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Coaching in maternal reminiscing with preschoolers leads to elaborative and coherent personal narratives in early adolescence

Elaine Reese*, Lucy Macfarlane, Helena McAnally, Sarah-Jane Robertson, Mele Taumoepeau

Department of Psychology, University of Otago, Dunedin 9054, New Zealand



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ABSTRACT

This long-term follow-up of an early childhood training study (Growing Memories) to promote elaborative reminiscing tested continued effects on mother-child reminiscing and on adolescents' narrative coherence. Of the original 115 families, 100 participated when their children were 3.5 years of age and 76 participated when their children were young adolescents ($M_{\text{age}} = 11.2$ years). Mothers and children reminisced about a positive event and a negative event at each timepoint, and adolescents narrated high points and low points. Mothers and children who had participated in the reminiscing intervention in early childhood remained more elaborative in dyadic reminiscing over time. Moreover, adolescents whose mothers had participated in elaborative reminiscing training in early childhood told more coherent low-point narratives (with respect to context and theme) than adolescents of mothers in the control group. These long-term benefits for the quality of mother-adolescent reminiscing and adolescents' narrative coherence have implications for theories of narrative identity development and for designing interventions in early childhood to foster autobiographical memory, which may help later understanding of difficult life events.

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* Corresponding author.

E-mail address: ereese@psy.otago.ac.nz (E. Reese).

Introduction

Parents in Western cultures reminisce frequently with their young children about a diverse range of past events (Bohanek et al., 2009; Nelson, 1993; Wang, 2013). More than three decades of research have shown the importance of reminiscing with young children for their autobiographical memory, narrative, and emotion understanding (see Fivush, Haden, & Reese, 2006, Salmon & Reese, 2016, and Wareham & Salmon, 2006, for reviews). Theoretically, this work stems from a sociocultural perspective on the importance of conversation for children's cognitive development (Vygotsky, 1978). Memory theorists have adapted Vygotsky (1978) theory specifically for the role of adult-child conversations about their personal past for fostering young children's cognitive and socioemotional development (e.g., Fivush & Nelson, 2004; Haden & Ornstein, 2009; Nelson & Fivush, 2004; Peterson, Jesso, & McCabe, 1999; Reese, 2002, 2018). All these theories propose that the way adults talk about past autobiographical events is critical for children's memory and narrative development as well as for their understanding and expression of emotions. Fivush (2007) proposed that parent-child reminiscing about negative events is particularly important for children's socioemotional development. Many theorists have proposed that these effects of reminiscing with young children are conceptually important for adolescents' later narrative identity (their life stories) and their socioemotional development (e.g., Fivush, Habermas, Waters, & Zaman, 2011; McLean, Pasupathi, & Pals, 2007; Reese, 2009). The current study focused on the long-term effects of a mother-child reminiscing intervention for mother-adolescent conversations about emotionally charged events and for adolescents' narrative coherence.

Reminiscing with children

Specifically, when adults discuss shared past events in elaborative and confirming ways, children are hypothesized to be better able to access their own memory representations verbally and to describe their memories through language. Most of the extant research has focused on mother-child conversations because of the prevalence of mother-child talk about the past during early childhood from a young age and across cultures (see Eisenberg, 1985; Miller, Potts, Fung, Hoogstra, & Mintz, 1990; but see Reese & Fivush, 1993, and Zaman & Fivush, 2013, for research on father-child reminiscing). These theories posit a special role for discussing *shared* past events in which both partners have access to a memory representation for the same event. This research has demonstrated that mothers who discuss past events in an elaborative fashion—especially by asking children open-ended questions containing new information about the events and confirming children's responses—have children who go on to produce more detailed and more accurate memory accounts themselves over time both with their mothers and with others (e.g., Farrant & Reese, 2000; Haden, Ornstein, Rudek, & Cameron, 2009; Hudson, 1990; Larkina & Bauer, 2010; Peterson & McCabe, 1992; Reese, Haden, & Fivush, 1993). These studies all are correlational, but they have taken into account alternative explanations of the long-term associations between maternal elaborative reminiscing and children's memory narratives such as maternal education, children's language development, and children's earlier language and recall skills. Most of these longitudinal studies end in early childhood, but two New Zealand samples (both different from the current New Zealand sample) have been followed into adolescence (Jack, MacDonald, Reese, & Hayne, 2009; Reese, Jack, & White, 2010; Reese & Robertson, 2018). In both samples, maternal elaborative reminiscing is a strong and unique predictor of adolescents' earlier memories as well as adolescents' longer, more insightful, and more emotionally expressive autobiographical narratives. Yet both of these longitudinal studies were correlational, and thus the causal effect of maternal reminiscing was uncertain.

The experimental work on adults' reminiscing with young children, however, supports these correlational findings. A growing body of short-term and long-term experimental tests of the effects of elaborative reminiscing demonstrates the causal nature of the link with children's autobiographical memory narratives. These experimental studies have been conducted with mothers (Cleveland & Morris, 2014; Peterson et al., 1999; Reese & Newcombe, 2007; Valentino, Comas, Nuttall, & Thomas, 2013; Van Bergen, Salmon, Dadds, & Allen, 2009) and with researchers (see Cleveland & Morris, 2014; Hedrick, Haden, & Ornstein, 2009; McGuigan & Salmon, 2004; see also Reese, 2018, for a

review). For the purpose of comparability with the current study, we focus here only on research with mothers.

The typical paradigm is to first collect baseline data on mother–child reminiscing and then teach a randomly assigned subgroup of the mothers to engage in enriched forms of elaborative reminiscing. These coaching sessions take various forms, but they are typically one-on-one sessions in which researchers first explain the importance of reminiscing and then teach mothers specific techniques for elaborative reminiscing (e.g., asking open-ended elaborative questions, following in and extending on children's responses). Some of the interventions focus specifically on elaborative reminiscing about emotions and emotional events. After an intervention phase of varying lengths and with diverse booster sessions, a posttest of mother–child reminiscing is conducted to establish whether mothers in the coaching group did indeed develop more elaborative reminiscing with their young children in comparison with mothers in a control group who did not receive special coaching in reminiscing. In some of these studies, follow-ups have been conducted 6 months to a year later. These studies have demonstrated that mothers from diverse backgrounds are able to adopt the elaborative reminiscing techniques (e.g., Peterson et al., 1999; Reese & Newcombe, 2007; Valentino et al., 2013; Van Bergen, Salmon, & Dadds, 2018). When manipulation checks have been conducted a year later, mothers are found to still be using most of the techniques they were taught (e.g., Reese & Newcombe, 2007).

These changes in maternal reminiscing translate to benefits at posttest for children in the form of longer and more detailed narratives (Peterson et al., 1999; Reese & Newcombe, 2007) that are more coherent (Cleveland & Morris, 2014), contain more emotion references (Valentino et al., 2013), and sometimes contain more complete and accurate memories with a researcher (Reese & Newcombe, 2007; but see Valentino et al., 2013, and Van Bergen et al., 2009, for exceptions). In one study focusing on emotional content, mothers who received elaborative reminiscing coaching also reported generalizing the techniques to their everyday talk about ongoing events (Van Bergen et al., 2018).

This experimental research demonstrates the robust effects of coaching mothers in elaborative reminiscing for children's autobiographical narratives. Yet all these studies to date have focused on the early childhood period, with the longest follow-ups taking place a year after the intervention had ended (Peterson et al., 1999; Reese & Newcombe, 2007). How enduring might we expect these effects of enriched reminiscing to be both in the way that mothers continue to reminisce with their children at older ages and for children's more mature memory narratives? Children's autobiographical memory continues to develop well past early childhood in the number of details recalled (Picard, Cousin, Guillery-Girard, Eustache, & Piolino, 2012), in the coherence of their event narratives (see Reese et al., 2011), and in their meaning making or autobiographical reasoning (e.g., Habermas & de Silveira, 2008; McLean & Breen, 2009; Reese, Chen, et al., 2014). To fully evaluate theories of the role of adults' reminiscing with young children, it is critical to know whether these effects are maintained for dyadic reminiscing with adolescents and whether any effects translate to benefits for adolescents' narrative coherence.

Reminiscing with adolescents

In line with Arnett (2000), we define *adolescence* as beginning at 10 or 11 years of age and ending at 18 or 19 years. There is scant extant research on mother–adolescent reminiscing, and it is all cross-sectional in design. For instance, in one study of mother–adolescent reminiscing (age range of 11–18 years and mean of 13.7 years), mothers asked few elaborative questions about emotional events; most of their utterances were instead in the form of confirmations of adolescents' statements (McLean & Mansfield, 2011). In another study with mid-adolescents (age range of 13–16 years), mothers used a technique called “move-alongs” (similar to elaborative statements) in 97% of their conversational turns about shared challenging experiences and also a sizable percentage of negations (23% of conversational turns) (Manczak, McLean, McAdams, & Chen, 2015). Together, these studies indicate that mothers may provide more elaborative statements and ask fewer elaborative questions when reminiscing with their adolescents than when reminiscing with young children and that mothers may be more evaluative of their adolescents' responses.

Adolescents' narrative identity

Although children can provide understandable narratives of single events from early childhood, these narratives become more coherent with age (Bohn & Berntsen, 2008; Fivush, Haden, & Adam, 1995; Köber, Schmiedek, & Habermas, 2015). It is not until early adolescence that they can select and narrate critical events such as high points, low points, and turning points (Habermas & Reese, 2015). These critical event narratives are the building blocks of the life story (McAdams, 1995), which undergoes rapid development throughout adolescence (Habermas & Bluck, 2000; Habermas & Reese, 2015). The coherence of these critical event narratives is an indicator of narrative identity hypothesized to arise from early elaborative mother–child conversations (Fivush et al., 2011; McLean et al., 2007). Yet, to our knowledge, no longitudinal research has yet traced narrative coherence in adolescence back to early mother–child reminiscing. Narrative coherence can be measured in multiple ways, with a primary focus on autobiographical reasoning, by which the narrator links past events to the present self (see Habermas & Bluck, 2000; McLean et al., 2019). In early adolescence, because young adolescents are not yet reliably engaging in autobiographical reasoning (Habermas & Reese, 2015), we propose that the best measures of coherence are whether the narrative provides context (time and place), chronology within the event, and an overall theme or sense of significance (see Reese et al., 2011). In this study, we coded adolescents' critical event narratives (about high points and low points) for these three dimensions of coherence.

The current study

The current study is a long-term (9-year) follow-up of a sample of mothers and children who participated in a reminiscing intervention study in early childhood (Growing Memories; see Reese & Newcombe, 2007). The study began with a baseline phase at 19 months of age (henceforth 1.5 years) in which mother–child reminiscing was collected in the home alongside measures of children's language development. Mothers were randomly assigned to an elaborative reminiscing training group or control group after this baseline phase (see Fig. 1). At the 21-, 25-, and 29-month timepoints, researchers taught the mothers in the training group how to reminisce in a more elaborative fashion with their young children. A short-term posttest was conducted at 32 months of age (henceforth 2.5 years), and a longer-term posttest was conducted when children were 44 months of age (henceforth 3.5 years). The training was successful; these posttests showed that mothers in the intervention group used more open-ended elaborative questions at both timepoints, and they confirmed children's responses more often than mothers in the control group.

At 3.5 years, mothers in the intervention group continued to use not only more elaborative statements but also more open-ended repetitive questions during reminiscing about positive and negative events, in which they repeated their own open-ended questions more often. Children whose mothers were in the intervention group provided more detailed memory responses with their mothers at 2.5 and 3.5 years and provided more detailed narratives with a researcher at 3.5 years (specifically including more actions) when their mothers had been coached in elaborative reminiscing.

When children in this sample were 11 years old, we had the opportunity to conduct another long-term posttest. We asked mothers to reminisce with their now adolescent children about a positive event and a negative event of their choice. We coded these mother–adolescent narratives for type of elaboration and emotional content, in line with prior research (e.g., Fivush, Marin, McWilliams, & Bohanek, 2009). For the researcher-led memory interview, we invited adolescents to tell us about one positive event and one negative event in their lives, framed as a high point and a low point.

To the best of our knowledge, this study is the first experimental test of sociocultural theories of long-term effects of reminiscing for adolescents' narrative identity by conducting a long-term follow-up in early adolescence of a childhood reminiscing intervention study. Thus, our primary aim was to examine long-term effects of the reminiscing intervention for mother–adolescent reminiscing and for adolescents' narrative coherence. Our first hypothesis was that mothers who had received coaching in elaborative reminiscing when their children were toddlers would still be using at least some of the elaborative techniques that we had taught them despite the fact that mothers had not received any further training in the intervening years and that their adolescent children would

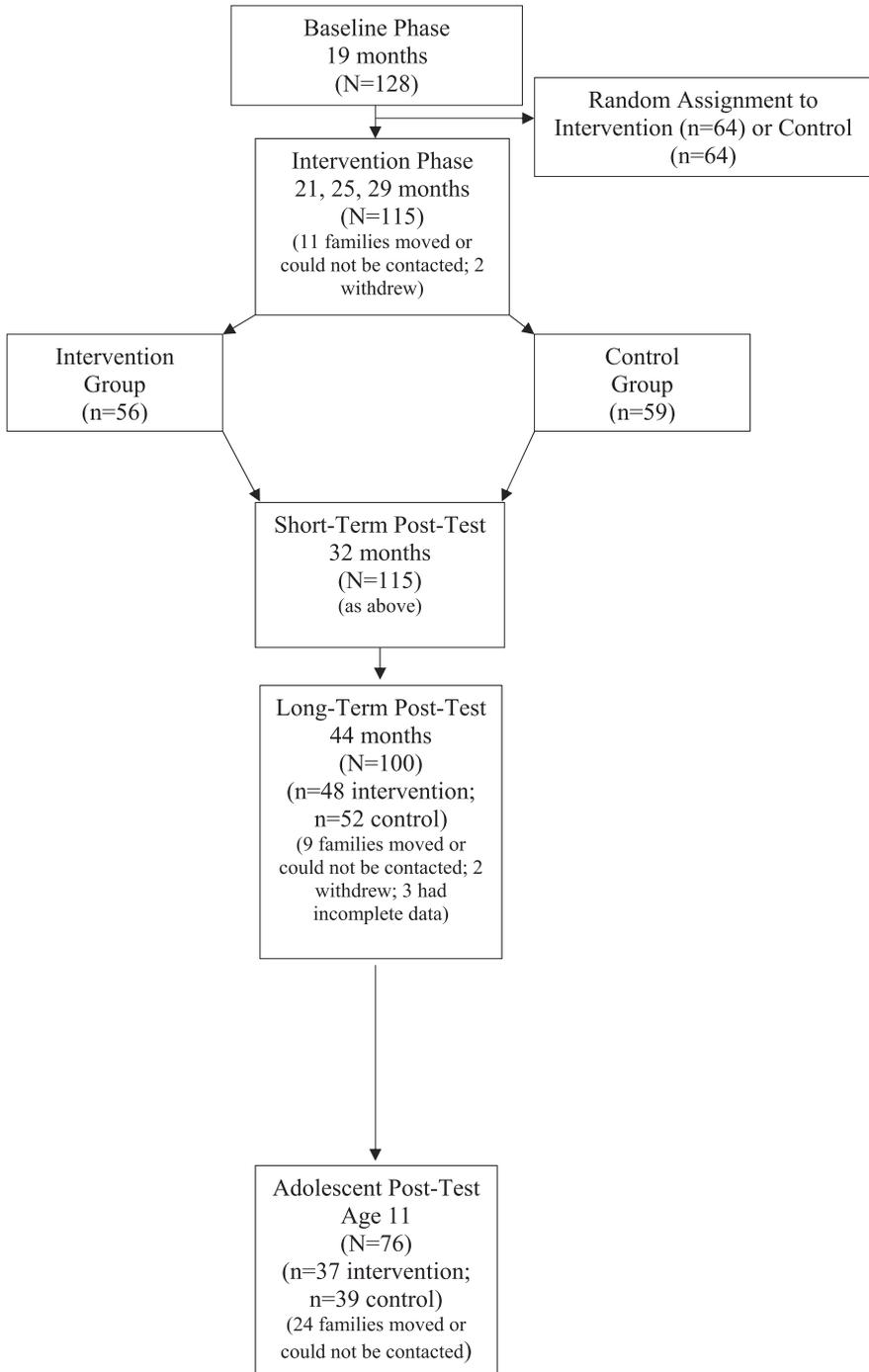


Fig. 1. Flowchart of study participants over time.

concomitantly be more elaborative in dyadic reminiscing. Our second hypothesis was that adolescents' critical event narratives would be more coherent (across context, chronology, and theme) if their mothers had been in the intervention group. Structural and thematic coherence are important indicators of narrative identity in early adolescence and into adulthood (see Adler, Lodi-Smith, Philippe, & Houle, 2016; Reese et al., 2011, Reese et al., 2017). Because we were particularly interested in personal narratives about emotional events (e.g., Ackil, Van Abbema, & Bauer, 2003; but cf. Waters, Bohanek, Marin, & Fivush, 2013), we included event valence as a factor in our analyses of both mother-child reminiscing and adolescent narratives.

Method

Participants

In the early childhood phase, 115 families participated in seven datapoints from 1.5 to 2.5 years (see Reese & Newcombe, 2007, for details). Most of the families came from New Zealand European (86%) backgrounds, with the remaining families coming from Māori (2.6%), Pacific Island (0.86%), and mixed New Zealand, European, Australian, Asian, Algerian, Māori, and Pacific Island (10.5%) families. In total, 59 mother-child dyads were in the control group (33 male) and 56 were in the intervention group (34 male). At 3.5 years, 100 of those families continued to participate. At 11 years ($M_{\text{age}} = 11.2$ years), we were able to see 76 of the original 115 participants: 39 from the control group (20 male) and 37 from the intervention group (22 male). Thus, our retention rate at this follow-up 9 years after the intervention ended was 66% of the original sample and 74% of the families who had participated in the most recent datapoint at 3.5 years; we present attrition analyses below.

Procedure

Early childhood

The procedure for the early childhood phase is described in detail in Reese and Newcombe (2007) and Taumoepeau and Reese (2013). All early childhood data collection was conducted in families' homes. Briefly, the dyads participated in a baseline phase at 1.5 years where we collected demographic information on the families (e.g., parental and child ethnicity, mothers' and fathers' educational and occupational information), and we recorded a mother-child reminiscing conversation about two past events that we coded for mothers' open-ended elaborative questions (e.g., "What did we see at the beach?"). We then matched mothers on this elaboration variable prior to random assignment to an intervention or control condition. The intervention phase went from 21 to 29 months, with home visits to all families every 2 months (21, 23, 25, 27, and 29 months) to collect child language inventories and to conduct nonverbal memory assessments (not included in the current analyses). In three of these home visits (at 21, 25, and 29 months), we coached the mothers in the intervention group to engage in more frequent and elaborative conversations about past events with their toddlers. In these coaching sessions, we encouraged more frequent reminiscing that included open-ended elaborative questions, praise of children's responses, and following in on children's interests in the conversations. At 2.5 and 3.5 years, all mothers and children participated in mother-child past event conversations about a range of positive and negative events. At 3.5 years, children also participated in a memory interview with a researcher about recent past events. The mother-child conversations were coded for maternal elaboration and children's memory at both 2.5 and 3.5 years and for narrative detail at 3.5 years (see Reese & Newcombe, 2007). We focus here on the mother-child conversations at 3.5 years about a shared event (mostly positive) and a time children misbehaved (mostly negative) in counterbalanced order. Out of earshot of children, a researcher first helped mothers select a specific past event of each type and then left the room for mothers and children to discuss the events as they normally would for as long as they wished.

Age 11 years

Once dyads had consented to participate in the study again, a researcher mailed out a tape recorder and instructions for the mother–child past event narrative conversations, which they completed at home prior to coming into a family study lab at the university to complete the remaining tasks. We asked dyads to choose one positive event and one negative event from the past year to discuss as they normally would for as long as they wished, with the order counterbalanced.

At the lab, one of three female researchers conducted the Emerging Life Story Interview (ELSI; Reese et al., 2010) with adolescents; the current analyses focus on the high-point and low-point narratives from this task, with the following spoken instructions:

Now I want you to think over all the things that have happened to you in your life and try to think of the VERY BEST thing that ever happened to you. It should be something that you remember clearly, and it should be something that's still really important to you now. It can be from anytime in your whole life. In thinking of the best thing, try to think of a specific thing that happened on one particular day.

Now I want you to think over all the things that have happened to you in your life and try to think of the VERY WORST thing that ever happened to you. It should be something that you remember clearly, and it should be something that's still really important to you now. It can be from anytime in your whole life. In thinking of the worst thing, try to think of a specific thing that happened on one particular day.

If an adolescent nominated an event that spanned more than a day (e.g., a trip to Australia), the researcher prompted the adolescent to think of a specific incident during the trip. The researcher encouraged adolescents nonverbally and with affirmations (e.g., “Mmm hmm”) during their narrative but did not prompt during the free recall. The high-point narrative always occurred first because the life story interview followed a set order. All audiotaped narratives were transcribed for later coding.

Coding

Mother–child narratives

These narratives were coded at both ages using the full structural coding scheme from early childhood (see Reese & Newcombe, 2007). The full scheme includes mothers' and children's elaborative questions and statements, repetitions, confirmations, negations, associations to other events, and metamemory comments. Elaborations are the primary focus because they contain new information about the event in three different forms: open-ended questions (e.g., “What did you like about that walk?”), closed-ended questions asking for a yes or no response (e.g., “Did you like the seals?”), and statements (e.g., “One seal was hanging off a rock”). Confirmations (agreements with accuracy or interpretation of the partner's previous utterance) and negations (disagreements with accuracy or interpretation of the partner's previous utterance) were also included in analyses as critical elements of elaborative reminiscing. Elaborative utterances were further coded for presence of emotion words (positive or negative) and for whether those emotions were attributed to the adolescent or another person (see Bird & Reese, 2006). Reliability between two independent coders on 25% of the positive and negative event transcripts at each timepoint was good, with Cohen's *kappas* of .70 to .80 for mothers and children for the structural scheme and from .71 to .73 for the emotional content scheme in adolescence (emotional content of the early childhood conversations was too low to code separately).

Age 11 years critical event narratives

Adolescents' high-point and low-point narratives were coded for three dimensions of coherence on separate 4-point scales (ranging from 0 to 3)—context, chronology, and theme—using the Narrative Coherence Coding Scheme (Reese et al., 2011). For instance, context scores ranged from 0 for not supplying information about time or place of the event to 3 for supplying specific information about both, chronology scores ranged from 0 if the coder could not determine the order of the event to 3 if the coder could order all parts of the event mentioned on a timeline, and theme ranged from 0 for a nar-

rative without a clear topic to 3 if the narrative was detailed and evaluative and if a resolution was provided. Reliability between two independent coders on 25% of the narratives was very good, with intraclass correlations for the high-point/low-point narratives of .82/.81 for context, .77/.71 for chronology, and .82/.80 for theme.

Results

Preliminary analyses

At 3.5 years of age, two mother–child dyads did not record a positive event conversation and one dyad did not record a negative event conversation. At 11 years of age, eight mother–adolescent dyads did not submit a conversation recording and an additional dyad recorded only a negative event conversation. Also at 11 years, three adolescents did not narrate a low-point event. Thus, the sample sizes in the analyses below varied across measures. Most of the mother–child conversation variables were positively skewed, as is typical for reminiscing conversations (see [Farrant & Reese, 2000](#)). Maternal and child negations were also very low in frequency (with means of < 1.0 per event for mothers and < 2.0 per event for children), so they are not analyzed further. We successfully transformed all remaining mother–child conversation variables with logarithmic transformations and used the transformed scores in all analyses.

Attrition analyses

We first conducted attrition analyses because we were able to see only 66% of the original families at this datapoint. There was no significant effect of intervention condition on attrition, $\chi^2(1) = 0.51$, $p = .47$, with families from the intervention and control conditions equally likely to participate at 11 years. Nor were there significant differences between the families who were seen or not seen at 11 years on the early childhood variables of maternal education, paternal occupation, and children's language (all $ps > .30$) (see [Table 1](#)). However, there was a significant attrition effect for mothers' initial levels of elaboration when children were 1.5 years of age, prior to the intervention phase. Regardless of intervention status, mothers who continued to participate at the 11 years datapoint were initially more elaborative in reminiscing with their toddlers (measured by the number of open-ended elaborative questions) compared with mothers who did not participate at 11 years, $F(1, 61) = 5.81$, $p = .02$, $\eta_p^2 = .04$. However, the mean number of open-ended elaborative questions at 1.5 years was 2.01 ($SD = 1.96$) for the eventual control group ($n = 39$) and was 1.39 ($SD = 1.78$) for the eventual intervention/training group ($n = 37$); these differences were not significant ($p = .15$). Therefore, the sample seen at 11 years was composed of mothers who were more elaborative in their reminiscing prior to intervention than the whole sample at 19 months, but these participating mothers did not differ in their initial levels of elaboration as a function of their later intervention assignment.

Table 1

Descriptive statistics at baseline (19 months) by attrition status at 11 years of age.

Baseline measure	Participating dyads ($n = 76$)	Nonparticipating dyads ($n = 39$)
Maternal education (years)	14.58 (3.01)	13.95 (3.25)
Paternal occupation ^a	3.0 (1.63)	2.94 (1.26)
Children's gender (% male)	55	64
Children's vocabulary (NZ-CDI)	83.25 (77.63)	76.08 (72.61)
Mothers' open-ended elaborative questions	1.71 (1.88)	1.04 (1.11)

Note. Values are means (and standard deviations) except percentages. NZ-CDI, New Zealand MacArthur Communicative Development Inventory.

^a Paternal occupation was coded on a 6-point scale ([Elley & Irving, 1976](#)), with 1 = skilled professional (e.g., doctor, lawyer) and 6 = unskilled laborer.

Gender analyses

We ran preliminary multivariate analyses of variance by gender on all mother–child reminiscing and adolescent narrative variables. There were no significant overall effects (all $ps > .08$), with the only significant univariate effect for adolescents' positive emotions being in the positive event conversations, $F(1, 65) = 9.15, p = .004, \eta_p^2 = .11$. Girls ($M = 2.03, SD = 2.24$) referred more often to their own positive emotions in the positive event conversation than boys ($M = 0.76, SD = 1.14$). Gender is not analyzed further.

Main analyses

The main analyses tested changes in mother–child reminiscing over time and long-term effects of the intervention on mother–child reminiscing and adolescents' critical event narratives with a series of multivariate analyses of covariance (MANCOVAs), controlling for baseline covariates. First, to address change over time and intervention effects for mother–child reminiscing, we ran a series of four-way mixed Intervention Condition (control vs. intervention) \times Age (3.5 vs. 11 years) \times Event (positive vs. negative) \times Utterance Type (elaborations vs. confirmations) MANCOVAs separately for mothers and children, using Pillai's Trace, with three baseline covariates from 1.5 years: maternal education, maternal open-ended elaborative questions, and children's vocabulary (Table 2). To address intervention effects on references to the adolescents' emotions in mother–adolescent reminiscing at 11 years, we ran another series of three-way mixed Intervention Condition (control vs. intervention) \times Event (positive vs. negative) \times Emotion Valence (positive vs. negative) MANCOVAs, separately for mothers and children with the same three baseline covariates (Table 3). Finally, to address long-term intervention effects on adolescents' critical event narratives, we ran a three-way mixed Intervention Condition (control vs. intervention) \times Event (high point vs. low point) \times Coherence Dimension (context vs. thematic) with the same three baseline covariates (Table 4). We did not include adolescents' chronological coherence in analyses because of limited variance, with the majority of adolescents scoring a 3 on that dimension. These scores are in line with those of other samples; chronology is the first dimension of narrative coherence to develop fully by late childhood or early adolescence (Reese et al., 2011). Assumptions of equality of covariance were met for all MANCOVAs. Significant effects were followed up as noted below, with corrected alphas to adjust for multiple comparisons.

Mother–child reminiscing over time as a function of the intervention

For mothers' elaborations and confirmations over time, the four-way MANCOVA revealed significant main effects of intervention condition, $F(1, 59) = 6.34, p = .015, \eta_p^2 = .10$, and utterance type, $F(1, 59) = 12.61, p = .001, \eta_p^2 = .18$. Separate follow-up tests by intervention condition on maternal elaborations and confirmations (collapsed across age and event, with a corrected alpha set at .025) revealed a

Table 2

Means (and standard deviations) for mother–child reminiscing about positive and negative events at 3.5 and 11 years of age as a function of intervention condition.

	3.5 years		11 years	
	Control ($n = 31$)	Intervention ($n = 34$)	Control ($n = 31$)	Intervention ($n = 34$)
<i>Positive event</i>				
Maternal elaborations	24.52 (13.49)	34.52 (18.21)	30.58 (18.91)	42.61 (35.32)
Maternal confirmations	8.77 (6.18)	14.39 (9.82)	11.06 (10.45)	13.61 (14.11)
Child elaborations	10.58 (8.26)	15.30 (10.20)	39.81 (49.36)	49.91 (49.01)
Child confirmations	4.58 (4.72)	7.73 (6.52)	9.97 (9.34)	14.88 (12.82)
<i>Negative event</i>				
Maternal elaborations	10.45 (5.90)	15.82 (9.86)	23.58 (15.32)	30.79 (17.90)
Maternal confirmations	2.97 (2.47)	3.91 (3.48)	6.00 (8.15)	7.61 (6.56)
Child elaborations	3.45 (3.26)	5.09 (3.74)	17.03 (15.76)	22.93 (18.49)
Child confirmations	1.68 (1.80)	2.03 (2.31)	5.77 (5.40)	8.18 (6.78)

Table 3

Means (and standard deviations) for emotion talk in mother–adolescent reminiscing about positive and negative events at 11 years of age as a function of intervention condition.

Reference to adolescents' emotions	Control (<i>n</i> = 32)	Intervention (<i>n</i> = 35)
<i>Positive event</i>		
Maternal positive emotions	1.94 (1.78)	1.77 (2.28)
Maternal negative emotions	0.34 (0.70)	0.37 (0.73)
Adolescent positive emotions	1.19 (1.55)	1.46 (2.05)
Adolescent negative emotions	0.31 (0.69)	0.74 (1.44)
<i>Negative event</i>		
Maternal positive emotions	0.56 (1.08)	0.71 (1.38)
Maternal negative emotions	1.78 (2.09)	1.63 (2.49)
Adolescent positive emotions	0.31 (0.93)	0.37 (1.00)
Adolescent negative emotions	0.94 (0.88)	1.80 (1.83)

Table 4

Means (and standard deviations) for coherence of adolescents' high-point and low-point narratives at 11 years of age as a function of intervention condition.

Coherence dimension	Control (<i>n</i> = 39)	Intervention (<i>n</i> = 37)
<i>High-point narrative</i>		
Context	1.44 (0.85)	1.32 (0.63)
Chronology	2.33 (0.74)	2.32 (0.82)
Theme	1.15 (0.37)	1.24 (0.49)
<i>Low-point narrative</i>		
Context	1.41 (0.90)	1.72 (0.74)
Chronology	2.62 (0.64)	2.50 (0.77)
Theme	1.24 (0.43)	1.56 (0.50)

significant effect for maternal elaborations, $F(1, 59) = 5.49, p = .022, \eta_p^2 = .09$, but not for maternal confirmations, $F(1, 59) = 4.96, p = .03, \eta_p^2 = .08$. Mothers were more elaborative in dyadic reminiscing across time and events if they had participated in the intervention condition when their children were toddlers, and they used more elaborations than confirmations (see Fig. 2 for adjusted untransformed means).

For children's elaborations and confirmations over time, the four-way MANCOVA revealed a significant main effect of intervention condition, $F(1, 59) = 8.77, p = .004, \eta_p^2 = .13$. Separate follow-up tests by intervention condition on children's elaborations and confirmations (collapsed across age and event, with a corrected alpha set at .025) revealed a significant effect for children's elaborations, $F(1, 59) = 8.03, p = .006, \eta_p^2 = .12$, but not for children's confirmations, $F(1, 59) = 4.63, p = .036, \eta_p^2 = .07$. Children were more elaborative in dyadic reminiscing across time and events if their mothers had participated in the intervention condition when the children were toddlers (see Fig. 3 for adjusted untransformed means).

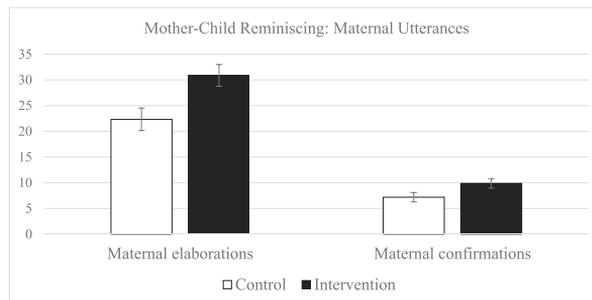


Fig. 2. Mothers' talk during mother–child reminiscing as a function of condition (averaged across time and event; adjusted for covariates). Error bars represent standard errors.

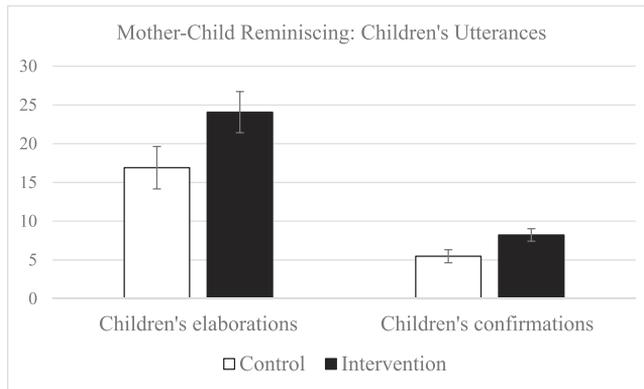


Fig. 3. Children's talk during mother-child reminiscing as a function of condition (averaged across time and event; adjusted for covariates). Error bars represent standard errors.

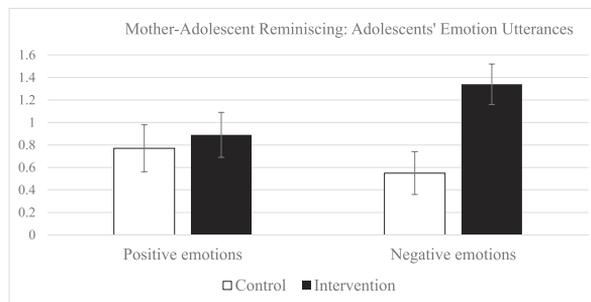


Fig. 4. Adolescents' emotion talk during mother-adolescent reminiscing as a function of condition (averaged across time and event; adjusted for covariates). Error bars represent standard errors.

For mothers' references to adolescents' emotions during reminiscing at 11 years, the three-way MANCOVA revealed no significant effects (all p s > .13).

For adolescents' references to their own emotions during reminiscing with mothers at 11 years, the three-way MANCOVA revealed a significant intervention condition by emotion valence interaction, $F(1, 62) = 6.04$, $p = .017$, $\eta_p^2 = .09$. Separate follow-up tests by intervention condition on adolescents' positive and negative emotions (collapsed across event, with a corrected alpha set at .025) revealed a significant effect of the intervention only for adolescents' negative emotion references, $F(1, 62) = 6.01$, $p = .017$, $\eta_p^2 = .09$. However, Box's test was significant at $p = .026$, indicating inequality of the covariance matrix for adolescents' negative emotions by intervention condition. Although adolescents expressed more negative emotions in dyadic reminiscing across events if their mothers had participated in the intervention condition 9 years earlier (see Fig. 4 for adjusted untransformed means), we interpret this effect with caution.

Long-term effects of the intervention on adolescents' narrative coherence

Finally, to test long-term effects of the intervention on adolescents' narrative coherence, the three-way MANCOVA revealed a significant intervention condition by event valence interaction, $F(1, 68) = 5.80$, $p = .02$. Follow-up analyses by event valence showed a significant effect of the intervention only for adolescents' low-point narratives, $F(1, 68) = 7.50$, $p = .008$, $\eta_p^2 = .10$ (see Fig. 5). Adolescents' contextual and thematic coherence of low-point narratives was greater if their mothers had participated in the intervention 9 years earlier.

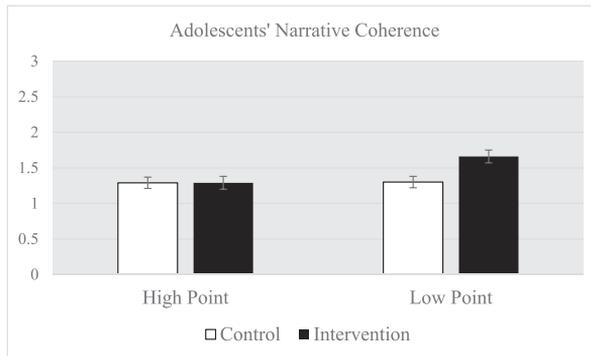


Fig. 5. Adolescents' coherence in high-point and low-point narratives as a function of intervention condition (averaged across context and thematic dimensions; adjusted for covariates). Error bars represent standard errors.

Discussion

In this long-term follow-up of a maternal reminiscing intervention, the first of its kind, we found that mothers who had participated in the elaborative reminiscing training when their children were toddlers continued to differ in their reminiscing style with their adolescents; there were no significant interactions between their intervention assignment and children's age. Across a span of 8 years, these mothers were more elaborative when reminiscing about positive and negative events than mothers who had participated in a control condition. Likewise, the children of mothers in the intervention condition were more elaborative in their reminiscing with mothers across time and events. In turn, these adolescents whose mothers had been in the intervention condition also told more coherent low-point narratives to a researcher both in terms of providing contextual details about the event and in terms of an elaborated theme. The overall picture is that when mothers received early training in elaborative reminiscing, their dyadic reminiscing with their children about emotional events remained more elaborative and their adolescents were more coherent when talking about difficult life events. [Appendix A](#) contains an excerpt from a mother–adolescent conversation to illustrate this elaborative quality, and [Appendix B](#) contains an illustration of an adolescent's coherent low-point narrative.

These findings suggest that enriching mother–child elaborative reminiscing in early childhood has long-term implications for mothers' and children's elaborative reminiscing style and for children's long-term ability to process difficult life events in a coherent narrative form. The maintenance of these effects of early maternal reminiscing training into adolescence is remarkable given the brevity of the original coaching sessions and the length of time since the intervention ended, with no booster training sessions in the interim. We propose that the enriched reminiscing techniques crystallized mothers' reminiscing style and their children's autobiographical memory skills in early childhood (Reese & Newcombe, 2007), with benefits that continue at least into adolescence. Most likely, these long-term effects are due to the intervention occurring at an age when children were experiencing rapid development of their autobiographical memory skills. For instance, many adults in Western cultures date their earliest memories back to 3 or 4 years of age, with 3.5 years marking the offset of infantile amnesia on average in New Zealand European samples (MacDonald, Uesiliana, & Hayne, 2000). We suspect that these benefits would not have been as great had we started the intervention at an older age (say, 4 or 5 years) when children were already well on their way to developing their autobiographical memory and narrative styles. However, the effect of the timing of the intervention is an empirical question that should be addressed with other long-term follow-ups of reminiscing intervention studies that begin at older ages.

It is also relevant that the generalization to adolescents' critical event narratives occurred only for their low-point narratives and not for their high-point narratives. A contextually and thematically coherent narrative about a negative event most likely means that the adolescent has reflected on

and processed the event. At this stage, of course, young adolescents are only beginning to show insight into difficult life events (Habermas & Reese, 2015). Notably, none of the 11-year-olds in our sample scored the highest rating of 3 on the thematic coherence scale. A score of 3 would indicate that the narrative was detailed and evaluated and included a resolution of some type. Instead, the typical score of 2 for the adolescents in the intervention group is indicative of narratives that are detailed and evaluated but are not yet fully resolved (see Appendix B). We would not expect young adolescents to achieve full insight and resolution of difficult life events even with coaching (Habermas & de Silveira, 2008). True insight is yet to come for the young adolescents in our sample. However, we predict that those adolescents whose mothers were in the intervention group will experience these insights into life events sooner than those whose mothers were in the control group due to participating in more elaborative conversations about negative events since they were young children (see Appendix A).

Our findings also revealed a significant effect of the intervention for adolescents' expression of negative emotions in dyadic reminiscing with their mothers. Regulation of negative emotions is a critical socioemotional skill that is linked to children's ability to self-regulate and cope with difficult life events (e.g., Havighurst et al., 2013). Thus, this effect is promising, but it needs to be replicated given the inequality of covariance across the two groups and the low overall rate of emotion references in the conversations.

We found no gender differences in the way that mothers reminisced with their daughters and sons, in contrast to some earlier studies with young children and adolescents (Bird & Reese, 2006; Fivush, Brotman, Buckner, & Goodman, 2000; McLean & Mansfield, 2011). Nor did we find gender differences in adolescents' own expression of negative emotions or in their narrative coherence, similar to Graneist and Habermas (2019) with a German sample of mothers and adolescents. However, girls' positive event narratives with mothers included more positive emotion references compared with boys' positive event narratives with mothers. This finding mirrors that with adults, in which women used more emotion terms when narrating childhood memories compared with men for events that occurred after 7 years of age (Bauer, Stennes, & Haight, 2003). However, in that study, women also used more negative emotion references than men. We will be able to track the development of these gender differences in emotion expression over adolescence with our current sample.

One difference from prior research is that mothers in our sample used hardly any negations in dyadic reminiscing, whereas mothers of older adolescents in Manczak et al. (2015) used negations in 23% of their conversational turns. In contrast, the reminiscing conversations in our sample had a highly collaborative and synchronous tone (see Appendix A for examples). This sense of collaboration and synchrony is heightened for dyads who were in the intervention condition in early childhood. We must acknowledge, however, that the dyads who remained in the study at this age were those who were naturally more elaborative in their reminiscing at the outset of the study, so selection biases may also be at play.

There are other limitations to this study, with the most serious being the attrition rate of 34% from the original sample and 26% from the most recent datapoint at 3.5 years. This attrition rate, however, is typical of or even lower than some other shorter longitudinal interventions (e.g., attrition of 45% after a 6-month follow-up in Van Bergen et al., 2009). It is reassuring that there was not differential attrition from the intervention and control groups and that the significant effects remained after covarying for the baseline variables. Our sample size was small, however, and we were underpowered to detect significant effects of the intervention—for instance, for mothers' and children's confirmations in the conversations. Another limitation was our focus on only mothers and not fathers, who also play an active role in reminiscing with adolescents (see Fivush et al., 2009). Moreover, although we made home visits to families in both groups in early childhood an equal number of times, our control group was not an active one such as the child-directed play control group in Van Bergen et al. (2009, 2018) studies. In addition, we collected only one positive event conversation and one negative event conversation at each age. Finally, the majority of the sample was of European ethnicity, so our results might not generalize to non-European families.

We conclude with a promissory note, which is to continue to analyze the ways that adolescents and young adults from this sample differ in their autobiographical memory and narrative as a result of the coaching in elaborative reminiscing their mothers received in early childhood. Finding ways to encourage young adolescents to talk elaboratively and coherently about difficult experiences with

mothers and others is a feat. We look forward to reporting on whether they will continue to maintain these skills of self-expression into adulthood.

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Appendix A

Excerpts from mother–adolescent reminiscing conversations

Positive event: Beach walk

M: And then on New Year's Day we went out, didn't we?

A: Mmm.

M: To ...?

A: Aramoana.

M: Aramoana, that was cool, I enjoyed that trip.

A: [unintelligible word]

M: [simultaneous with above] Remember we took a van eh ...

A: Yeah.

M: ... with Uncle and Auntie and all your cousins.

A: And the car.

M: And the car. We took the van and the car, we did too. But that's right, Daddy didn't come, did he? He was too tired.

A: Mmm, so.

M: And we walked all the way down to the end of the spit.

A: Which felt like it was never going to end.

M: It did feel like it was never going to end, and do you remember ...

A: [simultaneous with "you"] it was might have been [unintelligible word].

M: [simultaneous with "been"] ... Do you remember the little ones, Sierra and Josh ...

A: Yeah.

M: ... running around and I was worried because ...

A: Yeah.

M: ... because of the drop [unintelligible word].

A: [simultaneous with above] Do you remember seeing the seal on the tracks and the water?

M: No, I don't remember seeing the seal in the water.

A: On the, on the left.

M: Going down, on the left?

A: Yeah, like you're walking, no, you're walking to the end of the spit ...

M: You're

A: ... then on your left there's a seal that was coming along beside us [unintelligible word].

M: [simultaneous with above] Ahhhh, yeah, maybe I do. Do you remember the seal at the end of the spit?

A: Yeah.

M: On the, remember on that big piece of concrete, right at the end, and remember you climbed right around there?

A: Yeah.

M: And I didn't want you to.

A: Yeah.

M: And then I got [unintelligible word].

A: Yeah, he was like about a meter and a half away, but it was still pushing this way.

M: Yeah.

A: ... there was a rock in the way.

M: Yeah, but there was a big drop down to the ocean that's why I didn't want you climbing there. Um, and do you remember, we couldn't remember, we couldn't figure out how he got there.

A: Yeah.

M: Eh? There was, 'cause he was way up high.

A: Yeah, and there was the one on that funny cross thing. That wooden cross thing.

M: At the end as well?

A: Yeah.

M: Well, that's the one I'm talking about, isn't it?

A: Ah yeah, but there was one down behind the rock on the right.

M: Ah yeah, I didn't see that one 'cause I was too scared to go too far out, 'cause of all the rocks and stuff and the seals, but you weren't ...

A: Yeah.

Negative event: Starting a new school

M: Yeah, so was that quite scary to go to [new school] on the first day when you really didn't want to go there?

A: [simultaneous with "want"] No, I wasn't scared.

M: Ah, you weren't scared.

A: No,

M: Ah,

A: Just didn't really like ...

M: [simultaneous with "didn't"] and you didn't really know anyone.

A: I wasn't scared about that, I just didn't want to go.

M: Yeah. And are you a bit better, do you feel a bit better about the school now that you've been there a term?

A: Not really.

M: Apart from the religious education ...

A: If it wasn't for the religious stuff, it would be an okay school.

M: Yeah. Exactly.

A: Yeah.

M: So how much religion do you actually do?

A: It's, it's, you get it three times a week.

M: Three times a week, is that religious education?

A: [simultaneous with "education"] Three or four. Yeah.

M: Is there any interesting bits in the religious education?

A: No, I don't listen.

M: You don't listen?

A: I doodle.

M: You doodle, yeah, and do you bring your doodles home for us?

A: No [laughs].

M: Okay.

Note. M, mother; A, adolescent.

Appendix B

An adolescent's coherent low-point narrative

Low-point event: Seeing a beggar

A: There was a beggar on Bond Street Station which was pretty scary. I think it was just because it was bam right there and I got a bit of a shock.

R: Mmm hmm.

A: And my mum says she, she doesn't think she saw it as well as us, but I think I stopped and looked at him because I had a surprise.

R: Okay.

A: And I was quite, I uh, I had flashes and not really nightmares but just flashes of him, what could have happened and, yeah, and the night, that night was the night before we left England this year, and it was the 25th or 26th of September and, umm, he looked as if he was, had been burnt by a kettle or something like that, not fire, 'cause it, his skin was very, very white.

R: Hmm.

A: And I'd had a friend in England who'd been a bit burnt when he was very young, and he got on with things and he was getting a bit bullied by, umm, some of his other kind of friends, but he said that I was the best friend that he'd ever had and he didn't want me to leave England.

R: Mmm hmm.

A: And we'd been out shopping before we went to Bond Street, and we'd been to Hamley's and Marks & Spencer to get some lunch, and we would've been going back to King's Cross on the Victoria Line, and he was just there and I think I stopped because I got a surprise, but I also had to hurry so I could get up to Mum because she was getting on the train 'cause there was one that had just arrived. And my sister didn't like it, but she didn't stop, she just carried on. I think it was a different experience, I'd seen beggars before around [unintelligible place name] and that, but this one was just a surprise and a shock. So I think it's more I can remember it more clearly.

R: Mmm hmm.

A: And I can remember going home and while Jessica was in the bathroom brushing her teeth Mum had a bit of a chat about what could happen to me because Jessica didn't want to talk about it at all.

R: Okay.

A: But I kind of wanted to know what might have happened to him.

R: Mmm hmm.

A: So, yeah.

Note. A, adolescent; R, researcher.

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