as a better indicator of rAMS, particularly in nonclinical samples.

In response to these findings, the current research will also adopt an alternative measure of AMS. Participants will be asked to provide a specific, personally relevant turning point experience. Turning point memories are those that are significant or life-changing and are important in that the individual attempts to draw meaning from them and incorporate it into their greater life-narrative (Grysman, & Hudson, 2011). They are unique given that the demand placed on the individual is to interlace both episodic and semantic detail together to draw conclusions about the self. Thus, these turning point narratives will be coded for internal (episodic) and external (semantic) detail. Internal detail may be conceptualised as the details which refer to personal perceptions, thoughts, feelings, and emotions which are associated with the specific event. Alternatively, external detail does not include the re-

experiencing but is rather conceptual information about the self and contributes to the understanding of the self over time.

Söderlund and colleagues (2014) adopted this approach to measure AMS and found that depressed people recalled fewer episodic details but not fewer semantic details compared to community controls for both recent and remote events. However, they were not able to compare their results of AMS as measured by the AMT as it was not administered in their study. The current study aims to address this gap by comparing specificity as measured by the turning point narratives to those measured on the AMT. It is thought that by overriding some of the limitations with the AMT, these turning point narratives will provide a more sensitive measure of AMS in the current community sample.

The Relationship Between AMS and Rumination

A large amount of research has examined the relationship between rumination and AMS (see Williams, et al., 2007 for review). However, the exact nature of this relationship remains unclear. Some research has found a negative relationship between rumination and AMS in persons who are clinically depressed (e.g. Raes et al., 2005, 2006). Sutherland and Bryant (2007) used an experimental paradigm to examine the effect of rumination on AMS and found that people who scored highly on Becks Depression Inventory-II (BDI-II; Beck, Steer, & Brown, 1996) recalled less specific autobiographical memories after being exposed to a rumination task over a distraction task. This effect was not observed for people rated low on depression. The authors argue that rumination does influence the recall of specific autobiographical memories but only in individuals who are already experiencing high levels of depression. Similarly, Gutenbrunner, Salmon, and Jose (2017) using a community adolescent sample found that rAMS was associated with increases in anxiety among high ruminators. They suggest, in line with Sutherland and Bryant (2007), that rAMS may serve as

a vulnerability marker for rumination and psychopathology only in youth who are already at risk.

Further, Hamlat and colleagues (2015) found that rAMS and increased rumination in conjunction with stressful life events predicted increases in depressive symptoms for adolescent girls. These findings would suggest that low levels of rumination may potentially act as a buffer against depressive symptoms. Additionally, their research also showed that adolescents who displayed rAMS were more likely to show an increase in depressive symptoms when confronted with stressful life events compared to those who retrieved more specific autobiographical memories. Again, these results suggest rAMS and rumination act together as potential risk factors in the development of depression.

Such research is guided by the capture/rumination component of CaR-FA-X model (Williams et al., 2007). While some research has found a negative association between rumination and AMS in clinical populations (e.g. Raes et al., 2005, 2006; Sutherland & Bryant, 2007) the picture tends to differ when examining nonclinical samples (Raes, Pousset, & Hermans, 2004). A meta-analysis by Stewart, Hunter, and Rhodes (2017) investigating CaR-FA-X mechanisms found that, out of six studies, no support was found for a relationship between AMS and rumination in community samples. This is in line with the earlier argument for adopting the internal/external detail measure of AMS over the AMT.

Further noteworthy, most research thus far has focused on adults and very little has investigated the relationship between rumination and AMS in an adolescent sample. This is important, as rumination generally increases during adolescence as cognitive capacities develop (Jose & Brown, 2008) and adolescence is a time of increased risk for the development of psychopathology (Hayden & Mash, 2014). Furthermore, no studies have examined the link between AMS and rumination within the parent-adolescent dyad. If rumination has been shown to be associated with AMS at the individual level, it might also

be the case that this link extends across the parent and child relationship given the suggestion of learning and modelling processes described earlier. For example, a parent high on rumination may have access to less specific autobiographical memories, which in turn may reduce the support and guidance they can offer during shared reminiscing tasks. Based on Jobson, Burford, Burns, Baldry and Wu (2018)'s findings, this could impact on the development of a young person's AMS. Similarly, parental rumination may lend to joint reminiscing becoming 'bogged down' in repetitive, negative detail.

The Relationship Between Parent and Adolescent Rumination

Rumination is a cognitive process that involves repetitive, self-focused negative thoughts about the self and has been consistently associated with several forms of psychopathology (Nolen-Hoeksema, 1991; Nolen-Hoeksema, 2008). It has been demonstrated to be an important transdiagnostic risk factor by enhancing negative thinking, impairing problem-solving, and interfering with adaptive behaviours, for example, seeking social support. Furthermore, rumination has been suggested to share an important relationship with AMS (Williams, et al., 2007). The CaR-FA-X model proposed by Williams and colleagues (2007) would suggest those who engage in more frequent rumination show low levels of AMS due to the cognitive load involved in ruminative thought. In addition, individuals may become 'captured' at the broader level of autobiographical memory search as it may elicit personally relevant negative information that impairs recall of specific episodes.

Related to autobiographical memory development, the Developmental Psychopathology Model (Valentino, 2011) would argue that young people learn to identify, understand, and manage their emotions via processes that are taught and/or modelled by their caregiver (Vygotsky, 1978; Valentino, 2011). Stroud and Fitts (2017) suggest rumination is one such process. They found a positive association between parent rumination and the rumination of their adolescent children. Additionally, they found that parental coping

suggestions (approach vs. avoidance strategies) and parent-adolescent relationship quality each uniquely predicted adolescent rumination. Parents who suggested more avoidance strategies and shared poorer relationship quality had adolescent children that typically displayed increased levels of rumination. Conversely, Douglas, Williams, and Reynolds (2017) found no relationship between mothers' rumination and daughters' rumination, however, low levels of maternal positivity (as measured by positive comments mothers made about their daughters) were associated with increases in adolescent rumination.

In line with the Developmental Psychopathology Model (Valentino, 2011), Nolen-Hoeksema (1991; 2008) also argued that parenting processes play a role in the development of rumination in young people. She suggested the tendency to ruminate may be modelled by the parent, particularly if the parent is depressed. Further, it is possible that under such conditions adaptive coping strategies such as active problem solving are not being modelled or reinforced. In a similar way, Gaté and colleagues (2013) in a 5-year longitudinal study investigating family environments as a risk factor for adolescent rumination/depression found evidence to suggest that low levels of parent positivity may result in children adopting rumination as a passive means of coping and managing emotions.

Additional support for rumination being a learned process comes from Waller and Rose (2013). They found that mother-adolescent co-rumination (extensive discussion, rehashing, and speculating about problems) was related to adolescent co-rumination with friends and both these practices in turn were positively related to the adolescents' anxious/depressive symptoms. The authors argue that the practice of co-ruminating with one's caregiver may influence this behaviour within the adolescent which is then exercised within their broader social setting.

Such research and rumination's proposed relationship with AMS sets up the secondary research question for the current study. What is the relationship between parent

and adolescent rumination? If parents teach/model skills in emotion regulation, then it may be expected that parents and their adolescent children display similar levels of rumination. Therefore, it is hypothesised that parent rumination scores will be positively associated with the rumination scores of their adolescent children.

The Current Study

The primary aims of the current study are to examine the relationships between parent and adolescent AMS and, as a secondary focus, the relationship between parent and adolescent rumination. Additionally, the relationships between these variables at the individual level (e.g. parent AMS and parent rumination and adolescent AMS and adolescent rumination) will also be explored to expand on the literature examining the CaR-FA-X model. A community sample of 67 parent-adolescent dyads will be utilised.

This study is unique in two ways. First, it makes use of a sample that consists of adults and their adolescent children, allowing for examining the relationships of AMS and rumination between the two groups. Most of research looking at AMS has so far focused on the individual level, particularly with adults, which neglects an examination of the development of AMS and its associations within a family system. Incorporating this developmental component between parents and their adolescent children may provide support for Valentino's (2011) Developmental Psychopathology Model. Relatedly, the adolescent population have received less attention in the current AMS literature. Second, this study will adopt an alternative measure of AMS in addition to the AMT. The alternative measure utilises turning point narratives which will be coded for internal and external detail. It is argued the turning point narratives will provide a more sensitive measure of AMS in the current community sample.

The first aim is to examine the relationship between parent and adolescent AMS. *Hypothesis 1*: no relationship between parent and adolescent AMS is expected when

measuring AMS using the AMT (due to it being a community sample). However, when utilising the turning point narratives, it is hypothesised that parent and adolescent internal detail will be positively associated. This relationship is also expected between parent and adolescent external detail.

Second, to examine the interacting relationships between the AMS and rumination across the parent-adolescent dyad (i.e. parent AMS and adolescent rumination and parent rumination and adolescent AMS). *Hypothesis 2:* no relationship between parent AMS and adolescent rumination when using the AMT. However, a negative correlation between parent internal detail and adolescent rumination and a positive association between parent external detail and adolescent rumination are expected.

Third, these variables will be examined at the individual level (i.e. parent AMS and parent rumination, and adolescent AMS and adolescent rumination). *Hypothesis 3*: no significant relationships when utilising the AMT. However, a negative association between internal detail and rumination and a positive association between external detail and rumination within both the parent and adolescent are expected.

Lastly, the aim is to examine the relationship between parent and adolescent rumination. *Hypothesis 4:* a positive relationship between parent and adolescent levels of rumination is expected.

Method

Design

The current study adopted a cross-sectional design to examine the relationships between parent and adolescent AMS and rumination.

Participants

Participants were recruited from secondary schools throughout New Zealand. A total of 67 parent-adolescent dyads were utilised from within a larger longitudinal study

investigating the role of rAMS in the development of youth psychopathology. The sample consisted of 28 male and 39 female adolescents, with their mothers comprising the adult sample of 67 females. The adolescents had a mean age of 15.30 years (*SD*= 0.63) and the average age of the adult sample was 46.19 years (*SD*= 4.72). Ethnicity of the adult sample include European/Pakeha (86.8%), Asian (7.4%), Maori (2.9%), Pasifika (1.5%), and Other (1.5%). Ethnicity for the adolescent sample include European/Pakeha (88.2%), Asian (5.9%), Maori (2.9%), Pasifika (1.5%), and Other (1.5%). Decile rankings for the schools, in which the sample was recruited from, included a broad range from low to high socio-economic backgrounds. These included, decile 6 (13.2%), decile 7 (23.5%), decile 8 (11.8%), decile 9 (29.4%), decile 10 (22.1%). This study was approved by the Victoria University of Wellington School of Psychology Human Ethics Committee, under the delegated authority from the Victoria University of Wellington Human Ethics Committee.

Measures

Autobiographical Memory Test (AMT)

The AMT was administered to all parents and adolescents within the sample to serve as a measure of AMS. The test was administered to parents and adolescents simultaneously. The following instructions were read aloud by the researcher:

"In the first part of this study we are very interested in learning how people think about themselves and their lives. We want to find this out so that we can understand better how people feel good about themselves and their world. We are going to ask you a whole lot of questions today, and we hope you find these things interesting as you complete them. Thank you very much for helping us".

Following this demographic information was collected from each participant including name, school (for adolescents), date of birth, culture/ethnicity, and gender. Further instructions were then read aloud by the researcher:

"We are interested in your memory for events that have happened in your life. For each of the following words we would like you to think of an event that happened to you which the word reminds you of. The event could have happened recently (e.g. yesterday, last week…) or a long time ago. It might be an important event, or a not so important event. The memory you write down should be for a real event. So if we said "good" – it would be not OK to say, "I always enjoy a good party" because this does not mention a specific event. But it would be OK to say "I had a good time at Jane's party" because that is a real event. Please don't use the same event more than once."

"After I read each word, you will have about a minute to think about, and write down your memory. We'll tell you when to start and when it's time to stop. You can use as many or as few lines as you want. You don't have to fill in all the lines. You don't have to worry about spelling".

The participants then completed the AMT in response booklets provided to them by the researchers. Each booklet contained 10 cue words, which were all read aloud by the researcher. The ten cue words appeared in the following order and alternated between positive and negative valence. Each cue had its own individual page with lines printed for the participant to respond. *Happy, guilty, proud, scared, excited, angry, lucky, lonely, relaxed,* and *sad.* Participants were asked not to turn the page until they were instructed to do so by the researcher. Participants had 60 seconds per cue word to write a memory in the provided booklet.

Coding Memories from the AMT

Each memory was coded for specificity and organised into one of 11 categories (following Gutenbrunner, Salmon, & Jose, 2017).

Specific; a single instance lasting less than 24hrs, *extended*; singular instance lasting more than 24hrs, *categoric*; category of repeated instances, *specific or extended*; if could be

coded as either specific or extended with the available information, *specific or categoric*; if the memory could be coded as either specific or categoric based on the available information, *extended and categoric*; if the memory contained both types of information, *semantic associate;* response that is not a memory but something associated with cue word, *future event*; not a memory but reference to an event that may happen in the future, *incomplete memory*; started but unable to be coded due to incompletion, *omission*; no response was made, *repeated memory;* if memory was used on a previous cue.

The dependent measure (proportion of adolescent AMS) was calculated based on the number of specific memories to non-specific memories (e.g. extended, categoric, specific or extended, specific or categoric, extended and categoric, future event, incomplete, omission, or repeated memory).

Reliability was computed based on independent secondary coding of 25% of the overall sample. Cohen's kappa was .83 indicating good interrater reliability.

Turning Point Narratives

Turning point narratives were collected via recorded verbal interviews between researchers and participants and subsequently transcribed verbatim for coding analysis. The interviews were based upon a modified version of McAdams and colleagues (2006) Guided Autobiography Task. These interviews occurred individually for both the parents and adolescents. The following instructions were read aloud by the researcher:

"Now I would like you to think back over your life and identify an event that has changed your life or the kind of person you are. It could be something from any area of your life – your relationships with other people, your work and school, your outside interests, and so forth. Please identify a particular episode in your life story that you now see as a turning point in what your life is like or what you are like as a person".

Once an event has been selected and recalled the researchers prompted for exhaustive recall using open-ended questions, for example, *"Uh huh, what else? Yeah? Anything else you want to tell me about that? What else you can remember about that?"* Once the participant had recalled everything they could about the event the researchers asked the following specific questions. *"When did this happen? How did it feel? Were there any other people there? How did other people feel? How did this event change your life?"*

Coding Turning Point Narratives

Turning point narratives were coded within the software SciToS v 2.2.0 by HermeneutiX.org. Narratives were coded for internal detail and external detail. The coding was guided by the Adapted Autobiographical Interview Scoring Manual (Addis et al., 2008; based on Levine et al., 2002). Firstly, the main event of the narrative was identified. It was required to be a specific event lasting less than 24 hours. Following this, each clause (subject and predicate) was found and segmented into its constituent parts. Details within each clause were then coded. Details that pertained directly to the main event were coded as 'internal'. For example, what happened, the mental state of the person at the time of the event, who was there, the reactions of others, details of place and time, and other perceptual details. Details that were factual or not directly part of the main event were coded as 'external'. For example, semantic details, general knowledge, repetitions, metacognitive statements, or details from another event.

Internal detail was coded under the following categories: *event details;* event details describing the unfolding of the story pertaining to the main event (e.g. actions, who was there, weather, temporal sequence), *place details;* information that involves localisation in space (e.g. countries, provinces, cities, streets), *perceptual details;* auditory, olfactory, tactile/pain, taste, and visual information, *emotions/thought details;* mental state of the subject at the time of the event. External detail was coded under the following categories:

semantic details; general knowledge or facts (e.g. Paris is the capital of France), *repetitions;* unsolicited repetition of prior information, *other details;* details that do not reflect recollection (e.g. metacognitive statements, editorialisation, inferences, comments to the experimenter), *external episodic detail;* episodic event details that are secondary to the main event (e.g. occurred outside 24 hour period of main event), *external generic events/routines;* details that refer to repeated or routine events.

Total amount of internal and external detail from each the parent and adolescent sample would serve as the measure for the current research. A secondary researcher coded 25% of both the parent and adolescent samples. Reliability was high in both cases. Parent sample: ICC .71 for internal detail and .88 for external detail. Adolescent sample: ICC .94 for internal detail and .88 for external detail.

Parent and Adolescent Rumination: Repetitive Thinking Questionnaire (RTQ)

The Repetitive Thinking Questionnaire (RTQ) (McEovy, Mahoney, & Moulds, 2010) was administered individually to both parents and adolescents to measure rumination. The RTQ instructions read *"In this questionnaire we are interested in understanding how you respond to distressing situations. Please recall how you tend to respond when you feel distressed or upset".* The RTQ consists of ten items and participants were asked to rate each on a 5-point Likert scale from 1 "not true at all" to 5 "very true". For example, "I have thoughts or images that are difficult to forget" or "I have thoughts or images about all my shortcomings, failings, faults, mistakes". The RTQ has been found to have good convergent and divergent validity in a community sample of young adults (McEvoy, Mahoney, & Moulds, 2010) and in a clinical adult sample with depression and anxiety disorders (Mahoney, McEvoy, & Moulds, 2012).

Additional measures were also administered measuring depression, anxiety and avoidance but are not included as part of the current study.

Procedure

The interviews and all measures were administered as part of a larger longitudinal study investigating AMS and depression in young people. A variety of additional measures were utilised, and data was collected at multiple time points. The measures for the current study were administered at one time point and all interviews occurred within the homes of the participants. Researchers were trained in administration of the various measures and each researcher had a minimum of a postgraduate qualification in psychology. Upon arrival, researchers introduced themselves before introducing the study:

"Thank you for agreeing to participate in our study and thank you for having us in your home today. I'm going to tell you a bit about what is going to happen during this study session. There are a few different tasks for us to complete today, some will require you to write down your answers, you'll answer some questions on the iPad, and for some of the study we'll record you talking. We'll get you to do some study together and other parts of it we'll do separately. We will explain each part of the study as we get to it. For much of the study there are no right or wrong answers, we are just interested in what you think and feel and hearing your stories. Do you have any questions?"

Before data collection commenced, consent was obtained on behalf of both the parent and adolescent, and they were informed they would not be identifiable within the data set (i.e. only being referred to via reference number). Demographic information including age, sex, school, and ethnicity were also collected. Following this the AMT was administered followed by turning point narratives and finally the RTQ. At the conclusion of the administration, participants were thanked for their participation and provided information on debriefing interviews to occur in the future.

Results

Data Preparation

Data was collated and entered into SPSS (Statistical Package for the Social Sciences, Version 21) for analyses of the descriptive statistics. Parent and adolescent total external detail were calculated as total external detail minus the category for 'external other details'. The reason for this was that the coding scheme was developed for analysis of written narratives and narratives transcribed from verbal conversation contained a large amount of 'external other detail' unrelated to the events within the narrative (e.g. comments to experimenter, inferences, and editorialization). This ensured a more accurate analysis of external detail as it pertained to the reminiscing task and reduced the risk of inflating the amount of external detail for both the parent and adolescent samples.

Descriptive Statistics

Table 1.
Descriptive Statistics

	Mean	S.D
Parent Rumination	2.36	0.77
Adolescent Rumination	2.67	0.85
Parent Prop Specific	0.49	0.26
Adolescent Prop Specific	0.73	0.16
Parent Internal Detail	10.78	15.39
Adolescent Internal Detail	20.88	18.68
Parent External Detail	54.75	40.54
Adolescent External Detail	21.97	18.29

1. Parent and adolescent rumination are total scores on the RTQ. 2. Prop Specific scores are the proportion of specific to non-specific memories as measured by the AMT. 3. Internal and External detail is the total amount as measured by the individual turning point narratives.

Mean scores for both parent and adolescent rumination fell toward to midpoint of the 5-point scale. This suggests similar level of rumination amongst both the parent and

adolescent sample. Further, small standard deviations for both groups reflect limited variance in responding.

Proportion of specific scores show that parents had less specific autobiographical memories as measured by the AMT compared to the adolescent sample. Additionally, a higher standard deviation on behalf of the parents would suggest greater variance within the sample compared to the adolescents.

Concerning the turning point narratives, the parent sample had a larger amount of external details within their turning point narratives compared to the adolescents. Interestingly, the reverse pattern is observed with internal detail where the adolescent sample had a greater amount than the parents. A high standard deviation from parent external detail suggests larger variability within this category compared to the other three groups.

Table 2.
Variable Correlations

		1	2	3	4	5	6	7	8
1	Parent Rumination	--	0.28*	-0.11	-0.11	-0.02	0.11	-0.06	0.18
2	Adolescent Rumination		--	-0.02	-0.19	0.12	0.10	0.06	-0.02
3	Parent Prop Specific			--	0.25	-0.03	-0.03	0.02	-0.12
4	Adolescent Prop Specific				--	-0.19	-0.04	0.04	0.08
5	Parent Internal Detail					--	-0.13	0.07	0.13
6	Adolescent Internal Detail						--	-0.19	0.07
7	Parent External Detail							--	0.24
8	Adolescent External Detail								--

Note: $^{*}p$ <.05, $^{**}p$ < .01. 1. Parent and adolescent rumination are total scores on the RTQ. 2. Prop Specific scores are the proportion of specific to non-specific memories as measured by the AMT. 3. Internal and External detail is the total amount as measured by the individual turning point narratives.

Table 2 displays the preliminary correlations for the key variables of interest. There was a significant positive correlation between parent and adolescent rumination. All other variable correlations were non-statistically significant at the $p < .05$ level.

Hypotheses Testing

Hypotheses were tested by running the proposed actor-partner interdependence models within AMOS (Analysis of a Moment Structures) statistical analytic software. It is noteworthy that the current small sample size means limited statistical power which increases the likelihood of making a type 2 error (wrongly failing to reject the null). Simply, lower statistical power decreases the likelihood an effect will be detected if there is an effect to be found. Since all models are fully saturated with zero degrees of freedom no model indices are reported. The variables of adolescent gender and length of the narratives for both samples were controlled for within each equation model.

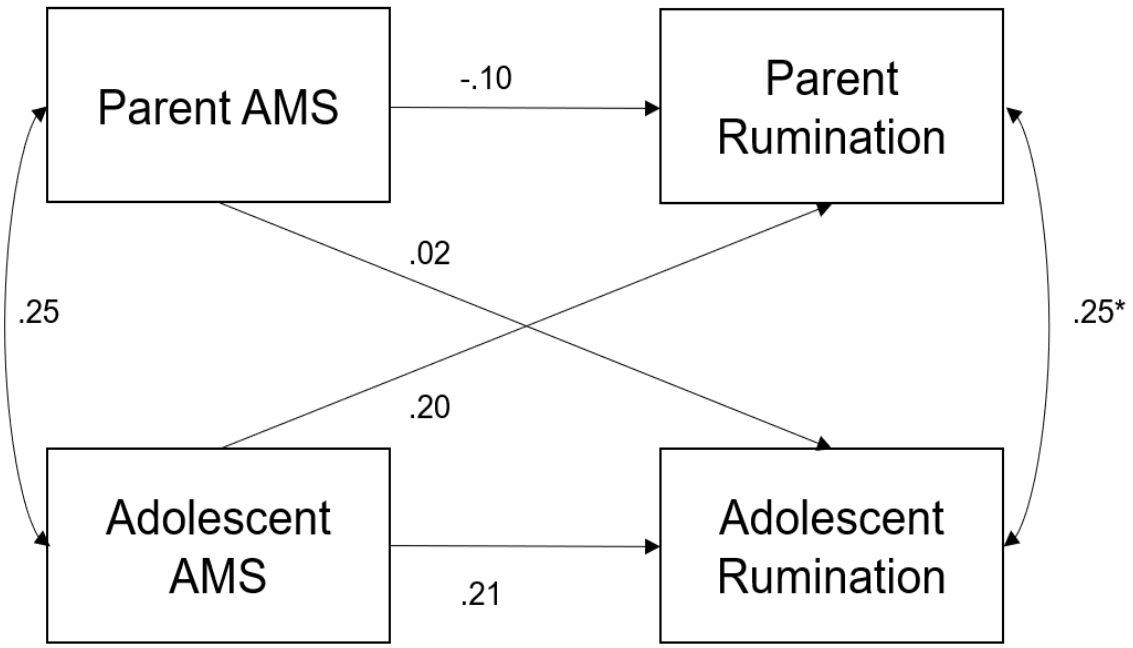

Figure 3. Standardised path coefficients derived from structural equation modelling test of the links between parent and adolescent AMS (Autobiographical Memory Specificity) as measured by the AMT (Autobiographical Memory Test) and parent and adolescent rumination. * coefficients were significant at the $p < .05$ two-tailed level.

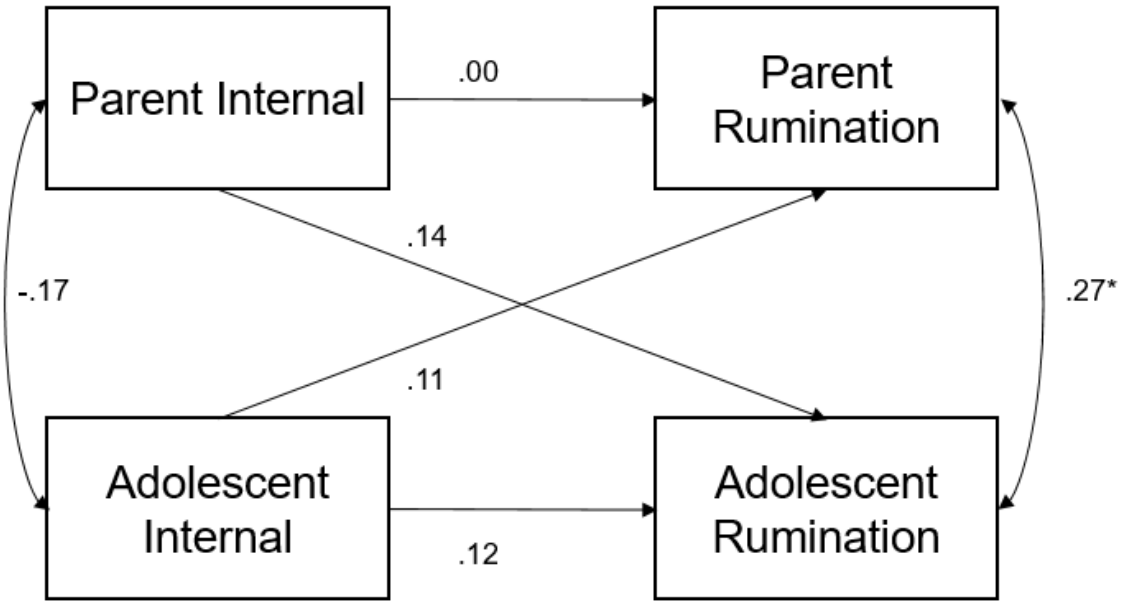

Figure 4. Standardised path coefficients derived from structural equation modelling test of the links between parent and adolescent internal detail and parent and adolescent rumination. * coefficients were significant at the $p < .05$ two-tailed level.

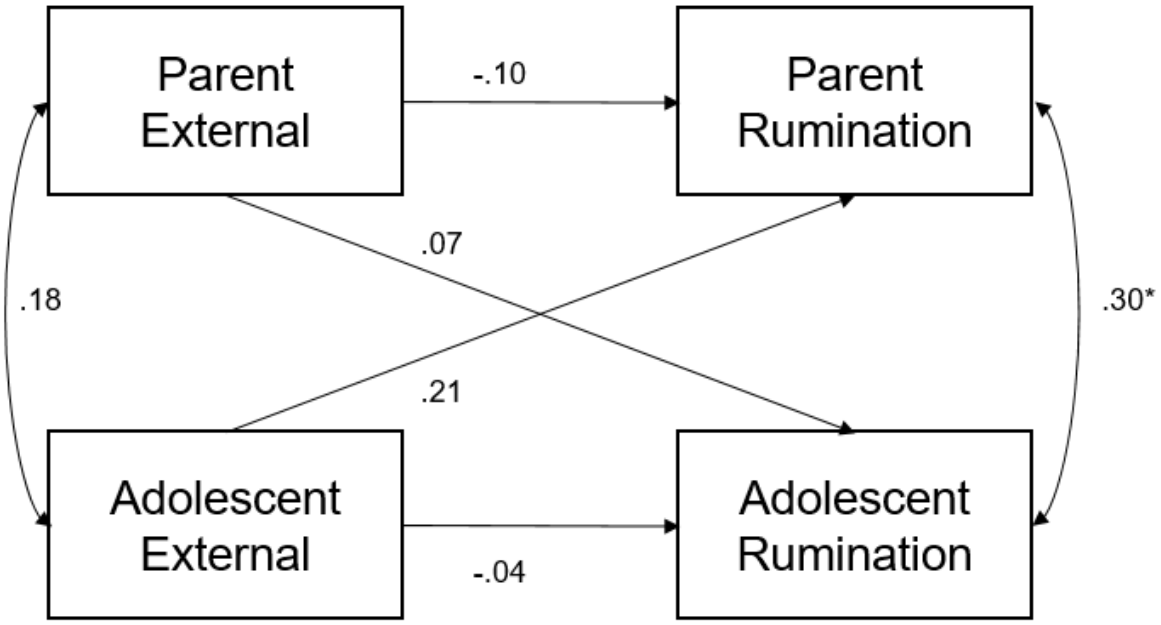

Figure 5. Standardised path coefficients derived from structural equation modelling test of the links between parent and adolescent external detail and parent and adolescent rumination. * coefficients were significant at the $p < .05$ two-tailed level.

Hypothesis 1: The relationship between parent and adolescent AMS.

Figure 3 shows the structural equation model of the links between parent and adolescent AMS as measured by the AMT and parent and adolescent rumination. As expected, there is no signification relationship between parent and adolescent AMS using the AMT. Figure 4 and 5 show the structural equation model for the links between parent - adolescent internal detail and parent - adolescent external detail respectively. Both relationships were revealed to be non-statistically significant. This means parent internal detail did not uniquely predict any of the variance in adolescent internal detail and, in a similar way, parent external detail did not uniquely predict any of the variance in adolescent external detail.

Hypothesis 2: The relationship between AMS and rumination across the parent-adolescent dyad.

Figures 3, 4, and 5 all show non-significant relationships between parent AMS, internal detail, and external detail and adolescent rumination. This suggests that these variables do not share significant relationships across the parent-adolescent dyad.

Hypothesis 3: The relationship between AMS and rumination within each sample.

These variable relationships at the individual level (i.e. parent internal detail and parent rumination) were all also revealed to be non-statistically significant in both the parent and adolescent sample. These relationships were non-significant when using AMS as measured by the AMT and internal/external detail as gathered from the turning point narratives.

Hypothesis 4: The relationship between parent and adolescent rumination.

Table 3 reveals a significant, positive correlation between parent and adolescent rumination $r(67) = .28$, $p, < 0.5$. Further, Figures 3, 4, and 5 all display a significant, positive associations at the $p < 0.5$ level between parent rumination and adolescent rumination even when controlling for the variance of the other variables.

Discussion

The present study sought primarily to examine the relationship between parent and adolescent AMS and, as a secondary focus, the relationship between parent and adolescent rumination. The interaction between these variables across the parent-adolescent dyad (i.e. parent AMS and adolescent rumination, and parent rumination and adolescent AMS) were also examined. Additionally, the relationships between AMS and rumination were examined within each sample. AMS was measured using the AMT as well as individual turning point narratives coded for both internal and external detail.

Firstly, it was hypothesised that parent AMS would not be related to adolescent AMS when measured using the AMT. The results supported this hypothesis as non-significant pathways were found. It was further hypothesised that parent internal detail would be positively related to adolescent internal detail and, in a similar way, that parent external detail would be positively associated with adolescent external detail. Both pathways were revealed to be non-statically significant and therefore these hypotheses were not supported.

Secondly, concerning the interaction pathways, it was hypothesised that parent AMS as measured by the AMT would not be related to adolescent rumination. This hypothesis was supported. Further, it was predicted that parent internal detail would be negatively associated with adolescent rumination and parent external detail would be positively associated with adolescent rumination. The data did not support these hypotheses as non-significant pathways were found.

Third, the test variables were examined on the individual level. A negative association between parent internal detail and parent rumination and a positive association between parent external detail and parent rumination were hypothesised – these same relationships were also hypothesised within the adolescent sample. However, the results failed to support any of these hypotheses. Additionally, it was predicted that parent AMS as measured by the AMT would not be related to parent rumination and the same true within the adolescent sample. This hypothesis was supported.

Finally, it was hypothesised that parent rumination would be positively associated with adolescent rumination. The results supported this hypothesis, meaning higher levels of parent rumination are associated with higher levels of adolescent rumination. This relationship was observed as part of the preliminary correlations and held within path analysis which means parent rumination uniquely explains a portion of the variance in adolescent rumination independently of the other test variables.

The Relationship Between Parent and Adolescent AMS

Jobson and colleagues (2018) found a moderate, positive (although non-significant) association between parent and child AMS. Additionally, support was found for this relationship being mediated by parental guidance and support (i.e. maternal task focus, genuine interest, guiding their children towards positive resolutions, and towards rich, coherent narratives) during joint reminiscing. Interestingly, they failed to find support for this relationship being mediated by maternal elaborative quantity. These results are consistent with Valentino and colleagues (2014) who found a similar pattern of results when examining the relationships between maternal elaborative quality and quantity and the AMS of preschool aged children.

Although the current study did not investigate the role of parent-child shared reminiscing, it did fail to find support for a relationship between parent and adolescent AMS when measured using the AMT. Additionally, when utilising internal and external detail from the individual turning point narratives, no relationships between parent and adolescence internal or external detail were found.

How may the current findings be explained? Only a limited amount of research has investigated the relationship between parent and child AMS and all these studies have utilised a sample of younger children. The current study is the first to look at this relationship using an adolescent sample. The argument for a relationship between parent and adolescent AMS rests on the suggestion that parents model the skills of remembering early in the lifespan and therefore a parent and their adolescent child may show similar patterns of AMS. However, this argument rests on the assumption that AMS is a stable construct that does not change over time.

The current study found considerable differences between levels of parent and adolescent AMS when utilising both the AMT and internal/external detail from the individual

turning point narratives. Parents had a lower proportion of specific to non-specific autobiographical memories compared to the adolescents on the AMT. Similarly, parents were found to have higher levels of external detail compared to the adolescents and the adolescents had higher levels of internal detail compared to the parents on the individual turning point narratives. This suggests there is large variability in AMS across the lifespan and perhaps a normative decrease in AMS. Further, this finding is consistent with Levine and colleagues (2002) who found the same pattern of results. They suggest that as people age specific episodic memories become more difficult to access but semantic autobiographical memory is retained.

These findings may be interpreted using the hierarchical autobiographical memory framework (Conway, 2005). It has been suggested that semantic detail plays a larger role at the theme-based level which contributes towards the coherence of self-identity and knowledge over time (Pasupathi & Wainryb, 2010). This knowledge comes as the result of accumulated experience, which naturally as a result of having lived longer, adults have more of than adolescents. Furthermore, additional research suggests that a critical developmental task for adolescents is the formation of self-identity and that they must integrate their autobiographical memories into an overarching life narrative to form a coherent sense of self (Harms, 2010; Grysman, & Hudson, 2011). It is therefore plausible that the younger adolescent sample are still undergoing this important developmental process and so consequently display lower levels of external detail compared to their parents.

Adolescents also showed higher levels of internal detail compared to the parent sample. Again, this finding may be interpreted using Conway's (2005) framework and is supported by the above argument. As stated earlier it is likely that many of the adolescents are still extracting and organising meaning from their autobiographical memories. Because self-knowledge information is encompassed at the broader theme-based level, it may then be

suggested that most memories in adolescence are stored as more independent episodic events. It was observed in the data that compared to the adults the adolescents were more focused in their recollection (i.e. chose an event and stayed on topic), made fewer meta-cognitive statements, and were less likely to link the event to other events or to extract a greater overarching meaning from their stories. This suggests that if high levels of semantic detail are consistently found in adult samples and the reverse in younger people, the possibility of a relationship between parent and adolescent AMS seems greatly reduced. In which case, perhaps high levels of parent AMS is not necessary to support their children in developing their own autobiographical memory specificity.

These results invite questions about the role AMS plays in healthy psychological functioning. Recall that rAMS has been proposed to nourish an abstract analytic thinking style typical of depressive thinking, impair problem solving, and limit an ability to imagine future events (Debeer, Raes, Williams, & Hermans, 2011). The current study, in line with Levine and colleagues (2002), would suggest that there is a normative increase in rAMS as individuals move through the lifespan. If this is the case, and rAMS does play this crucial role in depression psychopathology as it has been suggested, then one may expect to see increased rates of depression among older adults compared to adolescents. However, the opposite pattern appears more prevalent in the literature whereby adolescence and early adulthood are times of increased risk of depression (Rude, Valdez, Odom, & Ebrahimi, 2003). In line with this, Salmon and colleagues (submitted) found that increased AMS was related to higher rates of depression in young people suggesting that remembering more specifically increases the risk of experiencing symptomatology associated with depression. It may therefore be reasonable to conclude that rAMS in community samples is not an informative marker of poor psychological outcomes.

These findings further suggest that there may be utility in remembering less specifically whereby it could be conceptualised as a protective factor against psychopathology. Research by Bird and Reese (2006) and Bohanek, Marin, and Fivush (2008) found that the interpretation of memory and not the amount of specific detail recalled was related to increased wellbeing in adults and adolescents. This is at odds with the CaR-FA-X framework which maintains a higher degree of AMS is central to healthy psychological functioning. Further, Bruehlman-Senecal, Ayduk, and John (2016) argue that remembering less specifically creates psychological distance from memory and thus may result in experiencing less of the negative affect associated with those memories.

To conclude, given the apparent normative increase in external detail, and the apparent normative decrease in risk toward depression psychopathology as people age, it may be reasonable to suggest that an increase in external detail is linked to a more coherent sense of self and to more adaptive psychological functioning. What's more, the role of shared reminiscing tasks between parents and their children may not then be for parents to support children remembering more specifically but rather to extract and form coherent life stories which is in line with the developmental goals of adolescence and perhaps better psychological outcomes.

The Relationship Between AMS and Rumination

As stated earlier, despite a large amount of research, the relationship between AMS and rumination remains unclear. Some research has found significant negative relationships between rumination and AMS, particularly among persons who are clinically depressed (see Williams et al., 2007). Such work supports the CaR-FA-X model which suggests people who tend to ruminate more are more likely to become 'captured' at the broader theme-based level of the hierarchical autobiographical memory structure as recall may 'activate' negative self-relevant information (Conway, 2005; Williams et al., 2007). This then prevents the retrieval

of more specific episodic events. However, conversely, a notable amount of research has failed to find support for this framework (see Stewart, Hunter, and Rhodes, 2017 for review) and in some cases the opposite pattern of results has been found (i.e. increased rumination is associated with increased AMS) (Salmon et al., submitted).

Raes, Hermans, Williams, and Eelen (2007) suggested that because adolescence is a time of increased risk for depression, high levels of rAMS within this population would be reported. However, low levels of rAMS are often reported in adolescent samples (Debeer, Hermans, & Raes, 2005; Guttenbrunner, Salmon & Jose, 2017; Raes & Hermans, 2002; 2003). Relatedly, the current study found adolescents had more internal detail compared to external detail and thus low levels of rAMS. Furthermore, adolescence is also suggested to be a time of increased rumination (Jose & Brown, 2007). Thus, it seems more plausible that a relationship between AMS and rumination would be found within an adolescent sample. However, the current study found non-significant relationships between AMS and rumination at the individual level for both the parent and adolescent samples, thus lending no support to the CaR-FA-X model. This was expected when using the AMT, as this measure was argued to not be sensitive enough to detect rAMS in community populations. However, the null relationships remain when using internal and external detail from the individual turning point narratives as a measure of AMS. What is more, the current study failed to find any interaction effects, meaning that rumination and AMS are not related across the parent-adolescent dyad both when AMS is measured using the AMT and the internal/external detail from the individual turning point narratives.

These findings from the current study are consistent with some previous literature. For example, a meta-analysis by Stewart, Hunter, and Rhodes (2017) using 22 studies found that, in adolescents, rumination was negatively associated with rAMS in only one study of which used a clinical sample. Raes, Pousset, and Hermans (2004) found no association

between scores on the AMT and the Becks Depression Inventory (BDI) (of which rumination is a component) using a nonclinical university sample. Collectively, these findings suggest that rumination and AMS may only share a significant relationship in persons who are depressed or are more 'at risk' of depression. Additionally, these findings ought to be taken in consideration with the points provided earlier whereby perhaps increased external detail and the organisation of such detail within one's self-identity is more central to adaptive psychological outcomes than a higher level of AMS as would be suggested by the CaR-FA-X model.

The Relationship Between Parent and Adolescent Rumination

Some previous research has found a positive association between a parent's level of rumination and the rumination levels of their children (e.g. Stroud & Fitts, 2017; Waller & Rose, 2013). Findings from the current study are consistent with such work as a significant, moderate, positive relationship between parent and adolescent rumination was found. Further, the regression weights for parent-adolescent rumination in the path models remained relatively similar regardless of which measure of AMS was being employed. This suggests that, in the current sample, rumination acts independently and shares none of the variance associated with AMS.

The association between parent and adolescent rumination may be theoretically explained in several ways. There is some neurological evidence that supports the notion that certain ways of thinking (i.e. rumination) are perhaps more of a biological disposition and may run in families (Hilt, Sander, Nolen-Hoeksema, & Simen, 2007). Furthermore, it is possible that rumination is taught and/or modelled both directly and indirectly by a parent early in the young person's lifespan as a means of managing distress and negative emotion. This is in line with the socialisation arguments provided by Nolen-Hoeksema and colleagues (2008) and Valentino (2011) which suggest young people learn to identify, understand, and

manage their emotions via social interaction. Simply, a parent who ruminates more is more likely to teach/model a ruminative response style to their children. This was the predominate argument on which the current study based its hypotheses.

Recall also that in a 5-year longitudinal study Gaté and colleagues (2013) found evidence to suggest that low levels of parent positivity may result in children adopting rumination as a passive means of coping and managing emotions. Relatedly, Stroud and Fitts (2017) and Douglas, Williams, and Reynolds (2017) found poor parent-adolescent relationship quality was associated with increased adolescent rumination. Collectively, all this work highlights the profound impact differing parenting strategies may have on a young person's psychological development.

Finding that parent and adolescent rumination are positively related supports a current hypothesis and is consistent with a notable amount of previous literature. However, conclusions about causality and the mechanisms by which this relationship operates cannot be made, as a cross-sectional design was utilised and what is more, parenting styles/strategies and parent-adolescent relationship variables were not measured. Nonetheless, these findings are important as rumination has been established as an important transdiagnostic risk factor for multiple psychopathologies (e.g. depression) (Nolen-Hoeksema et al., 2008) and these findings are also consistent with parental psychopathology being a known risk factor for child/adolescent psychopathology (Hayden & Mash, 2014). While there is likely several causal pathways that explain the association between parent and adolescent psychopathology, it is possible that the mechanisms by which shared rumination operates will help shed light on some of the picture.

The parent-adolescent relationship is an important focus in the rumination literature. This is due to adolescence being a period known for increases in rumination and psychopathology and support from a primary caregiver is often sought during psychotherapy

with an adolescent (Hayden & Mash, 2014). An enhanced understanding of the relationship between parent and adolescent rumination may provide richer points of intervention during such therapeutic processes.

Limitations, Strengths, and Future Directions

Limitations

Limitations of the current study must be considered. The coding scheme adopted to code for levels of internal and external detail in the individual turning point narratives was originally developed for use with written narratives. The current study used written transcriptions from verbal interviews. This has several implications concerning the data analysis.

Firstly, it was noted that the parent sample had higher levels of external detail compared to the adolescents. Whilst a theoretical account for this finding has been provided it, was considered if the coding scheme may have inflated this result. As previously mentioned, the category for 'external other details' was excluded from both the parent and adolescent sample for the final analysis. The reason for this being that, particularly in the parent sample, there were large amounts of detail that were unrelated to the reminiscing task (e.g. conversations with the interviewer). Also, parents were more likely to make metacognitive statements (e.g. "Let me see if I can remember that"), editorializations (e.g. "That doesn't matter") or inferences (e.g. "I must have been wearing a coat because it was winter"). Because the coding scheme was developed for written narratives and thus exhaustive, all this detail would have been coded as 'external other details' and included in the final data analysis. In order to have the conversational data mimic more closely that of a written narrative 'external other detail' was excluded from the analysis. It should be noted that the results from the pathway analysis both including and excluding 'external other details' found no significant pathways.

Another consideration was low levels of internal detail on behalf of the parent sample compared to their adolescent children. It was noted that during the turning point reminiscing task the adolescents tended to pick an event (a specific episode lasting less than 24 hours) and recount details of that event in a focused way. However, whilst almost all the parents were able to recall a turning point event, these events typically occurred over a period greater than 24 hours (e.g. moving to a new house/country, having children, or the loss of a significant other). Consequently, the parent sample had very low levels of internal detail (as event detail that occurred outside the 24-hour period was coded as 'external episodic details') despite being able to remember a large amount of specific detail about related episodic events.

Future research could expand on this by including the 'external episodic detail' category within the analysis as internal detail. This category encompasses information that is specific about an event that is '*related'* to the main event. For example, if the chosen specific event was the birth of a child (an event occurring < 24 hours) and the parent recalled driving to the supermarket a few days later to buy baby items, then this would be coded as 'external episodic detail'. Including this category would boost levels of internal detail for both samples and is arguably still evidence of AMS. It seems arbitrary that the specific detail must be confined to a 24-hour period and the literature does little to offer reason as to why this must be the case. Remember that for this task participants must provide a specific, personally relevant, and life changing turning point event. Further, the participant must draw meaning from these experiences and weave it into their overarching life-narrative (Grysman & Hudson, 2011). It seems unlikely, and indeed quite a demand, to expect this to be isolated to an event that occurs within a period that lasts less than 24 hours.

A further limitation is that the current study utilised a small sample size with 67 parent-adolescent dyads. Utilising a larger sample size would increase statistical power and make it more likely to find an effect if there is an effect to be found. What is more, increasing

statistical power reduces the chance of a type 2 error. Therefore, this study may benefit from replication using a larger sample size.

Another limitation to consider is that current measures of AMS and rumination were based upon single questionnaires or interviews administered at one time point. This may potentially limit a measure of the full extent to which participants remember specific details about events and/or ruminate. Recall too that experimental work by Debeer, Raes, Hermans, and Williams (2011) found that rAMS may be context dependent and employed flexibly. They found participants were more likely to remember less specifically if warned the recalling memories may produce unpleasant emotions. A stronger design may see AMS and rumination measured across several time points and/or with multiple measures and averaged out to provide a more representative measure of AMS. Further, given the cross-sectional design of the current study, suggestions about causality cannot be made. This should be held in mind for future research which may consider examining these variables longitudinally.

Strengths

This study is one of the first to examine the relationship between parent AMS and the AMS of their children. Furthermore, it is the only study to date examining these variables using an adolescent sample. This allowed for an interesting perspective concerning the normative development of AMS/rAMS and how it exists within a family system. This is important as traditionally rAMS literature has focuses on its links to psychopathology and generally utilises adult samples (Nuttall, Valentino., Comas, McNeill, & Stey, 2014).

Secondly, this study recognises the many limitations with the AMT which has been the predominate measure of AMS throughout previous literature. A new measure was adopted in addition to the AMT and some interesting findings were discovered, notably the differences in external and internal detail between the parent and adolescent samples. Despite finding non-significant pathways between parent and adolescent AMS, a positive relationship

between parent and adolescent rumination was found. Finally, the current work highlights the importance of parenting practice and the impact this can have on a young person's development.

Future Directions

One theme to emerge from the current research is the proposed normative decrease in AMS throughout the lifespan highlighted by the discrepancy between parent and adolescent AMS. From this it was reasoned that perhaps high levels of parent AMS is not necessary to support their children in developing their autobiographical memory skills but rather it is suggested that the interpretation and understanding of one's autobiographical memories may be more integral to this process. It may then be beneficial for future work to move away from measures of AMS and towards measures of interpretation and understanding of autobiographical memories. Perhaps a goal of early shared reminiscing is not then for a parent to help their children remember more specifically but rather to help them extract meaning from their experiences and form a coherent sense of self. It would be interesting to examine whether the way a parent extracts meaning and organises their own experiences is related to the ways in which their children perform this same process.

The limitations of a cross-section design have been mentioned, therefore, future research may examine the development of AMS and rumination over time. Additionally, the influence parental practice has on both the development of AMS and rumination could be examined as the literature review suggested strong links between these variables. Further, such work could be tied in with an investigation of adolescent self-understanding and identity formation in relation to their autobiographical memory development. Such longitudinal work would provide a stronger basis on which to argue causally and allow a greater understanding of the development of these important developmental processes.

Conclusion and Applications

A significant result to come from the current study was the positive association between parent and adolescent rumination. No relationships between parent and adolescent AMS nor between AMS and rumination within each individual sample were found. Therefore, current results fail to provide support for the CaR-FA-X model. However, the apparent differences in levels of AMS between the parent and adolescent samples suggesting a normative decrease in AMS throughout the lifespan provides an opportunity for some interesting speculation. It was argued that perhaps the goal of the early socialisation of memory is not for parents to foster increased AMS in their children via joint reminiscing but rather an increased understanding of memories and how they relate to the self. Such an approach does not discount the developmental systems model and is in line both with a normative increase in external detail and the developmental milestones of adolescence. What is more, this argument provides a challenge toward the CaR-FA-X model which maintains increased AMS is central to adaptive remembering and healthy psychological functioning.

Finally, the current research and associated work is not without utility. In the beginning it was stated that the importance of such research rests on the proposed close relationships AMS and rumination share with depression psychopathology. An enhanced understanding of how autobiographical memory can contribute to adaptive and maladaptive psychological functioning provides informative targets for psychological assessment, formulation, and intervention strategies. Parental awareness and practices that promote adaptive outcomes concerning their children's autobiographical memory and psychological development are additional factors that can benefit from such work. This may involve educating parents on alternative ways to jointly reminisce with their children and support them in their memory development. Support for this is provided by Valentino, Comas, Nuttall, and Thomas (2013). Alternative methods to manage both their own distress as well as that of their children may also be beneficial. For example, education about rumination has

been demonstrated to be a helpful strategy for people who find it contributing to their mental health concerns (Watkins, 2018). Prevention and early intervention regarding psychopathology is crucial, as this is the most powerful opportunity to bring about long term and meaningful change.

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Appendix A: Autobiographical Memory Test (AMT) Coding Scheme

AMT Coding Scheme – Revised

General Notes:
Children sometimes respond with mixed tenses. In this case use your judgement on how to code the memory while making as few inferences as possible.

Examples:
I feel happy when I play with my dog yesterday (specific)
I felt excited when I go to my friend's house (categoric)

Specific (SPSS code 1)
An event that occurred on a particular occasion and lasted less than one day. It can often be located in a time or place.

Examples:
On my 13th birthday
When I came second in a hurdles race
When I was told my Grandad had died
When I found out we were going to Australia
When I was on the plane on the way to Australia

Extended (SPSS code 2)
An event that lasted longer than 1 day. Note: the memory must be referring to an event. Includes holidays, deaths, parental divorce or separation, child or others moving towns, being bullied, school holidays, school years and other extended periods of time boundaried in other ways e.g. "when my cousins were living with us". Trips – use your judgement, is it a place they are likely to travel to and from in less than 1 day? If in doubt code as **Specific OR Extended** (code 4).

Examples:
When I was on holiday in Fiji
When I was being bullied
When my parents split up

Categoric (SPSS code 3)
Summaries of a class of events or repeated events. Use your judgement – is it likely that this event would be one that happened repeatedly for a child in this age range? If in doubt code as **Specific OR Categoric** (code 5)

Examples:
Playing rugby
When I get home from school
When I get into a fight with my sister

Specific OR Extended (SPSS code 4)
Memories of a specific event which could have lasted less than 24 hours or could have lasted more than 24 hours and it is not possible to tell from the response.

Examples:

When I went camping last weekend
When I went to Palmerston North
When my family were visiting

Specific OR Categoric (SPSS code 5)
Memories of an event that lasted less than 24 hours and may have occurred once or may have occurred more than once and it is not possible to tell from the response

Examples:
Reading my book
Going to the park
In the hot pool at Hamner Springs

Extended AND Categoric (SPSS code 6)
A response that contains a categoric memory within an extended time period. This extended period may be while overseas, when living in a different city, when in a different school year, during the school holidays

Examples:
On holiday I read a book by the pool
In year 7 when I played soccer
When I lived in Christchurch and I hung out with my friends

Semantic Associate (SPSS code 7)
A response that is derived from general semantic knowledge rather than a personal memory. Child has not provided a memory of an event. Include responses when something didn't happen e.g. "that I didn't get to say goodbye to my cat" (But does not include "that I didn't get injured when I almost got hit by a car" – this is a specific event). Also includes when participants say they always feel a certain way or feel it every day. May be present tense or future oriented but <u>not referring to a specific event.</u>

Examples:
I feel lucky to have a family that love me
I always feel lonely
I feel lucky to live in New Zealand
I felt angry that I didn't get to properly say goodbye to my Grandad

Future Oriented (SPSS code 8)
Responses that refer to an event that has not yet happened. This event could be specific (i.e. confined to one day) or extended (i.e. will last longer than a day) but it must be <u>an event that the child is going to experience in the future</u>.

Examples:
I'm excited about going to Grandad's on the weekend
I'm scared to do the maths test tomorrow

Incomplete Responses (SPSS code 9)
Partial or incomplete responses that give enough detail to suggest the child had thought of a memory but not enough detail to code. It may seem as though the child ran out of time to

complete the response. Note: if the response does not contain any detail about the memory code as **Omission** (code 10) e.g. “I was happy when”

Examples:
I get angry when my brother
I am proud when I do
I was lonely when I went to

Omissions (SPSS code 10)
Participant does not provide a response or cannot retrieve a memory for the cue. Includes responses that have been started but no memory content has been included e.g. “I feel happy when”. Also includes responses that a child has “never” felt that way

Examples:
“I never feel angry”
“I felt happy when”
“N/A”

Appendix B: Internal/External Detail Coding Scheme

Internal/External (Experiential) Detail Coding Scheme
(Addis, Wong & Schacter, 2008)

Step One: Isolating and defining the event

Read narrative from start to finish. Identify the *main event:* should be a specific, single event, lasting 1 day or less (approximately – can be lenient with duration), that the subject was personally involved in

NOTE:

Subjects may give more than one event or events that are difficult to define (i.e. non-specific events). It is therefore necessary to be clear what the event is before any scoring begins. Details pertaining to the main event are coded differently to details that do not relate to the main event so it is important to identify this from the outset.

If the event extends over days or weeks (e.g. a holiday), the scorer must either choose the best time-restricted events, or choose the event which is described in most detail i.e. contains the highest number of details according to coding scheme. This may not be clear until the narrative has been coded, in which case the most detailed event becomes the main event, and all other events are external episodic details.
***For turning point narratives we may want to choose the event that is best conceptualised as the specific turning point event, regardless of the amount of detail*

In some cases, it may not be possible to identify a specific main event. Here the narrative should be coded according to the external detail coding scheme (void of internal details).

***Alternatively a third party can identify the main event i.e. someone who is reading the narratives for the first time and was not present during elicitation of narratives*

Step Two: Text segmentation and categorisation

A segment, or detail, is an information unit – a unique occurrence, observation, fact, statement or thought.

NOTE:

A single grammatical clause/sentence may contain multiple details. For each clause/expressed action, consider whether its constituent parts convey additional information. If so, the parts should be separated and coded as separate segments.

Examples:
"He had an old, brown, fedora" = 3 details. 'Fedora' is different from 'brown fedora', which is also different from 'old brown fedora'

"He jumped off the couch" = 2 details. 'He jumped' can stand-alone and convey information without the addition of 'off the couch'. Conversely, *"he got off the couch"* = 1 detail. 'He got' does not make sense as a stand alone statement and is not coded as extra detail.

The main categorical distinction for details is either *internal* or *external* to the main event.

INTERNAL DETAILS
Details that pertain directly to the main event, isolated as defined above. These details can be conceptualised as experiential details. Once this has been determined, the detail should be coded as one of the following categories.

NOTE:

Remember the aim of coding is to determine the extent to which the subject is re-experiencing/imagining/engaging with the event they are recalling. Use good theory of mind to get inside the subject's head to determine the correct context for their statements i.e. is it part of the experiential process or external information?

In some cases it may be difficult to distinguish internal from external details. The rule of thumb in these cases ('benefit of the doubt') is that if a detail could reasonably be internal it is scored as such. This rule, however, should not be applied to all details that could possibly be internal; only those that could reasonably be internal.

Don't rely too heavily on grammatical tense – present tense could mean they are re-experiencing the event. Go with the most likely interpretation in the context of the whole narrative.

Event Details: Overall, event details describe the unfolding of the story pertaining to the main event. They are usually happenings/actions (e.g. *"I fell down"*), but also include who was there (1 point per name/person/pet up to a maximum of 5 ***may want to remove this if not an issue for many participants***), reactions/emotions in others (but not own thoughts/emotions), the weather, clothing (if relevant to the main story), actions of others, and temporal sequence (information about the sequence of events, e.g. *"Mary came later than Sam"*, where 'Mary came' is a stand-alone event detail and 'later than Sam' is additional event informational).

NOTE:

If additional qualifying details (e.g. adjectives) are present, these are coded under the same category as the main detail. E.g. *"I was wearing a black t-shirt"* – 'I was wearing a … t-shirt' would be coded as an event detail, so 'black' is coded as an extra event detail.

If an item qualifies to be in another category (e.g. perceptual details), then priority is given to that more specific category. An item cannot be scored as an event detail if it is in another category.

The relationship of the subject to someone else (e.g. *"boyfriend", "sister"*) should be scored as 1 event detail (if person is involved in the main event). If the relationship is stated and the person is named it I scored as 2 event details. Also *"best friend"* is scored as 2 event details.

Number of detail scores depends on the choice of language used e.g. *"I jumped off the couch"* is coded as 2 details because 'I jumped' is a stand-alone details, but *"I got off the couch"* is coded as 1 detail because 'I got' is not a stand-alone detail.

Quantities of objects are scored as 1 extra detail regardless of how many there were e.g. *"There were 2 chairs"* is scored as 2 details, *"There were 100 chairs"* is also scored as 2 details.

Place Details: Any information that involves localisation in space, including countries, bodies of water, provinces, cities, streets, buildings, rooms and localisations within a room. Also includes objects in some contexts e.g. *"In bed", "on an aeroplane", "in the car"*

Time Details: Must locate the event in time. Life epoch (*"My twenties"*), year season, month, date, day of week, time of day or clock time.

NOTE:

It has been argued that it is not possible to re-experience a given point in time without some related episodic thought, feeling, or other detail. Therefore, when scoring time information, people should not be penalised for making inferences (which are usually coded as 'other details'), because this is the normal way to figure out when something occurred. E.g. *"the day before my birthday".*

Perceptual Details: Include auditory, olfactory, tactile/pain, taste, visual details.
Visual (but non-spatial information): object details, colours, clothes. In the case of objects it may be difficult to distinguish between a perceptual and an event detail. Objects that are directly involved in the unfolding of an event are considered event details (e.g. *"We lit the candles"*) whereas objects that are part of the visual landscape are considered visual details (e.g. *"There were candles lit everywhere"* = 2 perceptual details, 'there were candles lit' + 'everywhere).
Duration: E.g. *"We were there for 20 minutes", "It took a long time"*
Spatial orientation: Details about positions, distances, and orientations in allocentric/egocentric space e.g. one's own orientation in space

Emotions/Thought Details: Any detail that pertains to the mental state of the subject at the time of the event. These include feeling states, opinions, expectations, beliefs. Thoughts expressed in retrospect (either at the time of the interview or at any time after the event occurred. E.g. *"I found out later I was wrong"*) are coded as external details. Beliefs or opinions that are long-standing and not specific to the event (e.g. *"I never believed in ghosts"*) are also external and coded as semantic details. Inferences about other people's mental state (e.g. *"She was sad"*) are considered event details, unless these inferences reflect the subject's own mental state at the time (e.g. *"I thought he was angry with me"*), in which case they are internal thought details.

NOTE:

Subject must explicitly state their thought/feeling occurred in retrospect to be coded as an external detail. E.g. *"Later I realised", "now I know"*. If in doubt, code as internal.

For AMT narratives, do not code *"I felt happy when"* as this is a generic response to the task instruction

If a feeling is followed by the cause or target of the feeling (e.g. *"I was happy that he came over"*) then score as 2 details, because 'I was happy' is a stand-alone comment and more information is provided by describing the reason

EXTERNAL DETAILS
Events/details or factual (semantic) information that are not part of the main event. These can include the following:

Semantic Details: Involve general knowledge or facts. They can represent general knowledge (e.g. *"Paris is the capital of France"*) or be specific to the person (e.g. *"I always hated yams", "I worked as an engineer"*). In general, details that reflect a long-standing state of being or without a clear beginning or end are considered semantic.

NOTE:

The difference between semantic and other types of details can depend on the context. E.g. the fact 'Paris fell to the Germans' would be semantic if it is described as a historical fact (e.g. *"We couldn't go to Paris because it was in German hands"*) or an event details (e.g. *"We watched in disbelief as Paris fell to the Germans"*).

Semantic information can be 'brought in' to episodic recollection (and scored as internal detail) if it becomes an integral aspect of the episode. E.g. *"Arizona is hot"* is semantic but "*Arizona was hot when we went there"* is episodic (perceptual detail).

The richness of the description is independent from the episodic/semantic distinction, i.e. very richly described factual information is still semantic and impoverished, minimal details can still be episodic.

Repetitions: An unsolicited repetition of prior information-containing detail. It doesn't have to be a verbatim repetition, but should not add any new information to the prior detail (e.g. *"I hoped for the best. I kept my fingers crossed.*). Score all repetitions, even if they are part of normal discourse, except for repetitions that are clearly prompted by the examiner, which may occur if the examiner asks additional probes or queries a detail previously given.

NOTE:

Repetitions must convey information, as opposed to words that are repeated. E.g. *"and stuff"* may be repeated but it doesn't contain any information so it is not coded as a repetition.

Only score repetitions when they convey the same information as an earlier detail e.g. *"They liked what I did"* conveys the same information as *" They liked my work"* but *"They really liked me"* is not the same as *"They were happy with my work"*

Other Details: Details that do not reflect recollection and do not fit into other categories. Includes meta-cognitive statements (e.g. *"Let me see if I can remember that"*), editorialising (e.g. "*That doesn't matter", "That's amazing"*), inferences (e.g. *"I must have been wearing a coat because it was winter"*), comments to the experimenter (e.g. *"Is that alright?", "This is a funny one"*) or other statements that convey verbosity but are not related to the main event. Also includes non-answers e.g. *"I don't remember", "I can't think".*

NOTE:

Do not score an 'other detail' for all utterances – only those that contain information

External Episodic Detail: Episodic events that are secondary to the main episodic event. E.g. if the main event is the birth of their first child, but subject also talks about going to the pharmacy to buy prenatal vitamins a few months before.

NOTE:

These details can later be broken down into the internal detail codes if required. E.g. External Event Detail, External Place Detail etc.

Only code second episodic detail if it is related to the first. If subject has listed 2 or more completely different specific episodic memories, only code the first response (as per AMT guidelines).

It is sometimes hard to distinguish between external episodic detail and semantic detail. In these cases apply the benefit of the doubt rule and lean towards external episodic detail.

External Generic Events/Routines: Details that refer to repeated/routine events (but are not general knowledge). E.g. *"I always go to the dairy down the road"*

NOTE:

If a memory doesn't contain any specific/episodic elements and it is not possible to identify the main event it is likely to fall under this category.

OTHER CODING RULES

Dialogue: Whether the dialogue is internal (thoughts) or external (speech), each statement/thought represents one detail and is therefore not further segmented. E.g. *"I felt blah blah blah"* or *"She said 'blah blah blah"* are both scored as 1 detail

Negative events: The absence or failure of something to occur (e.g. *"Bob wasn't there"*) are still scoreable, as they reflect the subject's recollection

Missing information: Do not give credit for information that is not there. E.g. *"We went to a place where we could swim with dolphins"* contains one descriptive event detail, but the actual location is not mentioned so it is not scored under place detail. The place is implied but it is not scored until it is mentioned. This rule also applies if the subject has forgotten the name of the place e.g. *"A place with water you can swim in and sand you can sit on"* is clearly a beach but the description of the place is not scored. ***May not apply to our sample as children/adolescents may not know the name of the place, rather than forgotten the name of the place***.

Fragmented sentences: Scoring of fragmented sentences should allow for natural speech patterns even when they do not appear fluent in the transcription. The scorer should attempt to interpret fragmented sentences in a way that would be obvious to others. I.e. one detail may be interrupted by another detail and continue on afterwards.

The key is to BE CONSISTENT between narratives/subjects. Segmentation of details should be consistent regardless of whether the details are internal or external.

Appendix C: Repetitive Thinking Questionnaire (RTQ)

In this questionnaire we are interested in understanding how you respond to distressing situations. Please recall how you tend to respond when you feel distressed or upset.

How true (1-5) are each of these statements with respect to your experience **when you are distressed or upset**?

1	**2**	**3**	**4**	**5**
Not true at all		Somewhat true		Very true

1. I have thoughts or images about all my shortcomings, failings, faults, mistakes.	1	2	3	4	5
2. I have thoughts or images about events that come into my head even when I do not wish to think about them again	1	2	3	4	5
3. I have thoughts or images that "*I won't be able to do my school work because I feel so badly.*"	1	2	3	4	5
4. I have thoughts or images that are difficult to forget.	1	2	3	4	5
5. Once I start thinking about the situation, I can't stop.	1	2	3	4	5
6. I notice that I think about the situation.	1	2	3	4	5
7. I have thoughts or images of the situation that I try to resist thinking about.	1	2	3	4	5
8. I think about the situation all the time.	1	2	3	4	5
9. I know I shouldn't think about the situation, but can't help it	1	2	3	4	5
10. I have thoughts or images about the situation and wish it would go better.	1	2	3	4	5