

**Parent-child reminiscing: Relationships between parent elaborations,
emotion talk and memory contributions of children with Autism Spectrum Disorder.**

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Abstract

How parents of children with Autism Spectrum Disorder (ASD) engage their children in reminiscing about the past was investigated in a sample of 12 children with ASD and 12 matched typically developing children. Analysis of parent elaboration styles and emotion talk during reminiscing revealed no significant differences between parents of children with ASD and parents of typically developing children. The elaboration style and emotion talk of parents of children with ASD was associated with their children's memory contributions and emotion talk during conversations. The discussion addresses why the social and language difficulties, characteristic of ASD, may not have impacted on parent-child reminiscing. It considers this specifically in relation to the role that parents of children with ASD play in 'scaffolding' their children through the critical developmental process of parent-child reminiscing.

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An autobiographical memory is our life story. From a theoretical perspective, it has been proposed that knowing and understanding our life story has implications for how we understand ourselves, what we deem to be important and the meaning we give to our past experiences (Nelson, 2003; Wilson & Ross, 2003). In addition, our autobiographical memory is considered to be essential from a social perspective, in that it provides the basis upon which we interact with others, form and maintain relationships, as well as regulate our emotions (Alea & Bluck, 2003; Pasupathi, 2003). How does autobiographical memory develop? According to the Social Cultural Developmental Theory (Nelson & Fivush, 2004), how parents talk about the past with their children is a critical step in the development of autobiographical memory. There is a rich history of research that suggests an elaborative style of parent-child reminiscing is important in assisting children to talk about the past (Farrant & Reese, 2000; Fivush & Vasudeva, 2002; Reese, Haden, & Fivush, 1993). Furthermore, when this past talk includes discussing emotions, this can improve emotion understanding (Dunn, Brown, & Beardsall, 1991; Farrant & Reese, 2000; Laible, 2004b). It is the process of parent-child reminiscing that is of interest in this study.

Previous research has illuminated the understanding of parent-child reminiscing and the role it may play in children's development of the ability to independently recall memories of personal events in the future. It is important to investigate whether parents engage their child in conversations about the past when their child is atypical (i.e. does not follow typical social and emotional developmental trajectories). The current study intends to address this issue by considering how parents of children with Autism Spectrum Disorder (ASD) engage their children in conversations about the past. While there has been much research focussed on the social and communicative difficulties associated with ASD, there is, at present little research focused on autobiographical memory, and no

known research which considers parent-child reminiscing in families where there is a child with ASD.

The literature review will focus on

- (i) The definitions and functions of an autobiographical memory, and the critical role parent-child reminiscing plays in the development of autobiographical memory.
- (ii) Research that investigates the associations between the way that parents discuss the past with their young children and the children's own memory conversations.
- (iii) The social and communicative characteristics associated with ASD. Consideration will be given to what is known about autobiographical memory in children with ASD, and in particular to the possible impact these difficulties may have on how parents of children with ASD talk with their children about the past.

Autobiographical Memory

What is autobiographical memory?

Autobiographical memory is the recall of personal events that have occurred in an individual's life (Conway & Rubin, 1993). It is important to consider, firstly, how it develops and then examine the functions it plays within an individual's life.

Autobiographical memory forms part of declarative, or explicit, memory. Declarative memory includes semantic memory and episodic memory (Tulving, 1983). Semantic memory relies on knowledge about the past that is context free and not linked to the experience of remembering (i.e. knowing a hammer is a tool) (Conway, 1990). By contrast, episodic memory includes context, times and places associated with a particular event. Specifically, episodic memory requires a person to focus on elements of a past experience and it has been suggested that talking with another person about past events,

through joint reminiscing, may play an important role in developing episodic memory (Hoerl & McCormack, 2005).

Autobiographical memory and the Social Cultural Developmental Theory.

The Social Cultural Developmental Theory (Fivush, 1991; Reese, 2002) is of particular relevance to the current study. This theory is not the only conceptualisation of how autobiographical memory emerges, and indeed over the years alternative theories have been proposed (for review see Howe, 1998; Howe & Courage, 1997; Howe, Courage, & Peterson, 1994). It is not the intention of this study, however, to engage in the benefits for and against various theories. Given the growing evidence for the Social Cultural Developmental Theory, it is accepted here as a reasonable explanation for the development of autobiographical memory.

The Social Cultural Developmental Theory framework suggests that autobiographical memory develops within a social cultural environment and this development has three important components (Fivush, 1991; Reese, 2002). Firstly, autobiographical memory develops gradually over the preschool years. Secondly, language is proposed to be an essential social cultural component. As infants and preschoolers develop language they start to interact with others and their environment and these social interactions help to develop the emergence of intentionality (acting on goals and realising others do to) of others and self, as well as development of a core self (Nelson & Fivush, 2004). As the preschooler starts communicating through language, parents start talking about the past which can assist in improving the child's memory (Nelson & Fivush, 2004). There is much variability in the style and frequency of parent-child conversations and individual differences will be discussed in detail later. Thirdly, cultural, gender and individual differences are seen to impact on the development of autobiographical memory (Fivush, 1991; Reese, 2002). By talking about the past, children acquire the skills needed

to develop a narrative and share their personal story (Fivush, Reese, & Haden, 2006).

Parents model the social process and the particular skills needed to tell a good story and through this process children learn the cultural and social value of stories essential for narrative to have meaning.

The Social Cultural Developmental Theory attempts to bring together multiple concurrent development factors that help shape autobiographical memory.

Autobiographical memory is not just a matter of neurocognitive maturation or greater language facility; rather it is the integration of both social and cognitive skills over the pre-school years that assists in its development (Nelson & Fivush, 2004).

Why is autobiographical memory important?

According to the Social Cultural Developmental Theory, an autobiographical memory allows an individual to link past events, thoughts and emotions to current understandings of themselves, within a social and cultural environment. What benefits are there to be had from developing an autobiographical memory and conversely what are the deficits for those who have difficulties with this development? Research proposes three main functions associated with autobiographical memory: self, social and directive functions (e.g. Bluck, 2003; Nelson, 2003; Pasupathi, 2003).

Theory suggests that the benefit of remembering one's own personal stories (autobiographical memory) assists an individual to develop a sense of self which is stable across time and within the society in which one lives (Nelson, 2003; Wilson & Ross, 2003). Specifically, an individual gains an understanding of who they were in the past and who they will be in the future. Furthermore, it is hypothesised that through social interactions one learns to determine how, and why, it is important to remember one's autobiographical history (Alea & Bluck, 2003; Fivush & Haden, 2003; Gergen, 1994; Pohl, Bender, & Lachmann, 2005). Social interactions are seen to be important in learning how

to initiate, maintain and develop intimacy and empathy within relationships. Through using language to share our personal narratives, it is suggested that one learns to organise, understand, and evaluate our experiences and this is how our memories become meaningful (Alea & Bluck, 2003). In addition, autobiographical remembering may play an important role in helping regulate internal emotions (Pasupathi, 2003; Wilson & Ross, 2003). For example, Pasupathi (2003) theorises that when an individual focuses on positive memories this can improve their emotional states which can result in increased self-esteem, strengthening of relationships and assist an individual in coping with current emotions.

Parent-child reminiscing

What is parent-child reminiscing?

According to the Social Cultural Developmental Theory, there are a range of components that are seen to contribute to the emergence of autobiographical memory. These include basic memory abilities, temporal understanding, language and narrative ability, the parents' style of talking about the past and an understanding of self and others (Nelson & Fivush, 2004; Reese, 2002). While all the components are important, a growing body of theory and research lends support to parent-child conversations as one of the critical ways in which children develop an autobiographical memory (Fivush & Fromhoff, 1988; Fivush, Haden, & Reese, 1996; Welch-Ross, 1997).

Reminiscing is a process where individuals recall and talk about past experiences together. In line with the Social Cultural Developmental Theory, reminiscing is based on social interactions with parents or more experienced members of society (Fivush et al., 1996; Fivush et al., 2006). This theory proposes that as the typically developing preschooler begins communicating through language, parents start talking about the past, which assists in improving and developing their child's memory of past events (Fivush et

al., 1996). These social interactions provide a process through which an experienced adult is able to ‘scaffold’ the child, in the form of support and assistance, to help the child build skills and develop the structure of thinking about the past.

How do parents reminisce?

Style of reminiscing

While most parents talk to their preschool children about the past, there are individual differences in how parents scaffold and shape this reminiscing (Fivush & Fromhoff, 1988). Fivush, Reese, and Haden (2006) refer to these differences when talking about the past as a ‘maternal reminiscing style’. While the following outlines the maternal reminiscing style, several studies have found that women and men do not significantly differ in how they reminisce with their children, (Fivush & Haden, 2003; Reese & Fivush, 1993) suggesting the following findings may also be applied to father-child reminiscing.

Maternal reminiscing style ranges along a continuum of elaboration. At one end of the continuum is a highly elaborative style, and this involves mothers providing a rich amount of information about past events and encouraging their children to participate by asking predominately open ended questions (Fivush et al., 2006). This means that mothers ask children either open (*wh*-questions) or closed (yes/no) questions, as well as contributing elaborative statements about what has taken place. While all of these stylistic elements are important it is the use of open-ended questions that assists the child to engage and contribute to conversations in the present and the future. Importantly, highly elaborative mothers continue to elaborate even when the child appears to have little recall of the event and contributes very little information (Fivush & Fromhoff, 1988). In addition, these mothers invite and encourage their children to contribute to the conversation, and signal to their child that their involvement is valued (Fivush et al., 2006). When the child does

contribute towards the conversation, highly elaborative mothers repeat part, or all of their child's contribution, which helps to reinforce the recall of the event and makes the child's contribution part of the ongoing narrative. As a consequence, the child is scaffolded to develop a shared story that is rich in detail. By elaborating upon descriptive information, parents help the child understand how this event is different from other events and therefore the importance of it being remembered (Fivush, 1994).

At the other end of the continuum are mothers who display a less elaborative style of reminiscing. The key features to a low elaborative style are that mothers are less likely to talk to their children about past events and are more likely to ask few or redundant questions aimed at eliciting specific information from the child (Fivush et al., 1996). Furthermore, repetition is a key feature of a low elaborative style, as parents focus on what they want their child to remember. As the less elaborative parent is focussed on children's specific recall, they are less likely to confirm and support the child in building a shared story. When the child has little to contribute, the less elaborative mother is unlikely to continue to build a story, but rather is likely to change the subject. As this less elaborative style of reminiscing provides little detail about a past event it is less likely to scaffold a child in developing a detailed narrative (Fivush et al., 1996). As a consequence the child is less likely to develop a shared history as well as develop their own unique perspective about their personal memories.

Bauer and Burch (2004) found an association between maternal elaboration style and parental talk with pre-verbal children. When asked to instruct their pre-verbal child in an imitation paradigm, the mother's maternal language varied along a similar continuum found in parent-child reminiscing with verbal children. That is, when instructing their children in tasks of varying difficulty, some parents were highly elaborative whereas others were low elaborative. Furthermore, the parents who used more verbal elaboration during

the task had children who produced more non-verbal imitation actions. This study suggests that parental use of elaborations impacts on child outcomes prior to the child's developing language ability.

Language, however, is an essential part of parent-child reminiscing. Indeed child language ability has been found to be associated with the level of elaboration mothers use with their children at early preschool age (Fivush et al., 2006). Farrant and Reese (2000) found a correlation between children's language ability (expressive and receptive language), verbal memory and maternal reminiscing style in children as young as 19 months of age. The relationship between children's verbal memory and maternal reminiscing style could not be accounted for by children's language alone, however. In addition, by the time children reach late preschool age, language is less strongly associated with mothers' elaborative style (Reese & Brown, 2000). This finding potentially provides indirect support for Bauer and Burch's (2004) suggestion that child language skills are not essential in shaping parental reminiscing styles.

Which aspects of language are essential in parent-child reminiscing? While the level of a child's language development may not be highly influential in shaping a parental reminiscing style, it would still seem to be important in the process. Reese and Brown (2000) found that child language ability is less associated with parental reminiscing style by the time the child reaches older preschool age. As children get older, however, and are more able to participate in conversations, most mothers become more elaborative, presumably because children are better able to contribute to their parents elaborative questions (Fivush et al., 2006). This increase remains relative to the parents' original level of elaboration (Fivush et al., 2006). It is possible, therefore, that while children's language ability may not impact directly on individual parental reminiscing styles', it may impact

more generally on the evolving escalation of parent-child reminiscing as the child gets older.

Fivush et al. (2006) suggest that a maternal narrative style is not simply a reflection of how talkative a mother might be. That is, being talkative does not equate to having a highly elaborative reminiscing style. Mothers have been found to adopt different conversational styles in different situations. For example, when playing with their child, conversational styles are often different from the style used when reminiscing about the past. When reminiscing with their child, however, mothers have been found to be consistent in the way they reminisce across periods of time, across different types of events and also across different children in the same family (Reese & Farrant, 2003).

While the pioneering work of Fivush and Fromhoff (1988) proposed individual differences in maternal reminiscing styles, one problem with this research was that it did not specifically address the question of whether reminiscing styles were related to child recall outcomes over time. To address this issue, Reese, Haden and Fivush (1993) undertook a longitudinal study to investigate maternal styles when talking about the past and the impact on children's recall. Nineteen mother-child dyads talked about past events over four time points (when the child was 40, 46, 58 and 70 months of age). These researchers found cross-lagged correlations between maternal elaboration styles and children's later memory recall. A rich history of concurrent and longitudinal research now supports an association between maternal elaborative style of reminiscing and children's recall of unique information when reminiscing with their parents (Farrant & Reese, 2000; Fivush & Vasudeva, 2002; Harley & Reese, 1999; Welch-Ross, 1997)

Children of highly elaborative parental reminiscing styles are likely to have improved ability to develop independent autobiographical memory skills (Fivush et al., 2006). It is suggested that these children are more likely to show a willingness to engage in

independent conversations about the past and therefore develop a better foundation on which to remember and reflect upon the past as they develop (Fivush et al., 2006). There is a growing body of literature that supports the findings that the effects of a highly elaborative parental reminiscing style can be long lasting. Farrant and Reese (2000) provide support for an association between children's independent memory conversations and mother-child past event conversations. They found, when controlling for children's language ability, that maternal memory elaboration questions at 32 months predicted children's independent memory recall with an interviewer at 40 months. While correlational studies are important, experimental research provides evidence of the association between maternal styles, child recall and future independent autobiographical memory recall which helps us to understand the significance of parent-child reminiscing.

In a pilot study by Peterson, Jesso, and McCabe (1999), ten mothers were trained to use an elaborative style of reminiscing with their 3½ year old children to see whether this would improve personal memory outcomes. By the age of 5½ years, these children had significantly improved language skills as well as better quality of independent personal narratives when compared to a control group of children. Specifically, they had improved ability in recalling temporal and spatial information, they recalled more details about people, objects, actions and attributes, and their narratives were longer, included more clauses during conversation turns and they contributed more unique information.

The study by Peterson et al. (1999) helped to demonstrate that when mothers are trained in certain narrative skills their children's skills also improved. There were, however, several problems with the Peterson et al. (1999) study, including the study had a small sample size, there was a high dropout rate of participants, and, significantly, the study did not consider the causal connection between maternal reminiscing styles and the accuracy of the children's memory. To address these issues, Reese and Newcombe (2007)

conducted a longitudinal study to replicate and extend this previous research in important ways. Using a significantly larger sample size than Peterson et al. (1999), fifty six mothers were trained in the elaborative style, with children's narrative quality and accuracy being tested approx 1½ and then 2½ years later. Reese and Newcombe's (2007) study replicated Peterson et al.'s experimental evidence (Peterson et al., 1999) that children of trained mothers provided richer memory recall. In addition, children who had higher self-awareness (i.e. being able to recognise self), and who had mothers trained in the elaborative style, were also found to provide more accurate memories when talking independently with an interviewer, demonstrating that parent-child reminiscing has an impact on future independent autobiographic memory.

Further support for the experimental evidence of the influence on parent-child talk on recall comes from McGuigan and Salmon (2004). This study manipulated parent-child talk about a staged event, according to parent scripts for pre, during, post-talk and empty talk (empty talk included limited labelling and description of the actions, objects and goals associated with the event). McGuigan and Salmon (2004) found that while during-talk was beneficial, it was parents post talk about the event which had the greatest influence on the child's correct recall of the event. In addition, it was found that the child's contribution to the conversation was important in assisting recall.

While reminiscing in general, and individual differences in the *style* parents use to reminisce has outcomes on child recall and accuracy, this study is also interested in the individual differences in the *content* of parent-child reminiscing about the past.

Content of reminiscing

Fivush (1994) theorises that descriptive content during reminiscing can help a child to understand how an event is different to other events and therefore why it is important for it to be remembered. Furthermore, reminiscing that specifically includes emotional content

may assist a child in reflecting and interpreting the emotional experience of the event.

(Fivush & Haden, 2002). Fivush et al (2003) suggest that emotional reaction to past events is the glue which provides the connection to the event: it is this emotion valence that makes the event meaningful and memorable. Families open to discussing emotions are more likely to have children who have better prosocial skills, quality relationships with peers and better psychological adjustment (Halberstadt, Denham, & Dunsmore, 2001). When reminiscing about the past, what role does a parent play in assisting their child in developing emotional understanding?

Kuebli, Butler, and Fivush (1995) conducted a longitudinal study to investigate parent-child emotional talk when reminiscing, and the association with children's developing use of emotion talk. Mothers were asked to talk with their children about past events at 40, 58 and 70 months of age. Findings from this study revealed that in shared conversations there was a positive correlation between mothers' emotional language (i.e. number of emotional words) at 40 months and children's emotional language at 40 months and 70 months. In addition, mothers initiated over 80% of the emotion talk. When interpreting these results Kuebli, et al. (1995) suggest there is support for the important role mothers play in helping their child develop emotional understanding. In contrast to this finding, in a six month longitudinal study, Laible (2004b) found, contrary to her prediction, that mother-child emotion talk was unrelated to 30 month old children's emotional understanding. She suggests this inconsistency may be due to the younger age of the children in this study compared to previous research, and that mothers' emotion talk may better predict child emotion understanding when children have developed the ability to better discuss and label emotions. Laible (2004b) did, however, find that an elaborative maternal reminiscing style used by parents when the child was 30 months old was associated with children's emotional understanding six months later. This longitudinal

result suggests that the elaborative style of reminiscing may have an impact on children's emotion understanding, regardless of whether parents use high emotion laden talk.

In addition, emotion talk covers more than just mention of emotion words. When discussing emotions with children, parents of typically developing children tend to focus on either attributions of the emotional state (e.g., you were scared), causes for the emotional state (e.g., did the hairdresser scare you?) or resolutions about the emotional experience (e.g., but then mummy came and made you feel better) (Fivush, 1994). In particular, research suggests it may be the focus on causal explanations for emotional states that may be most useful in improving children's emotion understanding. Peterson and Slaughter (2003) found, in a group of 45 mother-child dyads (in which the children were aged four and five) an association between children who scored high on emotion understanding and mothers who used causal talk when discussing emotions. Specifically, mothers who discussed reasons for, and the consequences associated with, a particular emotion had children who scored higher on emotional understanding. Further research comes from Dunn, Brown, and Beardsall (1991) who conducted a longitudinal study investigating the association between differences in frequency, theme and pragmatics of emotional talk and children's later ability to understand others' feelings. These researchers found that the inclusion of causal explanations at 38-months of age was associated with children's ability to better recognise emotions at 6-years of age, independent of the child's verbal ability and the frequency of talk within the family environment.

The findings that emotion specific types of emotion talk (i.e. emotion state, attributions or causal talk) is associated with emotional understanding dovetails with other studies which indicate that parents vary in how they talk about emotions, depending on the event being discussed (Bird & Reese, 2006; Fivush, 1994; Fivush & Wang, 2005; Sales, Fivush, & Peterson, 2003). Specifically, studies have found that parents focus more on

emotion talk and confirmations of child elaborations when discussing positive events (Fivush & Wang, 2005; Sales et al., 2003); use more causal talk when negative emotions are under discussion (Bird & Reese, 2006; Fivush & Wang, 2005; Sales et al., 2003); and talk more about resolutions when discussing scared events (Fivush, 1994). Such research suggests that reminiscing about positive events has the aim of strengthening relationships whereas with negative events, parents are attempting to help the child make sense of, and resolve the emotion (Bird & Reese, 2006; Fivush, 1994; Fivush & Wang, 2005; Sales et al., 2003).

In summary, both the *style* and the *content* parents choose to use with their children appears to be important in the socialisation process of reminiscing. Both of these factors have been shown to have an influence on how much a child remembers and how well they can reflect on and interpret a past event. By the same token, parent-child reminiscing involves two people, and we will now consider the significance children bring to the reminiscing process.

Bidirectionality of reminiscing

Reminiscing between parents and children is seen to be bidirectional (Farrant & Reese, 2000; Fivush et al., 2006; Reese & Farrant, 2003). This means both mothers and children mutually influence and accommodate each other during the reminiscing process. While research has established that maternal reminiscing styles are associated with children's concurrent and future memory recall (Peterson et al., 1999; Reese & Newcombe, 2007), another research direction has started to consider individual child characteristics that may have an impact on how parents talk with their children. To date, however, research aimed at identifying what children bring to the reminiscing interaction has yielded equivocal results.

Specifically, a child's language ability is one characteristic that has been examined when considering the influences on parent-child reminiscing. For example, Farrant & Reese (2000) found language skills of young preschoolers to be associated with higher levels of maternal elaboration. In contrast, Reese & Brown (2000) did not find such a link in older preschool children. Fivush et al. (2006) suggest the inconsistency may be attributed to children reaching a certain language threshold, at which stage the impact language has on a maternal reminiscing style is no longer so important. Other characteristics have been considered by Bauer and Burch (2004) who found an association between a child's temperament and maternal elaboration. Their research suggests that children who were rated as more interested, persistent, sociable and higher in effortful control, as measured through the Toddler Behavior Assessment Questionnaire, was associated with mothers who used more verbal behaviour. In addition, researchers have looked at attachment and the impact on maternal reminiscing and found associations between maternal elaboration and a secure attachment (Fivush & Vasudeva, 2002; Laible, 2004a).

Of interest to the current study are recent findings (Farrant & Reese, 2000; Haden, 2003), highlighting that children's interest in reminiscing conversations can have a marked effect on maternal elaboration. Farrant and Reese (2000) conducted a longitudinal study investigating children's interest in conversations at 19, 25, 32 and 40 months of age. Children's interest in maternal-child conversations was assessed through the child code of 'child placeholder'. That is, child placeholders were coded when the child took a legitimate conversation turn, and showed an interest in participating in the conversation, even when they were not providing new information (i.e. 'I don't know', 'uhm'). Farrant and Reese concluded that children's future independent memory recall was a collaborative process that included the child's interest and participation as well as their mother's

maternal reminiscing style. At 19 months of age children's participation in the conversation appeared to concurrently predict their mothers' reminiscing style, with mothers being seen to encourage their child's participation, which predicted children recalling more information at 25 months of age. Farrant and Reese highlighted 'children's early interest in reminiscing as a crucial factor in initiating the social aspect of autobiographical memory' (p. 222). By 25 months of age, however, mother's memory question elaborations uniquely mediated their child's memory recall. While previous research has suggested that parent-child reminiscing is mother directed, this finding suggests that when children's early interest in conversations is taken into account, there is a bidirectional effect.

In summary, while typically developing children appear to have some influence on their mother's elaboration style as young preschoolers, by the time children reach late preschool age, research suggests this influence is no longer as important as the mother's elaboration style (Farrant & Reese, 2000; Reese & Brown, 2000). This review will now consider whether there may be gaps in the parent-child reminiscing body of research.

Universal elaboration style?

Much of the research looking at parent-child reminiscing has been limited to white middle class families. In the earliest study of parent-child reminiscing, Fivush and Fromhoff (1988) chose well educated, middle class European-American mothers to see if there were individual differences in this homogeneous group in how they talked with their children about the past. Indeed, individual differences were found and this result has since been replicated many times (Farrant & Reese, 2000; Fivush & Vasudeva, 2002; Reese et al., 1993; Welch-Ross, 1997). Recent research has started to investigate several different lines of inquiry, i.e. gender and culture, with converging support for the suggestion that the

structure and content parents use when reminiscing with their children may shape their children's early memory recollections.

When comparing how parents talk with their children, Reese and Fivush (1993) found both mothers and fathers talk to their children along a continuum of elaboration; with both parents being more elaborative when talking with daughters than with sons. Furthermore, in cross-cultural studies with mothers who are Maori (Hayne & MacDonald, 2003), and Chinese mothers (Wang, 2007), both groups of mothers showed variation along the elaboration continuum, and both groups showing a less elaborative style of reminiscing compared to white middle class mothers.

In summary, despite stylistic differences in elaboration depending on gender of child or particular cultures, there appears to be a growing body of research which lends support to parental elaboration styles impacting on children's recall, and their future autobiographical recall. Wang (2007) suggests that 'maternal elaboration may be indeed a universal contributor to early autobiographical memory development' (p. 468). In a recent review of parent-child reminiscing, Fivush (2007) suggests that this developmental process would benefit from future research exploring a wider range of SES groups, cultural populations and other caregivers.

There is an important gap in the literature that has not yet been considered, however. Specifically, the conclusions that have been drawn are limited to parental reminiscing with typically developing children. While some research has considered the characteristics children bring to the reminiscing process (Fivush et al., 2006), these also apply to typically developing children. Significantly, no study to date has considered the style and content parents use when reminiscing with atypical children. Given the importance of parent-child reminiscing for child memory recall, emotion understanding and the functions that have been associated with autobiographical memory, it is important to investigate this

developmental process in atypical populations. The current investigation aims to explore how parents of one atypical child population: namely children with ASD, attempt to engage their children in talk about the past. Will the difficulties associated with ASD highlight significant differences in elaboration between parents of children with ASD and typically developing parents? Before seeking to provide answers to this question it is necessary to look at the communicative difficulties associated with ASD, as well as reviewing what is currently known about autobiographical memory in children with ASD. This review will then turn to what is known about the ability of parents of children with ASD to scaffold their children.

Atypical populations

Autism Spectrum Disorder (ASD).

Autism Spectrum Disorder is a pervasive developmental disorder that affects approximately 51 out of every 10,000 children (Williams, Thomas, Sidebotham, & Emond, 2008). ASD is a disorder that is more predominant in males (DSM-IV-TR, 2000). The prevalence rates for ASD include three main subtypes, that being Autism, Asperger's Syndrome and atypical Autism (Williams et al., 2008). These subtypes can be understood when considering that ASD symptoms fall along a continuum. At one end of the continuum a child might present with severe impaired social interaction and language symptoms, including mutism, while at the other end of the continuum you would be more likely to find a child who shows no language delays.

Three main symptoms need to be present for the diagnosis of Autism. These symptoms include impairments in social interaction, social communication, and a range of restricted, repetitive and stereotyped behaviours (DSM-IV-TR, 2000). Children with relatively fewer developmental delays are often described as having Asperger's Syndrome

and while their social communication skills may be intact, they are faced with the same social interaction difficulties as those at the more impaired end of the ASD continuum (DSM-IV-TR, 2000).

Communication in ASD.

Given that reminiscing is a process of recalling and talking about the past with another person, it is the impairment in social interaction and communication in children with ASD that may most compromise this process. The social interaction difficulties that might impact on parent-child reminiscing include a decreased desire for social stimuli (i.e. children with ASD often prefer to spend time in solitary activities), a lack of understanding that other people have different perspectives, and an inability to engage in conversations with others (Landa, Holman, & Garrett-Mayer, 2007; Volkmar, 1987). In addition, a lack of joint attention in children with ASD is a particularly notable deficit which has implications for communication (Adamson, Bakeman, Deckner, & Ronski, 2009). Joint attention has a social function, in that it involves the sharing of experiences which help facilitate communication and interaction with others. This process of shared attention provides the foundation for social development, cognitive development and early verbal communications (Adamson et al., 2009).

Language and engaging in conversations about oneself and one's experiences are important for a child to start developing a sense of self (Nelson & Fivush, 2004), making this an important socialisation process that is likely to be affected for some children with ASD. While children with ASD may be able to use language to competently articulate content in a conversation (Frith, 2003), it is the social use of language, however, and its subtle pragmatics such as how language is used in shared communication that will make typical conversations difficult for children with ASD (Goldman, 2002).

Given the social and communicative difficulties facing children with ASD, it might be easy to assume that they are asocial. This is not the case, however. As highlighted by Frith (2003) and Volkmar (1987), over the course of development children with ASD are able to form positive social relationships and attachments with their caregivers. They do have a level of social responsiveness, although limited; and they can use language to communicate, albeit in different ways to a typically developing child. Nonetheless, Volkmar (1987) highlights that even a highly functioning child with ASD are unlikely to engage in more than rudimentary social relationships.

In summary, the social interaction and communication difficulties significantly compromise some of the critical socialisation processes that typically take place from the time a child is born. While there is much research on reminiscing with typically developing children and their parents, little research to date has explored autobiographical memory and parent-child reminiscing about past events in children with ASD. This leads to the question; given the social interaction and communication difficulties facing children with ASD, how do these children develop an autobiographical memory? While this question is beyond the scope of this study, it is possible to consider what we currently know about children with ASD and autobiographical memory, as well as the role of parent-child reminiscing which is one aspect in the development towards autobiographical memory.

ASD and Autobiographical memory.

Given that parent-child reminiscing requires an ability to engage in language, the following research reviews focus on studies that have included children with ASD who are high functioning. For example, when a study includes children with autism, the participants are likely to have language delays but have subsequently developed basic language skills. In a study that includes children with ASD, this group is likely to include

children with language delays who have basic language skills, as well as children who have no language delays.

The little empirical research available considering the ability of children with ASD to engage in independent autobiographical recall has been conducted with a non-related interviewer. This research suggests that children with ASD have a specific episodic memory deficit and this, in turn, is associated with difficulties in recalling details from personal events. That is, children with ASD have impaired explicit memory, in contrast to their implicit, or general memory which remains intact (Bruck, London, Landa, & Goodman, 2007; Crane & Goddard, 2008; Millward, Powell, Messer, & Jordan, 2000).

Evidence for episodic memory deficits in children with autism comes from a study by Millward, Powell, Messer, and Jordan (2000). This experimental study provides evidence that children with autism have difficulties reporting details from events personally experienced compared to recalling details from events experienced by others. Children both with and without autism were asked to undertake two 25 minute walks. In the first walk, the child with autism was alone with an experimenter who pointed out five various locations along the walk (a horse sanctuary, park, shopping precinct, church, and a street). At each location the child experienced an event (e.g. pointing to the horses). In the second walk the child with autism had a companion, with the experimenter pointing out five different locations to each child. Millward et al. (2000) found that children with autism had more difficulty recalling aspects of events in which they had participated compared to recalling details of events that happened to their companions. The results were presented as evidence that children with autism have a specific episodic memory deficit for details relating to their personal experiences.

Bruck et al. (2007) replicated and extended Millward et al.'s (2000) findings in important ways. In contrast to the Millward et al. (2000) study, the children in the Bruck et

al. (2007) study were of similar chronological age (between 5 to 10 years), thus reducing the chance of motivational differences between the two groups, and resulting in less chance of one group finding the events less interesting. In addition, children with moderate or severe cognitive impairments were excluded to avoid the confound that deficits in autobiographical memory may be due to low cognitive functioning. Thirty-eight typically developing children and 30 children with ASD were administered the Autobiographical Memory Questionnaire and then participated in a magic show. Eight days later they were provided with details about the magic show and asked a range of leading and misleading questions. Approximately four days later the children were asked open ended questions and yes/no questions to evaluate their memories of the magic show as well as assessing the degree of susceptibility to the earlier misleading information. Regarding the recall of information, Bruck et al. (2007) replicated Millward et al.'s (2000) finding that children with ASD, when compared to typically developing children manifested poorer recall in regards to number and accuracy of details. Furthermore, this pattern was observed regardless of whether they were asked open ended, recognition or yes/no questions. This suggests that even when children with ASD do not have to generate sentences or coherent narratives, they still show deficits in autobiographical memory.

Furthermore, Goldman (2002) investigated how children with ASD use personal narratives in both recalling and representing their past. Her study compared fourteen verbal children with ASD, aged 9 to 13-years-old, with twelve typically developing children, and twelve non-autistic children with comparable developmental language disorders.

Children were individually matched for chronological age (within 12 months), gender, and for non-verbal IQ (+/- one standard deviation of the mean as measured by the Stanford-Binet Intelligence Scale-Revised). Goldman (2002) found when children with ASD were questioned about personal events (scripted events, unique events and emotionally driven

events), they were able to engage and sustain short conversations with the experimenter, and were able to compose a story that contained the basic elements such as time, orientation, high point and resolution, suggesting an ability for narrative composition. Compared to the language disordered group and typically developing group, however, the children with ASD produced stories that had significantly fewer high points and their stories were often based on physical (e.g., it was cold) or scripted details (e.g., it was great) of an event, with significantly less reference to social components and people (e.g., Uncle Tom was there). In particular, children with ASD had the most difficulty when trying to elaborate on answers related to unique and emotional events (Goldman, 2002). Goldman suggests that unique events require a higher level of skill on the part of the child, such as an understanding of affect, information and the representation of events. According to Goldman (2002) these findings suggest a higher order language processing deficit for children with ASD. In addition, she suggests that the developmental social difficulties facing children with ASD may affect their ability to produce narratives for personal events.

While the above studies provide support for personal memory deficits, what is of particular interest is whether children with ASD can *improve* their level of recall when prompted or scaffolded by an experimenter. Goldman's (2002) study is important because it found that the ability of children with ASD to maintain a conversation with the experimenter improved if they were prompted or scaffolded throughout the process. This is not surprising given the view that experienced adults support and provide assistance to children as they develop unfamiliar skills (Nelson & Fivush, 2004). When unprompted, the conversations were short and disjointed. In comparison, when the experimenter used direct question scaffolding, rather than open-ended questions, children with ASD were more likely to respond and engage in the conversation. Nonetheless, the improvements in recall from being scaffolded were less for the children with ASD than for the typically

developing children and the children with language disorders, which Goldman (2002) argues may be due to children with ASD having poorer narrative encoding and coherence which leads to poorer recall of events. However, it is the finding that children with ASD were able to relatively improve their responses when scaffolded that is of importance to this study, given the role parents have been able to play in scaffolding their children's memory contributions.

In summary, typically developing children develop the ability to recall personal stories. Children with ASD, on the other hand, can produce elements of a story but they appear to be lacking in coherence and communicative function. When a researcher scaffolds or supports children with ASD when talking about past events this improves their ability to maintain a discussion and recall more information about past personal events (Goldman, 2002). Given the beneficial role of *parental* scaffolding for autobiographical memory in typically developing children, it is important to examine whether parental scaffolding, particularly through a highly elaborative style of reminiscing, is associated with children with ASD's contribution to conversations. No current research addresses this question. There are several studies, however, which allow us to hypothesise about factors that may assist and/or hinder parents of children with ASD in their ability to scaffold and reminisce.

Parental scaffolding in children with ASD.

Firstly, there is some evidence to suggest parents of children with ASD may be effective in scaffolding their children. In a case study of David, a high-functioning adolescent with autism, Levy and Fowler (2005) investigated whether parental scaffolding could increase his level of coherence (i.e. merging clauses and temporal understanding) during the retelling of a story. Over a period of three days, the adolescent retold the story of a movie he had seen, with the assistance of repeated parental prompts, questions,

commands and provision of sentence fragments. Levy and Fowler (2005) found considerable improvement in the retelling of the story; by day three his initial resistance in describing the story had dissipated, and he was able to string together more than two clauses, suggesting he had learnt how to retell the story through adult intervention. This result was reliant on both direct and indirect input from interactions with the parents, suggesting that repeated parental prompts and reproducing adult speech was effective in helping the adolescent to build a story. Despite the limitation of not exploring whether this improvement in recall continued over time, or generalised to other events, parental scaffolding did facilitate the temporal sequencing of this event, and this is an essential component of developing an autobiographical memory (Levy & Fowler, 2005).

Another important component in an elaborative style of reminiscing is the ability of parents to signal to their child that their involvement is valued (Fivush et al., 2006). It is unclear whether the recall of children with ASD will be improved if parents encourage involvement. Some indirect evidence is taken from a longitudinal study by Siller and Sigman (2008) investigating children with autism's ability to improve their language skills. These researchers found that joint attention and the responsiveness of parents towards their child's interest and activity during play independently predicted the child's change in language abilities over a period of twenty months. This finding was over and above the child's initial language skills, mental age or IQ. The result suggests the important collaborative process of children's ability to engage, as well as mother's synchronization (i.e. pointing and talking about objects that the child was attending to), to have been important in predicting language improvements. These studies are important as they show that when parents are able to scaffold their children, it raises the possibility of improved performance. This may have implications for parent-child reminiscing if parents of children

with ASD are able to scaffold these children in building shared stories and improving children's memory and emotion contributions.

Further support for improved performance in child contribution to conversations comes from Curcio and Paccia (1987), who investigated parents of children with autism interaction styles when talking about a current event. The study included parents and four children who had been diagnosed with autism. The mean age of the children was nine years eight months, and their verbal ability was similar to a three and a half to four year old. While there are several limitations of Curcio and Paccia's (1987) study, in that it had a sample size of just four mother-child dyads and there was no control group, findings showed that when adults modified the number of facilitating features they used in their conversations there was a corresponding improvement in the number of the child's contributions to conversations. Specifically, when their children were unable to answer an open-ended elaborative question, the parent moved to one of three types of response; a yes/no question; a conceptually simple question (i.e. a concrete question based on description of events versus an abstract question based beyond description to include inferences and subjective feelings); or based their questions around the child's interest.

Contrary to the studies above, other research suggests parents of children with ASD may face many difficulties in attempting to scaffold their child's recall and emotional contribution to conversations. For example, given the communication difficulties of children with ASD it would seem these children have fewer opportunities to engage in social conversations. Adamson et al. (2009) suggest a lack of joint attention that is characteristic of autism can limit access to language based interactions with others. Lord (1993) found that parents of children with autism are likely to be less interactive with their children, potentially leading to social isolation. This finding is paralleled by Goldman (2002), who noted that parents of children with ASD reported initiating limited

spontaneous reminiscing with their children about past events compared to parents of typically developing children and parents of children with language disorders.

Potential impact of ASD on parent-child reminiscing

Given the language delays for some children with ASD, as well as the higher order language difficulties (Goldman, 2002), it is possible that parents of children with ASD naturally delay talking about the past. This may result in children losing opportunities to be scaffolded in skills needed for effective reminiscing. That is, perhaps autobiographical memory develops later for children with ASD. Support for this speculation comes from Bruck et al. (2007) who found, across a 5 year age range, that children with ASD showed memory deficits for early life events. The authors suggested that autobiographical memory has a later onset and takes a less steep slope compared with typically developing children.

Farrant and Reese (2000) found the association between language ability and maternal reminiscing in early preschool age lessens by the time children reach late preschool age, presumably because children are more able to participate in conversations. If children with ASD are less likely to participate in conversations, it is possible for children with language delays that this might have an impact on maternal reminiscing style past early preschool age. This may have implications for the style that parents of children with ASD use when reminiscing about the past. It is possible that for ASD children with language delays, parents may need to be less elaborative, as their children may not have the language ability to contribute memory information. As a result, parents of children with ASD may need to be more repetitive in an attempt to maintain their child's engagement in the conversation at a level the child can participate.

What might we discover about parents of children with ASD who attempt to scaffold their child's emotion understanding? As outlined above, while Kuebli, et al. (1995) found emotion talk was associated with children's emotional understanding, in parents of typically

developing children, Laible (2004b) found this parent-child emotion association firstly required children to be able to discuss and label emotions. In addition, Losh and Capps (2006) have found that children with ASD are more likely to pay attention to the visually salient elements of an event than the emotional elements and that the inability to understand causes behind emotions compromises the depth of understanding children with ASD have in regards to emotional experiences. Furthermore, Golan, Baron-Cohen and Golan (2008) found that while children with ASD have some understanding of basic emotions, they have difficulties understanding more complex emotions (e.g. guilt and loneliness). It is possible that the social difficulties and differences in attention in children with ASD may result in their parents focusing less on emotion aspects of events.

Conversely, parents of typically developing children who are highly elaborative continue to maintain this elaborative style regardless of their children's contributions to conversation (Fivush & Fromhoff, 1988). If a similar association is found in parents of children with ASD, then it is possible they will continue to discuss emotional aspects of events regardless of their children's difficulties and differences in attention. Indirect support for the role of parents of children with ASD may play in scaffolding their children's emotion understanding comes from Bruner and Feldman (1994). These researchers found that children with ASD could understand one component of emotion understanding, namely causation, when questioned and scaffolded by an interviewer. Specifically, without assistance the children with ASD could not describe the motivation of characters when retelling a story, but when an interviewer specifically questioned the child they were able to describe the motivation behind a character's action. To date, it is unknown whether parents of children with ASD can influence their child's developing ability to talk about and understand the causes of emotions.

Moreover, given that parent-child reminiscing is bidirectional it may be that the influence of children with ASD and their parent's relative contributions to the reminiscing process are different in these dyads. Farrant and Reese (2000) have shown when reminiscing with their parents, children at early preschool age play a role in shaping their mother's reminiscing style. In particular, children show an interest in participating in conversations through appropriate turn taking (e.g. 'uhum', 'I don't know'), more so than contributing memory information. This in turn leads to mothers then facilitating their children's interest in participating in conversations, and as they get older, this converts into children's memory elaborations. As children reach late preschool age, however, their interest has less impact on the maternal reminiscing style, with mothers mediating this bidirectional relationship through their reminiscing style. Given that the social interaction difficulties in ASD are evident from an early age, and are enduring, it is possible that children with ASD may display an ongoing lack of interest in reminiscing about the past with their parents. This in turn may have an influence on the style their parent uses when talking about the past if they do not receive initial interest from their children and there is little response to the parents' attempts to facilitate further interest in talking about the past.

The characteristics of a child with ASD may not be the only factor that makes it difficult for parents to engage their child and scaffold talk about the past. In a study of 41 parents of 29 children with ASD it was found that the stories of these parents were similar length to those of typically developing parents, but they were less complex and coherent (Landa, Folstein, & Isaacs, 1991). Furthermore Landa et al. (1992) found that parents of children with ASD were likely to show atypical pragmatic features in their conversations similar to the social language deficits found in children with ASD. Given the genetic association with ASD (Wallace, Anderson, & Dubrow, 2008) it is possible that parents of

children with ASD are themselves somewhere on the autism spectrum and may have their own social communication issues which would impact on the reminiscing process.

Parents of children with ASD may also bring psychological difficulties to the parent-child reminiscing process. Studies have found, when compared to parents of typically developing children, there is a higher association of stress and vulnerability for depression in parents of children with ASD (Bitsika & Sharpley, 2004; Wolf, Noh, Fisman, & Speechley, 1989). In addition, mothers of children with ASD were found to report higher depression than fathers of children with ASD (Hastings et al., 2005). Anxiety has also been found to be elevated in parents of children with ASD (Bitsika & Sharpley, 2004). As highlighted by Foster et al. (2008) maternal depression has been found to impact on family functioning, resulting in lower levels of maternal affection, warmth and expressiveness as well as higher levels of conflict with their children when compared to non-depressed mothers. In summary, the above studies suggest both the possibilities and the difficulties potentially associated with parents of children with ASD in scaffolding their children.

Summary

Children with ASD may be faced with fundamental difficulties that could impact on parent-child reminiscing. In typically developing children, parents play an important role in scaffolding their child's developing reminiscing ability. Studies to date provide equivocal support for the possibility that, like typically developing children, parents of children with ASD may be able to support or scaffold their child's memory contributions. A highly elaborative style of reminiscing, as well as emotion talk that some parents use when talking about the past, have been identified as an effective form of scaffolding reminiscing and autobiographical memory.

Specific aims

The focus of this research was to investigate how parents of children with ASD discuss past events with their children. Twelve children with ASD were matched on gender and verbal mental age with 12 typically developing children. The parent-child dyads were asked to talk about four past events that had occurred in the last month. The hypotheses were as follows:

- H1. Parents of children with ASD will be less elaborative compared to parents of typically developing children.
- H2. Children with ASD will contribute fewer memory contributions to conversations compared to typically developing children.
- H3. Children with ASD will show less interest in participating in conversations about the past (as measured through placeholders) compared to typically developing children.
- H4. Parents of typically developing children will use more emotion talk (e.g. attributions, behaviours, causes, resolutions) when discussing past events compared to parents of children with ASD.
- H5. Parents of children with ASD will score higher on parent psychopathology; with higher scores on the Depression, Anxiety, Stress Scale (*DASS-21*, *Lovibond & Lovibond, 1995*), associated with less elaboration and less emotion talk.

Method

Participants

Twenty-four parents and their children participated in this study. Twelve of the parent-child dyads (10 mothers and 2 fathers) included children with ASD who were

recruited through a database of participants in previous ASD research and through various ASD support networks in the Wellington region. The group of children on the ASD children included twelve participants (2 female, 10 males; mean CA = 87.38, mean VMA = 75.48). There were proportionally more males in the groups and this reflects the demographic fact that ASD is more common among boys than girls. Each participant with ASD had been formally diagnosed by a clinical psychologist, a paediatrician or a speech pathologist, as having either a diagnosis of autism or Asperger's Syndrome. That is, the ASD group varied in terms of their severity of impairment and presence of symptoms. As a check, the probability of autism and Asperger's syndrome and the degree of severity were confirmed using the caregiver questionnaire of the Gilliam Autism Rating Scale – Second Edition (GARS-2) and the Gilliam Asperger's Disorder Scale (GADS) (Gilliam, 2001) respectively. For the autism group ($n = 9$) and the Asperger's group ($n = 3$), all participants' GARS-2 and GADS index scores were greater than cut-off points.

Twelve of the parent-child dyads (9 mothers and 3 fathers) included typically developing children who were recruited from two local kindergartens. The typically developing group included twelve controls (2 female, 10 males; mean CA = 72.58; mean VMA = 69.42). Participants in the control group were selected to match participants in the ASD group on gender, and verbal mental age (The Peabody Picture Vocabulary Test; Dunn & Dunn, 2007). Written parental consent and child assent forms were obtained from all children before participation. Children received a sticker in return for their participation.

Table 1

Demographic characteristics of sample.

	Autism (<i>n</i> = 12)		Typically developing (<i>n</i> = 12)	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
DASS	35.67	36.07	22.33	12.50
GARS	88.17	30.47		
GADS	98.17	14.07		

DASS = Depression, Anxiety, Stress Scale (DASS-21, Lovibond & Lovibond, 1995)

GARS = Gilliam Autism Rating Scale – Second Edition (GARS-2, Gilliam, 2006)

GADS = Gilliam Asperger’s Disorder Scale (GADS) (Gilliam, 2001)

Materials

Peabody Picture Vocabulary Test – fourth edition (PPVT-4, Dunn & Dunn, 2007).

Verbal mental age (VMA) scores for all participants were obtained from administration of the PPVT-4. The Peabody Picture Vocabulary Test is used to examine receptive vocabulary and verbal comprehension. Whilst ideally it would have been useful to have administered several vocabulary measures, the PPVT-4 was chosen for its easy administration. The PPVT-4 has been found to be highly correlated with the Expressive Vocabulary Test-second edition (.82) (Dunn & Dunn, 2007). Furthermore, Kjelgaard and Tager-Flusberg (2001) found, when investigating language impairment, that there was no significant difference between the receptive and expressive abilities in 89 children with autism (as measured by the PPVT-III and the EVT-2 and based on comparisons of lexical knowledge).

Depression, Anxiety, Stress Scales (DASS-21, Lovibond & Lovibond, 1995).

The DASS-21 is a self report measure that assesses the emotional states of depression, anxiety and stress from a dimensional perspective. Depression items assess such factors as dysphoria, hopelessness, devaluation of life, lack of interest, inertia; anxiety

items assess autonomic arousal, skeletal muscle effects and situational and subjective affects; while stress items assess levels of chronic non-specific arousal such as difficulty in relaxing or nervous arousal. The DASS-21 has strong psychometric properties including high internal consistency and reliability (Depression $\alpha = .81$; Anxiety $\alpha = .73$; Stress = .81) (Lovibond & Lovibond, 1995).

Gilliam Asperger's Disorder Scale (GADS; Gilliam, 2001).

GADS is a thirty two item scale used to identify persons with Asperger's Disorder. The scale uses a four point severity/frequency scale (0 = Never observed to 3 = Frequently observed) and has four subscales aimed at assessing characteristics associated with Social Interaction, Restricted Patterns of Behaviour, Cognitive Patterns and Pragmatic Skills. GADS is completed by someone who knows the person well e.g. parent or teacher. GADS possesses good internal consistency and reliability. Coefficient alpha's ranged from .77 to .87 for subscales and overall Asperger's Disorder Quotient (Gilliam, 2001). The overall Asperger's Disorder Quotient, when standardised (Median 10, SD 3), provides a probability rating of Asperger's Disorder (High/Probable, Borderline, Low/Not Probable).

Gilliam Autism Rating Scale – Second Edition (GARS-2; Gilliam, 2006.)

The GARS-2 is used to identify persons with autism. GARS-2 is high standardised, norm referenced and is based on the current DSM-IV definitions for autism. The measure has three subscales that assess Stereotyped Behaviors, Communication and Social Interaction. Ratings are made by someone who knows the person well and are based on a four point severity/frequency scale (0 = Never observed to 3 = Frequently observed). An overall Autism Index suggests autism is Very Likely, Possibly or Unlikely to be present for the person. The internal consistency and reliability of the three subscales and the overall Autism Index are in the .80s and .90s making the measure well within acceptable ranges. Studies have shown the GARS-2 to possess validity in that, the items are representative of

the characteristics of autism and the measure is strongly related to other measures of autism (Gilliam, 2006).

Procedure

A female researcher visited the parents and children in their homes. The researcher restated the aims of the study. Parents signed a consent form and the child signed an assent form before participating. Following Reese et al. (1993) and Haden (1998), parents were instructed as follows: “I am interested in how parents and children talk about shared past events. I would like you to choose four events that you have shared with your child in the last month. In a little while I will ask you to talk about these events with your child. I would like you to choose something you have done together, such as a trip to the zoo, rather than, for example, a story or a movie. One of these events will be a time when your child was happy, another when your child was sad, the third one will be when your child was angry and the final one when your child was scared. I am going to ask you to talk about each of these experiences just as you normally would and take as long or short a time as you need. I won’t stay in the room but I will ask you to tape record your discussion. This is so I can have a record of the conversation to help me analyse and learn how parents typically talk to their children about past shared events”. Examples of events discussed include getting a new puppy (happy event), losing a toy (sad event), being sent to bed (angry event), and having a haircut (scared event). The majority of parents had little difficulty in identifying a range of emotional, unscripted events their child had experienced in the last month. This was not the case, however, for three parents (one parent of a typically developing child and two parents of children with ASD) who, for one of the four emotional states, were unable to identify a unique event and resorted to discussing stories. In addition two parents of children with ASD were unable to identify at least one of the

negative emotions (i.e. scared, angry). These five events were excluded from the analysis. Parents could choose the order in which they talked about each event.

After setting up a digital voice recorder to tape the conversations, the researcher left the room while the discussions took place. At the end of the discussions, either the parent or the child invited the researcher back into the room. The conversation lengths, covering the four events, ranged from approximately 8 to 19 minutes for the typically developing parents and their children and approximately 7 to 26 minutes for parents and their children with ASD.

Following parent-child discussions, parents were asked to complete the DASS-21 (Lovibond & Lovibond, 1995). In the children with ASD group, parents confirmed their child had been previously diagnosed with ASD or Aspergers Syndrome by a medical practitioner. Parents of children with ASD were administered the GARS/GADS for the purpose of an additional screening tool, rather than a diagnosis of the children (Gilliam, 2001, 2006). The PPVT-4, Form A (Dunn & Dunn, 2007) was administered by the researcher to all children to assess vocabulary level and scored in the standard manner.

Coding

Conversations were transcribed and the coding system was adapted from Reese et al. (1993) and Haden (1998). Firstly, the beginning and end of each event conversation was marked by the researcher, and only utterances relating to the event being examined. As an overall guide, coding was based on utterance (e.g. 'You were biting her'), except when there were two independent clauses in a single utterance (e.g. 'Did you think it would fall over and drop onto you?'). In such cases the clauses were separated into two units based on independent clauses (*subject + verb + object/and or complement structure*), with each unit of coding containing either a unique or implied subject or verb utterance. In addition, dependent clauses were included as part of the main independent clause (e.g. 'Did it make

you scared because it's noisy?' would be coded as one unit); and false starts by parents or children were also collapsed into the main utterance (e.g. 'I was happy when I... *as soon as* I... jumped on the train' would be coded as one unit). As highlighted by Haden (1998), one of the benefits of this coding system is that it somewhat accounts for language differences.

Once the unit of utterance was established it was then coded for both Style and Emotion content (see Table 2). The Emotion categories were based on Fivush et al (2003) and Van Bergen, Salmon, Dadds & Allen (in press). Two raters independently coded 25% of the transcripts to assess reliability. With regards to Style reliability, the two raters achieved 84% agreement. With regards to Emotion reliability the two raters achieved 88% agreement. Any coding disagreements were resolved through discussion. After reliability was established, the remaining transcripts were coded by the primary researcher.

Table 2

Style and Content coding

Codes	Descriptions	Examples
<i>Style codes</i>		
Parental elaboration	Any open ended questions, Yes-No questions, or statement elaborations that extends or embellishes the conversation	'What was your favourite part', 'Was that a happy time? Or 'You do need to eat good food'.
Parental repetitions	Any utterance that repeats the content or idea previous stated.	'We saw the ducks?' after the ducks had already been mentioned.
Parental evaluations	Any utterance that confirms, negates or questions the previous statement.	'Yeah', 'That's right', 'The beach'.
Child Memory Contributions	Any utterance that adds new information by the child.	Mother says 'What did we see at the beach?' and child responds 'Shells'.
Child Placeholders	Any utterance where the child participated by repeating their own previous comment or taking legitimate turn without adding new information.	'I don't know', 'uhmm'.
<i>Content codes</i>		
Attribution	Any emotional state attribution.	'You were so angry'.
Behaviour	Any behaviours directly associated with emotional states that demonstrates the emotion.	'You cried when you got hurt'.
Cause	Any statement and question regarding the cause of the emotional state.	'Why were you angry', 'You were scared because you saw the spider'.
Outcome/Consequence	Any direct outcome of the emotion or behaviour that does not resolve the emotion.	'When you got the balloon you were so happy that he gave you another'.
Resolutions	Any resolution of negative emotions that help solve, negate, modify or directly change the emotion.	'But really it was Ok, because I gave you a big hug'.
Preferences	Any statement about likely or disliking something that do not directly refer to emotions.	'I loved jumping on the trampoline', or 'I didn't like that'.
Factual	Any utterance that did not receive an emotional code.	'What did we see at the beach?'

Note: see Appendix for further details.

Results

Overview of analysis

Analysis investigated several primary areas. Firstly, differences in parental use of elaborations and how these patterns differed between parents of typically developing children and parents of children with ASD. Secondly, whether there were parent differences in elaboration which were reflected in their children's use of elaborations and placeholder contributions to the conversations. Thirdly, whether there would be differences in the amount of overall emotion talk used by parents of typically developing children and parents of children with ASD when talking about the past. Finally, would there be differences between groups for parental psychopathology.

Each parent-child dyad talked about four unique events. Out of a possible 36 events, parent-child data were missing for five events (with similar missing events across the typically developing and ASD conditions). In each instance parents could not recall a particular emotion occurring over the last month or could recall an emotion but could not relate this to a unique event (i.e. always becoming sad when watching a particular movie). Given these missing data, all analyses were based on mean frequencies of relevant codes across events (see Haden, 1998). Although previous studies have excluded from analysis events for which the child failed to contribute two unique pieces of information, in the current study these events were included. This was because out of the six events that meet this criterion, five came from children with ASD and it seemed unwarranted to exclude them given the social and communication difficulties known to characterise ASD.

An independent t test comparing the chronological age between children with ASD and typically developing children found a significant difference $t(22) = 4.97, p = .001$. This result was expected as the groups were matched on verbal mental age. An

independent t test comparing the verbal mental age between children with ASD and typically developing children found no significant difference $t(22) = .64, p = .53$.

Pearson product-moment correlations were conducted between children's verbal mental age and parent-child conversation variables. There were no significant relations between children's language abilities on the PPVT-4 and parental repetitions, parental evaluations, child memory contributions or child placeholders parent-child memory conversations for either group at $p > .05$ (Pearson r s ranged from $-.09$ to $.53$). There was a significant correlation between children's verbal mental age and parent elaboration for the parents of children with ASD ($r = .67, p < .05$). There was no significant correlation between children's verbal mental age and parent elaboration for the parents of typically developing children ($r = -.09, p > .05$).

Furthermore, there were no differences between parents with regards to Emotion valence ($p = >.05$). Parallel results were found for children ($p = >.05$). As a result, positive and negative emotion results were collapsed for each Emotion variable (i.e. Attributions, Behaviours, Causal, Outcomes and Preferences).

Style

Parents' contributions. Table 3 shows the means and standard deviations for parents' elaborations. An independent samples t test on parent Elaborations (the mean number of parental memory questions, statement elaborations and yes/no elaborations summed) showed no significant difference between the parents of typically developing children and parents of children with ASD $t(22) = -1.47, p = .17$. Furthermore, an independent samples t test comparing the number of parental Repetitions (the mean number of parental repeated memory questions, repeated statement elaborations and repeated yes/no elaborations summed) made by parents of children with ASD and

parents of typically developing children showed no significant difference $t(22) = .09, p = .93$.

Table 3

Means and standard deviations for parent and child style contributions.

	Group			
	Typically Developing		ASD	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
<i>Parent-child conversation variables</i>				
Parent Elaborations	18.03	5.77	14.45	6.14
Parent Repetitions	2.60	1.77	2.66	1.73
<i>Child Memory Contributions</i>				
Child Placeholders	9.68	4.30	9.81	7.76
	2.27	.91	1.97	1.14

Children's contributions. Table 3 shows the means and standard deviations for child contributions. An independent samples t test comparing the number of child memory contributions between the typically developing children and the children with ASD, found no significant difference $t(22) = .05, p = .96$. Furthermore, an independent samples t test on child placeholders found no significant difference between the typically developing children and the children with ASD, $t(22) = -.73, p = .48$.

Relations between Parental Style and Children's Memory Contributions. Further analyses were conducted to investigate associations between parent reminiscing styles and child memory contributions. Pearson product-moment correlations between children's unique memory contributions and parental elaboration were significant for both typically developing children and children with ASD (Table 4). Furthermore,

Pearson product-moment correlations between children's unique memory contributions and parental evaluations were significant for both typically developing children and children with ASD (Table 4). There were no significant associations between parental repetitions and children's memory contribution for either group (Table 4). For the parents of children with ASD, there was a significant association between parental elaboration and their children's placeholders (Table 4). No significant associations were found between typically developing parents' elaboration with their child's placeholders (Table 4).

Table 4

Correlations between parental and child utterances during reminiscing

Utterance type	1	2	3	4	5
Typically Developing Group ($n = 12$)					
1. Parental Elaboration	-				
2. Parental Repetition	.29	-			
3. Parental Evaluations	.71**	-.19	-		
4. Child Memory Contributions	.75**	.01	.76**	-	
5. Child Placeholders	.38	-.03	.32	.49	-
ASD Group ($n = 12$)					
1. Parental Elaboration	-				
2. Parental Repetition	.31	-			
3. Parental Evaluations	.57*	.11	-		
4. Child Memory Contributions	.72**	.32	.72**	-	
5. Child Placeholders	.71**	.42	.43	.55	-

* $p < .05$ ** $p < .01$.

It is also important to understand to what degree these relations between parent-child conversation styles are associated with children's verbal mental age. Pearson correlational analyses were conducted between types of parent styles and child

contributions when reminiscing with verbal mental age partialled out. Within the typically developing group partialling out verbal mental age made no difference to the significance of the correlations (Table 5). Within the group with ASD, partialling out verbal mental age made one difference to the correlations. Specifically, the correlation between parent elaboration and parent evaluations became non significant (Table 5).¹

Table 5

Correlations between parental and child utterances during reminiscing when verbal mental age has been partialled out.

Utterance type	1	2	3	4	5
Typically Developing Group (<i>n</i> = 12)					
1. Parental Elaboration	-				
2. Parental Repetition	.30	-			
3. Parental Evaluations	.72*	-.19	-		
4. Child Memory Contributions	.75**	.02	.76**	-	
5. Child Placeholders	.38	-.03	.33	.49	-
ASD Group (<i>n</i> = 12)					
1. Parental Elaboration	-				
2. Parental Repetition	.45	-			
3. Parental Evaluations	.33	.15	-		
4. Child Memory Contributions	.59*	.40	.62*	-	
5. Child Placeholders	.61*	.50	.25	.40	-

* $p < .05$ ** $p < .01$.

¹ Pearson correlational analyses were also conducted between types of parent styles and child contributions when reminiscing, with verbal mental age and chronological age partialled out. Within the typically developing group partially out these factors made no difference to the significance of the correlations (r 's ranged from .65 to .79). Within the group with autism, partialling out these factors made the correlations non significant (r 's ranged from .33 to .61).

Emotion

Parents' emotion contributions. Means and standard deviations of parent emotion variables by group are reported in Table 6. An independent samples t test on parent emotion talk (Attributions, Behaviours, Causes, Resolutions and Preferences summed) showed no significant differences for total emotion talk between parents of typically developing children and parents of children with ASD, $t(22) = -1.30$, $p = .21$.

Further analyses were conducted to investigate differences between parents of typically developing and parents of children with ASD dyads in other aspects of emotion content. Two differences were identified in independent samples t tests between the two groups of parents. Firstly, there was a significant difference in Resolutions emotion talk (e.g. 'You weren't sad anymore when Daddy got home'), parents of typically developing children talked more about resolutions with their children than parents of children with ASD, $t(22) = -2.23$, $p = .04$. Secondly, there was a significant difference in Preferences (e.g. 'You liked the park'), with parents of typically developing children talking more about preferences with their children than parents of children with ASD, $t(22) = -2.16$, $p = .04$. It should be noted, however, that very few resolutions and preferences were discussed. All other individual emotion categories were not significant, $p = .05$ (Table 6).

Children's emotion contributions. Means and standard deviations for the child emotion variables by group are displayed in Table 6. Similar to the parent's emotional contribution, an independent samples t test on total child emotion talk (Attributions, Behaviours, Causes, Resolutions and Preferences summed) showed no significant differences for emotion talk between typically developing children and children with ASD, $t(22) = -.75$, $p = .46$.

Further analyses were conducted to investigate differences between typically developing and children with ASD with regards to other aspects of emotion content. The only difference identified in independent samples t tests between the two groups of children was for the Resolution variable of emotion talk, with typically developing children talking more Resolution talk than children with ASD, $t(22) = -2.44$, $p = .02$. Again it should be noted that very few resolutions were discussed. All other individual emotion categories were not significant, $p = .05$ (Table 6).

Relations between parental emotion talk and children's emotion talk. Further analysis was conducted to investigate the relationship between parents' emotion talk and their child's emotion talk. Pearson product-moment correlations shows there were significant associations within conditions between parent and child emotion talk when reminiscing. Specifically, there was a positive association between the total emotion talk of parents of typically developing children and the total emotion talk of their child ($r = .63$, $p < .05$). A positive association was also found between total emotion talk of parents of children with ASD and the total emotion talk of their child ($r = .78$, $p < .01$).

It is also important to understand to what degree these relations between parent-child emotion talk are associated with children's verbal mental age. Pearson correlational analyses were conducted between types of parental and child emotion talk with verbal mental age partialled out. There was no change in the correlations for either group. That is, there continued to be a positive association between the total emotion talk of parents of typically developing children and the total emotion talk of their child ($r = .63$, $p < .05$). This positive association was also found between total emotion talk of parents of children with ASD and the total emotion talk of their child ($r = .78$, $p < .01$).

Table 6

Means and standard deviations for parental and child emotion and factual variables.

	<i>Parent Variables</i>					
	ASD		Typically developing		<i>t</i>	<i>p</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		
Factual Talk	15.69	8.08	20.47	9.56	-1.32	.20
Attributions	4.60	2.92	4.06	1.74	.55	.59
Behaviour	.65	.87	.46	.55	.63	.54
Causal	1.92	1.99	2.21	.97	-.46	.65
Outcomes	.26	.49	.48	.73	-.87	.39
Resolutions	.34	.43	1.26	1.36	-2.23	.04*
Preferences	1.74	1.24	2.91	1.41	-2.16	.04*
Total Parent Emotion Talk	9.50	3.84	11.38	3.19	-1.30	.21
	<i>Child Variables</i>					
	ASD		Typically developing		<i>t</i>	<i>p</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		
Factual Talk	13.98	8.93	13.88	6.14	.31	.98
Attributions	2.65	2.21	2.08	1.17	.79	.44
Behaviour	.33	.44	.28	.27	.37	.72
Causal	1.28	.76	1.83	.85	-1.67	.11
Outcomes	.23	.35	.28	.33	-.41	.69
Resolutions	.17	.29	.85	.91	-2.44	.02*
Preferences	1.65	1.24	1.99	1.41	.62	.54
Total Child Emotion Talk	6.32	3.38	7.31	3.02	-.75	.46

* $p = <.05$

Depression, Anxiety and Stress (DASS)

Means and standard deviations for DASS variables by group are displayed in Table 1. An independent samples *t* test on total DASS scores showed no significant differences between typically developing parents and parents of children with ASD, $t(22) = 1.21$ $p = .24$. Table 7 contains Pearson product-moment correlations between scores on the DASS and parental elaboration styles and emotion talk. There was no significant association between scores on DASS and parental elaboration for either group (Table 7). Furthermore, there was no significant association between scores on DASS and parental repetition for either group (Table 7). Further analysis investigated whether DASS would be associated with parent emotion talk. No significant relations were found between DASS and total parental emotion talk for either group (Table 7). Finally no significant relations were found between DASS and total child emotion talk for either group (Table 7).

Table 7

Correlations between total DASS and parent elaboration and emotion talk.

	1	2	3	4	5
Typically Developing Group ($n = 12$)					
1. Parental Elaboration	-				
2. Parental Repetition	.29	-			
3. Parent Emotion Talk	.43	.49	-		
4. Child Emotion Talk	.17	.11	.63*	-	
5. DASS Total	-.12	-.07	-.02	.24	-
ASD Group ($n = 12$)					
1. Parental Elaboration	-				
2. Parental Repetition	.31	-			
3. Parent Emotion Talk	.49	.37	-		
4. Child Emotion Talk	.50	.41	.78**	-	
5. DASS Total	.23	.10	.12	.08	-

* $p < .05$

Discussion

The primary goals of this study were to investigate how parents of children with ASD attempt to engage their children in conversations about the past and examine the degree of emotion content within these conversations. Although the role that parent's play in scaffolding their children's ability to engage in parent-child reminiscing has been studied in typical populations, it has not been considered in parents of atypical populations. To test the hypothesis that there would be differences between these two groups, parents of children with ASD were compared to parents of typically developing children with respect to elaboration style and emotion content. In addition, after matching children on verbal mental age, the memory and emotion contributions to conversations of children with ASD were compared with the contributions of typically developing children contributions. Finally, the differences between the two groups with regards to parent psychopathology were considered.

It was anticipated that the social and interaction difficulties characteristic of ASD would result in parents of children with ASD being less elaborative when reminiscing with their child. Furthermore, it was anticipated that parents of children with ASD would use less emotion talk during these conversations. Contrary to these hypotheses, the results showed no overall group differences between parents of children with ASD and parents of typically developing children with regards to parent reminiscing styles or in the amount of emotion talk used when reminiscing about the past. Furthermore, there were no differences between children with ASD and typically developing children in their elaborative styles, specifically in relation to the children's unique memory contribution to the conversation. Neither did children with ASD differ from typically developing children in their amount of overall emotion talk with their parent.

The current study's main findings, i.e. the unexpected similarities in the number of elaborations, repetitions and overall emotion talk between parents of typically developing children and parents of children with ASD, as well as the similarities between their children's unique memory and emotion contributions to conversations will be discussed in relation to the following areas: Social Cultural Developmental Theory, emotion talk, the bi-directionality of reminiscing, atypical populations and psychopathology.

Social Cultural Developmental Theory

The current study investigated how parents of children with ASD discuss past events with their children. The Social Cultural Developmental Theory was outlined as a useful framework for considering how parents talk with their children, and the longer term outcome this has for children's developing autobiographical memory (Fivush & Fromhoff, 1988; Fivush et al., 1996). In particular it was the process of parent-child reminiscing that was of most interest in the current study. The findings in the current study provide support for the role parent-child reminiscing plays in scaffolding the memory and emotion contributions in children with ASD.

In particular, the lack of group differences in parent-child elaboration styles provides support for the well established finding that parents reminisce along an elaboration continuum (Fivush & Fromhoff, 1988; Fivush et al., 1996; Fivush et al., 2006), with this finding being extended to parents of an atypical population, namely ASD. Specifically, the current study suggests that parents of children with ASD are no less elaborative and no more repetitive than parents of typically developing children.

Importantly, the associations found in the current study between the style parents' of typically developing children use when talking about the past and children's contribution to conversations are similar to those found in past research (Farrant &

Reese, 2000; Fivush & Vasudeva, 2002; Flannagan, Baker-Ward, & Graham, 1995; Harley & Reese, 1999; Welch-Ross, 1997). Furthermore, this study extended the link between parental elaboration style and children's memory contributions to parents of children with ASD and their children.

How might the Social Cultural Development Theory account for the similarities between both the groups of parents and children? The Social Cultural Developmental Theory proposes that children learn through their parent's scaffolding their reminiscing experience (Fivush, 1991) and the current study suggests this process provides a reasonable explanation for the similarity between the groups. Moreover, the parents of children with ASD were no less elaborative, indicating they use the techniques associated with a high elaborative style ('*wh*' questions, yes/no questions, statement elaborations and evaluations) in building a shared story, regardless of their child's contribution. The findings suggest that the parents of children with ASD were able to continue to scaffold their child, despite the individual variability within their children's development. This in turn may have seen the children with ASD learn the necessary skills of reminiscing through their parent, possibly assisting them in contributing to the conversation at a similar level to that of the typically developing child.

Support for this view is bolstered by previous studies which have found that children with ASD benefit from being scaffolded by an experimenter. Goldman (2002), for example, found that children with ASD's ability to contribute unique memory to a conversation improved when they were scaffolded (through verbal prompts) by an experimenter. Furthermore, Bruner and Feldman (1994) showed that when questioned and scaffolded, through the experimenter asking further questions, children with ASD were able to use emotional causal connectors to describe a character's motivation. In these examples it has been evident that when given support, children with ASD still performed below the

standard of comparison groups. Importantly, the current study was interested in the role parents play in scaffolding their children. Therefore the current study extends previous work by speculating that when supported during parent-child reminiscing, parents of children with ASD may have the ability to improve their child's contributions and emotion talk, and in this setting, the improvement might be at a level comparable to that of typically developing children.

In summary, the results suggest that parents of children with ASD provide scaffolding for their children, in the form of elaborative reminiscing, and this is likely to have reduced the differences between the two conditions. Parent-child reminiscing has been proposed as one of the critical ways in which children later come to develop autobiographical memory. While beyond the scope of this study, it is speculated that this may have possible effects for these children's future autobiographical memory.

Furthermore, while children with ASD were able to contribute a similar amount as typically developing children, it is important to consider whether these children have the ability to understand *why* they are contributing. According to Reese and Brown (2000), children learn not only what and how to remember but they also learn at a young age *why* it is important to remember. Goldman (2002) suggests children with ASD learn how to tell stories but their lack of high points, fewer resolutions and end markers in their storytelling suggests they do not understand *why* we tell stories. While the current results suggest parent-child reminiscing is associated with child memory contributions, future research that includes a measure of social and self understanding may also be beneficial in determining whether children with ASD understand why it is important to remember.

Emotion Talk

It is conceivable that parents use relatively little emotion talk with young children and this may account for the similarities in the amount of emotion talk used by both groups of parents. Combined with the small sample of participants, a lack of emotion talk may have resulted in too little variance between the two groups to identify differences. This may be plausible given the low means of emotion talk for both the parents and the children groups. This explanation, however, is considered unlikely to fully account for the similarities.

The current study proposes that the explanation given above to account for the similarities in parent elaboration and child contributions, may also account for the similarities between both the groups of parents and children with regards to total amount of emotion talk. Specifically, the positive association between parent emotion talk and child emotion talk suggests that parents are scaffolding and teaching both their elaboration and emotional style of reminiscing to their children. Past research has found that parental emotion talk has been associated with child emotion understanding (Kuebli et al., 1995). While the current study did not measure child emotion understanding, the results do suggest that parental emotion talk is associated with child emotion talk between typically developing parent-child dyads as well as between children with ASD and their parents.

Furthermore, the predictive association between parent emotion talk and their children's emotion understanding was seen be reliant upon children having developed the ability to discuss and label emotions (Laible, 2004b). It is speculated that the children with ASD in the current study may have been able to discuss and label emotions due to the simplicity of the emotion task. According to Frith (2003), children with autism are capable of expressing basic instinctive emotions (e.g. happiness and

anger) as these emotions do not require an understanding of mental states. While in the current study parents were asked to talk (rather than express emotions) with their child about past emotion events (happy, sad, angry and scared), it is possible that the discussion of such basic emotions may not have proved difficult for either group of children. More complex emotions, however, such as relief, guilty, loneliness have been found to be more difficult for children with ASD to understand (Golan et al., 2008). Further research would benefit from investigating whether the similarities between the two groups of children remain if the conversations included more complex emotion talk.

In summary, the associations between parent emotion talk and child emotion talk were found for both the typically developing group and the ASD group. The similarities between the groups may be attributable to the limited quantity and complexity of emotion talk at this age. Alternatively, it is possible that the current study suggests, when scaffolded by their parents, children with ASD are able to use emotion talk to the degree that it is associated with the amount of emotion talk of their parents. Fivush et al. (2003) suggests that talking about the emotion aspects of an event is the first step towards making an event meaningful and memorable, and therefore this association between parents and children's emotion talk has important implications, particularly for the child with ASD who may have social and communication difficulties.

Bidirectionality of reminiscing

Parent-child reminiscing is bidirectional, in that both the parent and child contribute to the process (Farrant & Reese, 2000; Fivush et al., 2006; Reese & Farrant, 2003). The current study investigated two areas seen to impact on the bidirectional process: language and child's interest (Fivush et al., 2006).

Language is essential for parent-child reminiscing to take place. In the current study typically developing children and children with ASD were matched on verbal mental age to reduce language differences between the two groups. Furthermore, the coding system used in this study was based on previous studies used with typically developing children (Haden, 1998; Reese et al., 1993) with one of the advantages of this system is that it accounts for language differences in children. When matched on verbal ability, children with ASD were no less likely to contribute unique memory contributions towards conversations with their parents than were typically developing children.

It is also important to consider whether individual variability in children's language plays a role in shaping parent reminiscing styles? Specifically, in this study there was no relationship between children's verbal mental age on the PPVT-4 and parent-child memory conversations styles (parental repetition, parental evaluation, child's memory contribution or child's placeholders), except for the association between verbal mental age and parental elaboration for children with ASD. Furthermore, partialling out verbal mental age in the key analysis provided no change to the results. The current findings provide tentative support for Farrant and Reese (2000) who suggest that while language ability is important in parent-child reminiscing, the relationship between children's memory contributions and maternal reminiscing style it is likely that language alone can not account for these associations. This has been further extended by Reese and Brown (2000), who suggest that by the time children reach late preschool age, language is less strongly associated with mothers' elaborative style. Findings in the current study potentially extend previous findings, that even in atypical populations child language skills, which are important in the child's ability to reminisce, may not shape parent reminiscing styles by the time children reach late

preschool age. This is in line with Fivush et al. (2006) who suggest there may be a language threshold and once met it has little impact on the reminiscing process.

It has been suggested that the bidirectional nature of reminiscing is influenced by children's interest up to 25 months and then mediated by maternal reminiscing style (Farrant & Reese, 2000). Children's interest in conversations has been defined as taking appropriate conversation turns in the absence of contributing new memory information (e.g. 'I don't know') (Farrant & Reese, 2000). It was suggested earlier that enduring social interaction difficulties in children with ASD might result in an ongoing lack of interest in conversations, which would lead to decreased future facilitation of interest from parents, thus resulting in reduced child contributions due to the children's impact on the parental reminiscing style. There were no group differences, however, between the children in their interest (as measured by placeholders) in the conversation. This finding suggests the social interaction difficulties characteristic of ASD has not impacted on the ability of the children involved in the current study to show basic interest in conversations with their parents.

There was, however, an association between parental elaboration and interest (defined as placeholders) in the ASD group. It is possible that while findings of the current study suggest no association between parent's elaboration styles and interest in typically developing children, the reminiscing style of parents of children with ASD may be more influenced by their children's interest. That is, while in typically developing children interest was not associated with parental reminiscing styles by late preschool age (Farrant & Reese, 2000) in children with ASD their interest in conversations may have longer lasting association with parental reminiscing styles. Further research is needed to explore the area of bidirectionality between parents and children with ASD. This discussion will now turn to the specific characteristics of

children with ASD and to particular factors which may assist further in understanding the lack of differences found between the two groups in the current study.

Atypical children

It was hypothesised that children with ASD would have difficulty engaging in parent-child reminiscing. This hypothesis was based on the social and language difficulties characteristic of ASD (Landa et al., 2007; Volkmar, 1987). What can account for the similarities between the typically developing group of children and the children with ASD, with regards to their unique contribution and their interest in the conversations?

Several factors may have contributed to the similarities. As highlighted above, it is proposed that parents play an important role in scaffolding their children, and it is suggested this may be largely responsible for the similarities. It is possible, when faced with a conversation partner who is accustomed to these difficulties, that the social processes thought to impact on parent-child reminiscing become less detrimental. That is, for parents of children with ASD their scaffolding may extend to accommodating social difficulties such as joint attention, decreased desire for social stimuli or a lack of understanding of different perspectives. For example, the parent of a child with ASD (or a parent of a typically developing child) may continue to ask elaborative questions and provide evaluations for their child's response, despite the child's lack of joint attention or understanding that the parent may have a different perspective on the event being discussed. Parent's sustained scaffolding may encourage the child to continue contributing to the conversation.

This explanation alone, however, may be insufficient to explain the similarities. ASD symptoms fall along a continuum with the range of symptoms and severity varying for individual children (DSM-IV-TR, 2000). It is therefore important to reflect on the children with ASD who participated in this study. Firstly, all children had language abilities at a

level which allowed them to participate in the study and be matched with typically developing children. In addition, parents agreed to the child's involvement, understanding that it would involve their child talking about (albeit in a limited way) events that had happened in the past. Specifically, the children in this study may have been relatively high functioning children with ASD and this may account for the similarities between the two groups of children.

Furthermore, the continuum and variety of ASD symptoms suggests that this atypical population are not solely defined by impairments and dysfunctions. As this was the first study to investigate parent-child reminiscing in children with ASD, it is possible the results suggest that when language is controlled, the social process of reminiscing is not impaired for this group. Specifically, reminiscing focuses on talking about past events, and when facilitated by an adult, children with ASD may be able to contribute to the conversation to the same level as a typically developing child.

In summary, children with ASD vary with regards to their social and language difficulties. In this study it would appear that the children with ASD were able to engage in the process of parent-child reminiscing. This may have been due to parent scaffolding, combined with a relatively high functioning group of participants, for whom the social process of reminiscing was not beyond their capability.

Psychopathology

The current study found no significant differences on the DASS scores between parents of typically developing children and parents of children with ASD. The similarity between the two groups of parent's stands in contrast to the findings of Bitsika & Sharpley (2004) and Wolf et al. (1989) who found when compared to parents of typically developing children parents of children with ASD had higher levels of stress, anxiety and depression.

What might account for the similarities between the two groups of parents? It is possible that the small sample size, combined with the potential high functioning ASD group has resulted in reduced variability between the two groups. Furthermore, it is possible that various factors beyond the scope of assessment in the current study may be at play when considering the level of psychopathology in parents of children with ASD. For example, Bitsika and Sharpley (2004) highlight that attendance at a specialist school was associated with lower parental stress. In addition, behavioural difficulties, poor communication skills and a lack of independence were the kinds of difficulties that presented problems for parents and it is possible that this group of children with ASD were low in these factors. Given the ability of the children with ASD in the current study to use language and therefore communication, as well as the qualitative lack of observed behavioural difficulties during the interviews, these explanations may be plausible.

Furthermore, levels of anxiety and depression and stress were found to be associated with social supports surrounding the family, as well as perceptions about the ability of other family members in being able to support the child with ASD (Bitsika & Sharpley, 2004; Wolf et al., 1989). In addition, the mere fact that the parents of the children with ASD felt able to participate in a research study that looked at their parenting skills may suggest these parents were low in psychopathology. In summary, while it was surprising there were no group differences in levels of parent psychopathology, this finding may be attributed to the self selection of the parents in the study, as well as other factors outside the scope of the current study.

Limitations

Although this study is the first in the literature to examine the ways in which parents of children with ASD attempt to engage their children in reminiscing, several limitations must be acknowledged. Firstly, the current study included a small participant sample.

Given this, it was not feasible to separate participants within the ASD group by subgroups. Specifically, the sample did not reflect a homogeneous group in regards to the severity of impairment, presence of symptoms, level of IQ and verbal ability. It is possible that these factors have contributed to the non-significant results between the two groups and therefore this makes it difficult to generalise the results. Further research would benefit from a larger sample size, which distinguishes both autism and Asperger's subgroups, and examines individual differences between as well as within the groups.

Due to the concurrent nature of the present study it is not possible to make causal claims about the ability of parents of children with ASD to scaffold their children, through using parent elaborations and emotion talk in a way similar to that of typically developing parents. Steps toward clarifying such issues could include research examining firstly, whether parent elaboration and emotion talk has longitudinal associations with children's contributions and secondly, whether experimental studies, training parents in elaboration and emotion talk would be useful in improving children's contributions to conversations.

The purpose of this study was to investigate an atypical group and to compare the results to previous research. The coding system used in this study was guided by previous research and was effective in that it allowed comparison of an atypical population using a system based on elaboration style and emotion talk. Another research direction, however, would be to go beyond coding the style and emotion content of reminiscing to further explore the story built between parent and child. For example, given the social and language difficulties facing children with ASD, would there be differences in the content such as social references or story structure? The content of the conversations of children with ASD may have important implications on

the process parents use when they assist in developing their autobiographical memory. It is possible, as conversation partners that parents may have to try harder to engage and maintain a conversation, given the social role of reminiscing. While parents may be willing, (particularly when involved in a research study) other conversation partners may not. Such refining and expanding of the coding system would benefit the understanding of parent-child reminiscing in children with ASD.

Implications

This study has provided the first step in investigating parent-child reminiscing in an atypical population. The lack of differences between the typically developing group and the ASD group, as well as the associations between parent and child style and emotion talk, provides an encouraging basis on which to speculate about the role of parents in scaffolding their children with ASD.

Parent scaffolding, through reminiscing is found to be associated with children's concurrent contributions and their future autobiographical memory when talking with an independent interviewer (Farrant & Reese, 2000; McGuigan & Salmon, 2004; Peterson et al., 1999; Reese & Newcombe, 2007). The findings that no differences occur between the two groups in the current study raise the possibility that children with ASD, who have highly elaborative parents, would have not only improved concurrent contributions, but also improved independent autobiographical memory and emotion talk. The current study did not assess independent autobiographical memory recall. A useful focus of further research with considerable applied relevance would involve the group of children first reminiscing with their parent, and then reminiscing with an experimenter about emotional aspects of past events, in order to establish if these results generalise outside of the parent-child relationship. As highlighted earlier, autobiographical memory plays an important role in developing a sense of self, as well

as understanding social and directive functions (Bluck, 2003; Nelson, 2003; Pasupathi, 2003).

In typical populations, parent training in a high elaborative style is found to be effective in assisting children's memory contributions, both concurrently and longitudinally (McGuigan & Salmon, 2004; Peterson et al., 1999; Reese & Newcombe, 2007). The social and language difficulties associated with ASD does not appear to compromise parents of children with ASD's elaboration styles, suggesting similar positive effects of parent training may be possible for this group. Furthermore, given Goldman's (2002) finding that parents of children with ASD are less likely to engage in spontaneous talk, it seems advisable these parents understand their ability to enhance their child's future autobiographical memory through the essential process of talking.

Finally, parent-child reminiscing has the added advantage of not only helping autobiographical memory. Talking about the past through narratives is seen as 'decontextualized speech' which has been found to be associated with literacy acquisition. For children with ASD who have language delays, reminiscing may not only help with improving future autobiographical memory but additionally it may help with their literacy acquisition (Peterson et al., 1999).

Conclusion

The current study is the first to investigate the style and emotion practices used by parents of children with ASD when reminiscing about the past. When verbal mental age was controlled, parents of children with ASD were able to scaffold their child's memory contributions to conversations to the same degree that typically developing parents scaffold their children. This finding replicates previous research and extends the knowledge in this area to an atypical population. It also, however, raises interesting questions regarding the specific mechanisms through which parents might scaffold their

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children. For example, is it that parents of children with ASD are able to compensate for their child's social and language difficulties when reminiscing, or are the social and language difficulties associated with ASD not involved in the reminiscing process?

The similarities between typically developing parents and parents of children with ASD are encouraging, given that parent-child reminiscing is deemed to be critical processes in assisting children develop an independent autobiographical memory.

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Appendix

Style.

(1) Parental Elaborations

(a) Memory-elaboration questions (**MQ-ELAB**) included any open ended questions by the parent (e.g., *wh-* questions) aimed at encouraging the child to produce a new piece of memory information (e.g., What was your favourite part or 'Tell me about...').

(b) Yes-no elaborations (**YN-ELAB**) were coded when the parent asked the child a question that required either a confirmation or denial of the new information (e.g., Was that a happy time?). In addition forced choice questions (e.g., 'Where you happy or sad?') were coded as YN-ELAB due to the minimal demand they placed on children to supply additional memory information (following Haden, 1998).

(c) Statement-elaborations (**ST-ELAB**) were used when parents provided new information about the event without the child needing to respond (e.g., 'You do need to eat good food'). In addition, tag questions had the 'tag' disregarded and the question considered a statement (e.g. 'we saw the shells, ahy?').

(2) Parental Repetitions

Parental repetitions occurred when the parent repeated the content/idea they had said in a previous conversation turn. Repetition was applied to memory questions (**MQ-REP**), yes-no elaborations (**YN-REP**) or statement-elaborations (**ST-REP**).

(3) Parental Evaluations

Parental evaluations (**M-EVAL**) were coded by instance instead of clause. Parental evaluations (**M-EVAL**) included immediate confirmation or denial following the child's conversation turns. The evaluation might include 'yeah', 'that's right', 'no', or repeating what the child had just said (e.g., 'The beach'). It was possible for parents to have more than one evaluation code in a conversation turn if they evaluated the child's utterances in more than one way (e.g. 'That's right (M-EVAL) you did get a hole in one (M-EVAL)'). Parental evaluations also included parent summaries of past info of the child.

(4) Parental Placeholders

Parental Placeholders (**PPL**) were coded when the parent took a legitimate turn without adding any new information (e.g., "Cool", "Mm, 'I don't know"). Two or more of the same type of memory placeholders in a single turn were counted as a single memory placeholder. This code was only given when the PPL was the only contribution to the conversation turn, otherwise the PPL was ignored and considered as a false start.

(5) Children's Elaborations

(a) Memory-elaboration (**MEM**) included any **new** information by the child about the past event being discussed (e.g., Mother says 'What did we see at the beach?' and child responds 'Shells' (**MEM**)). Included under this code were any requests for information by the child (e.g., 'Why do we have to go to the beach?').

(b) Unclear-elaboration (**UNC**) included any new information where the meaning of the utterance was unclear. The information was deemed to be related to the current thread of conversation and not considered to be OFF topic information.

(6) Children's Placeholders

Memory placeholders (**PL**) were coded when the child participated by repeating their own previous comment or where the child took a legitimate turn without adding any new information (e.g., 'I don't know', 'uhmm',). Two or more of the same type of memory placeholders (e.g., "I don't know. "You tell me.") in a single turn were counted as a single memory placeholder.

(7) Children's Evaluations

Children's evaluations (**C-EVAL**) were coded by instance instead of clause. Children's elaborations (**C-EVAL**) were coded when the child responded by either confirming or denying the mother's previous comments (e.g., Mother says 'Was that a happy time?' and child responds 'yes, yeah, nah'). Also included were child repetitions of what the mother has just said (e.g. M: We went to the park, C: The park). It was possible for children to have more than one evaluation code in a conversation turn if they evaluated the parent's utterances in more than one way (e.g. C: Yeah, the park).

(8) Children's off-topic talk

The code of off-topic (**OFF**) included any discussion of topics unrelated to the event being discussed.

(9) Other utterances

A range of codes were given to content not covered above:

(a) Metamemory comments (**MMC**): feedback on the child remembering (e.g., 'You're doing great at remembering our trip').

(b) Fill-in-the-blanks (**FIB**): sentences where parents prompted the child's remembering (e.g., 'We talked along the pier until we got to...?').

(c) Parental off-topic talk (**POT**): e.g., 'Sit still, we're still talking'.

(d) Child associative comments (**CAC**): children talked about related events (e.g., 'like that dog we saw the other day') or where talk of the past event led into related future or story like conversation.

(e) Parental associative comments (**PAC**): parents talked about related events (e.g., 'That was another trip to the park') or where talk of the past event led into related future or story like conversation.

(f) Parental unclear elaboration (**PUNC**): includes any new information about the past event where the meaning of the utterance is unclear.

(g) Unclassifiable comments (**UC**): e.g., 'Now I will need to think about that'.

Many of above categories were infrequent or not theoretically relevant to this study and thus were not included in analyses.

Emotion.

(1) Attribution (EA+, EA-)

Positive and negative emotional state attributions (e.g. 'you were so excited, 'you looked sad', 'I was angry').

(2) Behaviour (EB+, EB-)

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Facial expressions and behaviour directly associated with positive and negative emotional states (e.g. 'you were crying'). That is, specific emotion behaviour that is directly linked to the emotional attribution and demonstrates the emotion e.g. child becomes upset and then starts to cry or is angry and frowns or is happy and smiles.

(3) Cause (EC+, EC-)

Statements and questions regarding the cause of positive and negative emotional states (e.g. 'why were you angry?' 'you were scared because you saw the spider!', 'was nana's funeral a sad day for you').

(4) Outcomes/Consequences (EO+, EO-)

Direct positive and negative outcomes of the emotion or behaviour that do not resolve the emotion (e.g. 'when you got the balloon you were so happy that he gave you another'). Look for words like 'that' and also look for because this happened – then that happened.

(5) Resolutions (ER)

Resolutions of negative emotions that help solve, negate, modify or directly change the emotion (e.g. 'but really it was OK, because I gave you a big hug'). That is, you were sad but when I hugged you I wanted to make you feel happy or no longer sad.

(6) Preferences (PR+, PR-)

Statements about liking or disliking something that do not directly refer to emotions (e.g. 'I loved jumping on the trampoline', 'I like this', 'I don't like that'). This code is when the unit is eluding to an emotional state but not directly talking about the emotion e.g. I loved jumping on the trampoline is eluding to this making the child happy – but it does not directly talk about being happy.

(7) Factual (F)

Any unit that did not receive emotional code was deemed to be factual in nature (e.g. What did we see at the beach?).