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From infancy to eight: How early maternal mental health, emotion reminiscing, and language shape children's mental health

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Abstract

To test the transmission of mental health difficulties from mother to child, we examined mediation through emotion reminiscing conversations and child language. Maternal depression symptoms were measured at 9 months post-partum, and child mental health outcomes were measured at age 8 years. Emotion reminiscing conversations between 1,234 mother-child pairs (624 boys, 610 girls) were recorded as part of a large, diverse, longitudinal cohort *Growing Up in New Zealand*. The 1,234 reminiscing conversations were transcribed and coded for maternal elaboration and emotion resolution quality (mother and child). The coded reminiscing variables did not mediate the pathway from maternal depression to child mental health outcomes; however, each maternal reminiscing variable together with child language skill serially mediated the relationship from maternal depression symptoms to child-reported anxiety and depression symptoms, and parent-reported child externalizing symptoms. Language as a skill and it's use as a tool for making shared meaning from past events are highlighted as possible mechanisms for the intergenerational transmission of mental health difficulties. These findings point to potential opportunities for early interventions, including prevention of and support for postnatal depression, family intervention in reminiscing training, and supporting child language development.

Keywords: intergeneration; language; mental health; parent-child interaction; reminiscing

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Introduction

Children learn through the world around them, with caregivers' behavior, language, and affect influential from infancy across development. Parent-child reminiscing conversations about past events that the child has personally experienced may be an especially important conversational context for children's development (Salmon & Reese, 2016). Decades of reminiscing research has focused on implications for children's autobiographical memory and socio-cognitive development (Fivush, 1991; Laible, 2011; Nelson & Fivush, 2004). Through story telling about past events, parents and children establish a reference point and create a shared history, strengthening their emotional bonds and family identity (Fivush et al., 2006). In the emotion socialization context, discussing emotional past events, known as *emotion reminiscing*, may be one especially salient mechanism where parents scaffold children's understanding of the event and their emotions (Fivush, 2007). Because reminiscing takes place outside of the immediate emotional

context, there is a greater potential for nuanced emotion learning, where the parent and child may both be more regulated and better able to engage with the emotion content (Siegel, 2020). Parents provide support and serve as role models for handling difficult emotions, and these skills may extend to managing challenging emotions in other contexts as the child grows (Eisenberg et al., 1998; Eisenberg, 2020). It is important to note that the way mothers reminisce is influenced by cultural values, beliefs, and gender roles, resulting in variations in the focus and content of these conversations (Wang, 2004). Maternal mental health difficulties have been consistently linked with children's own mental health difficulties (S. H. Goodman et al., 2011) and high-quality emotion reminiscing has been suggested as one potential mechanism to prevent transmission of mental health difficulties within families and to promote wellbeing (Valentino, 2011; Wareham & Salmon, 2006). Only one study to date has empirically tested this intergenerational transmission of mental health difficulties through reminiscing as an indirect pathway (Swetlitz et al., 2021). The current study seeks to extend these findings within a large, diverse, longitudinal sample. In addition, because children's language skills are related to both mental health (Salmon et al., 2016) and parental reminiscing (Waters et al., 2019), this study explored the role of children's language skills in this potential intergenerational pathway. The current study explores maternal mental health in infancy and

later child mental health at age eight, as mediated by emotion reminiscing and child language skills.

Maternal depression and child development

Maternal postnatal depression has significant and long-lasting effects on children's cognitive and emotional development (Sohr-Preston & Scaramella, 2006; Waxler et al., 2011). In line with social learning theory, maternal depression may model maladaptive ways of coping and expressing negative emotion to children (Woodrow, 2008). Parenting behaviors can be impacted by maternal depression, for example mothers with depression appear to be less consistent and responsive (Lovejoy et al., 2000). These behaviors may affect the attachment bond and have ongoing consequences. Indeed, maternal depression has been associated with increased child mental health difficulties (S. H. Goodman et al., 2011). Maternal depression is most strongly related to increased negative parenting behaviors, including irritability and hostility towards the child, although it is also associated with disengagement and reduced positive parenting (Lovejoy et al., 2000). In addition, the timing of maternal depression is associated with child outcomes. Infancy is a critical period of development, with the strongest concurrent associations for maternal depression and negative parenting behaviors (Lovejoy et al., 2000). It may be that earlier exposure to maternal depression has increased impact due to the formation of the attachment relationship and disruption of the infant's maturational tasks (S. H. Goodman & Gotlib, 1999); with older children having more developed coping and language skills to communicate their needs more clearly, and thus have them met with greater ease (Salmon et al., 2016).

Transmission pathways

S. H. Goodman and Gotlib (1999) provide a seminal integrative model to explain the relationship between maternal depression and children's own mental health difficulties. The posited mechanisms for transmission include heritability, dysfunction in neurology, mothers' cognitive style, emotion and behaviors, and the home environment. The latter two mechanisms present opportunity for intervention through modifying the impact of exposure to maternal maladaptive interactions and reducing a child's stressful environment. These mechanisms are thought to relate to child mental health difficulties through disruptions in children's social, emotional, and cognitive capacities. It is important to note that targeting treatment towards parent depression without specifically addressing parenting and parent-child interactions are not sufficient to improve child outcomes (Galbally & Lewis, 2017).

Viewed within the integrative model from Goodman and Gotlib (1999), mother-child reminiscing may be one mechanism that exposes children to the maladaptive cognitions, affect, and behavior of parents with mental health concerns. Reminiscing occurs outside of the "heat of the moment," where children and parents can hold meaningful discussion about difficult or stressful events (Fivush, 2001; Salmon & Reese, 2016). These conversations can provide an opportunity for children to safely explore the linguistic and emotional world to make sense of their experiences. High-quality reminiscing has been associated with children's autobiographical memory, language skills, theory of mind, self-concept coherence, self-esteem, and wellbeing (Bird & Reese, 2006; Fivush & Nelson, 2006; Fivush & Vasudeva, 2002; Laible, 2011; Reese et al., 2007; Wang, 2006; Wareham & Salmon, 2006).

Maternal mental health and reminiscing

Maternal depression is likely to affect how the mother interacts with the child, particularly regarding her child's emotions. Parental depression may make it more difficult for a parent to self-regulate, to understand and explain their child's own emotions (Cimino et al., 2019; Koren-Karie et al., 2008) and to attune appropriately to their child's internal experiences (Franz & McKinney, 2018). The context of reminiscing, outside the emotional 'heat of the moment', provides a space for both parent and child to navigate complex emotional events and feelings (Salmon & Reese, 2016). Reminiscing has been researched through recording, transcribing, and coding the style and content of parent-child conversations. Conversations are typically coded on either: a frequency-based level, looking at the conversation at the sentence level; or scale-based, considering the conversation as a whole (Grysman & Mansfield, 2020). Scale-based coding may be more appropriate for emotion reminiscing research, which has been established as uniquely related to child socio-emotional functioning, whereas frequency-based codes were significantly related to child memory accuracy (Leyva et al., 2020). Utilizing a scale-based approach for mother-child emotion reminiscing may better reflect meaning making across the conversations as a whole, rather than detailed accuracy on a sentence level (Grysman & Mansfield, 2020).

Why would mothers with depressive symptoms be less likely to elaborate or resolve emotion in later emotion reminiscing conversations? Depressive symptoms can have lasting cognitive effects on selective attention or memory even once the symptoms resolve (Semkovska et al., 2019). Elaborative reminiscing requires curiosity and exploration, which may be difficult for individuals if they avoid difficult emotions (Tiwari et al., 2008) or do not have the coping skills to regulate themselves or their child (Bridgett et al., 2015). The empirical research investigating the associations between parent mental health and reminiscing has shown mixed results. In a small study of 42 mother-infant dyads, frequency of emotion references in reminiscing was not associated with maternal depression symptoms (Raikes & Thompson, 2006). In a more recent study, mothers with diagnoses of anxiety, depression, anorexia nervosa, or no diagnosis, were compared on the quality of reminiscing with their 8-year-old children (Cimino et al., 2019). Compared to mothers without a diagnosis, mothers with any diagnosis had lower rated maternal sensitive guidance (including closure of emotion), child cooperation and exploration, and emotional coherence. Specifically, mothers with depression and anorexia nervosa diagnoses were also less emotionally matched with their 8-year-old child during reminiscing (Cimino et al., 2019). Reese et al. (2019) assessed elaborative reminiscing with mothers and their 3.5-year-old children. They found that earlier maternal depression symptoms negatively predicted elaboration, but this was no longer significant once maternal sensitivity was included in the model. Finally, Russell et al. (2023) also found a negative association between parent depression symptoms and parent elaboration within a small cohort of children; however, this association was only observed for community recruited children and not for children recruited from a mental health clinic. The variety of coding used across the existing studies makes for difficulty establishing a clear pattern and calls for the coding of both emotional and elaborative aspects of parent-child conversations. When taken together these findings provide equivocal support for an association between parental mental health and the emotional and elaborative quality of parent-child reminiscing conversations.

Child mental health and reminiscing

There is also evidence of an association between parent-child reminiscing quality and child mental health. Suveg et al., (2005, 2008) found that parents of children with anxiety disorders showed lower emotional expression and explanation and were less likely to talk about positive emotions when reminiscing compared to dyads without a diagnosis. Moreover, there is evidence of differences in reminiscing based on the externalizing clinical status of the child. Van Bergen et al. (2018) found that mothers of children with conduct problems were less elaborative and used more negative emotion terms than mothers of typically developing children, whereas Pate et al. (2020) found no differences in emotion descriptions or elaboration for mothers of children with oppositional defiant disorder versus those without. In other emotion conversations, similar patterns have been observed: Sales and Fivush (2005) found a negative relationship between mothers' emotion expression and explanations when discussing a chronic stressor, and children's internalizing and externalizing difficulties. Brumariu and Kerns (2015) observed lower parent elaboration and higher psychological control in conflict discussions with children with higher anxiety symptoms. Using a similar cohort as the present research from a large longitudinal study in New Zealand: *Growing Up in New Zealand,* Garnett et al. (2023) found that higher maternal elaboration during reminiscing was associated with children having fewer emotional problems and greater prosocial behavior at age 8. Overall, these findings suggest that less rich emotion discussion and a less elaborative reminiscing style is associated with greater child mental health problems across both internalizing (inward processes including anxiety and depression) and externalizing (behaviors expressed outward including aggression and hyperactivity) domains.

Transmission pathways

As noted, we know of only one study that has directly tested an indirect pathway from parent mental health to child mental health through reminiscing. Swetlitz et al. (2021) followed 206 infants and their mothers into childhood. Maternal depression was measured using the Brief Symptom Inventory-18 (Derogatis et al., 2000) during infancy, and at age 7, children's symptoms were measured using teacher report with the Child Behavior Checklist Teacher's Report Form (Achenbach & Rescorla, 2001). At a home visit when children were age 5, three reminiscing conversations were recorded and coded for elaborative reminiscing using utterance-based coding (Reese et al., 1993). Of note, the conversations were not emotionally focused; rather, they focused on novel shared mother-child experiences. Swetlitz et al., also coded for harsh and sensitive parenting (during a free play interaction) and explored this as a potential pathway for the intergenerational transmission of mental health difficulties as well as reminiscing style. Results indicated support for an indirect pathway through reminiscing, but not via harsh or sensitive parenting. Interestingly, the indirect pathway through less elaborative reminiscing was significant for teacher-reported children's externalizing, but not teacher-reported internalizing difficulties. This pattern may be due to the inward nature of internalizing symptoms, which may not be as sensitive to detection by others, particularly schoolteachers who may be more aware of externalizing difficulties in a classroom setting (Papandrea & Winefield, 2011; Splett et al., 2019). Swetlitz et al. (2021), however, did not measure child language, which may also play a role in the intergenerational transmission of mental health through reminiscing.
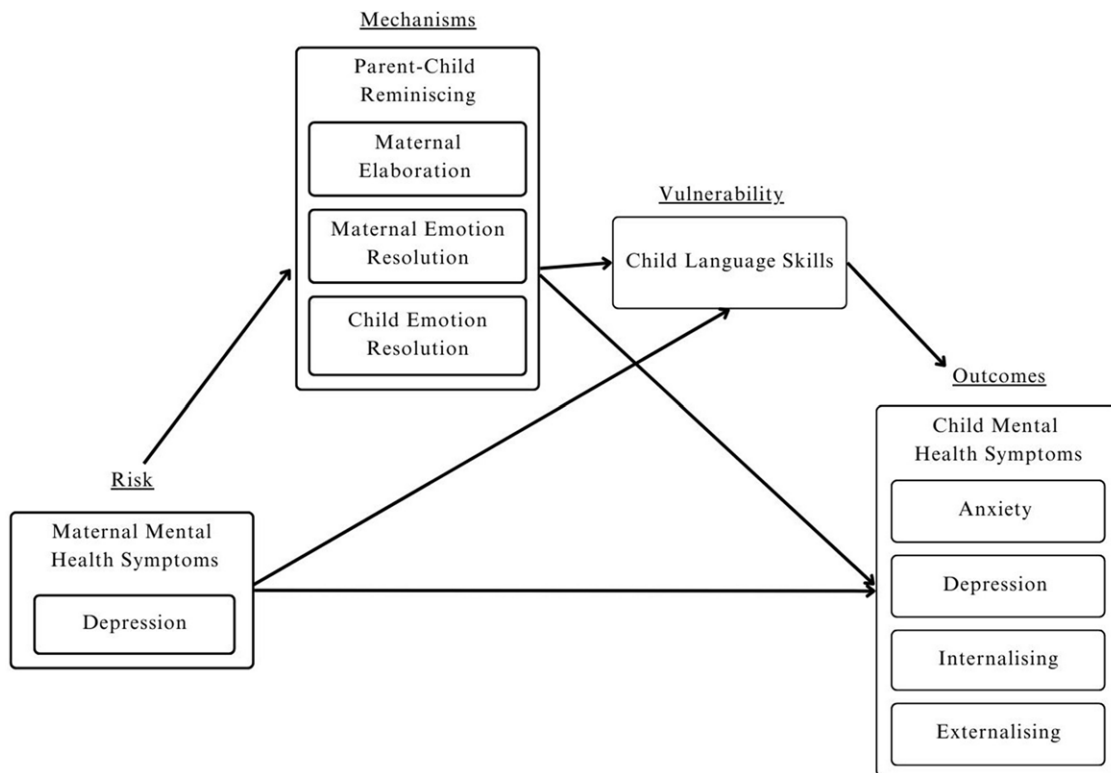
Language, mental health, and reminiscing

Reminiscing is a linguistic process, and children's language ability is likely to be both shaped by their reminiscing experience, and contribute to the richness of the conversation. Parent reminiscing style is strongly related to children's language skills (Salmon & Reese, 2016; Reese, 2002; Waters et al., 2019). The more complex language a child has, the more likely children are able to communicate accurately and emotionally their internal world and experience of difficult events. Likewise, maternal reminiscing interventions during childhood are associated with improved child narrative and language (Reese & Newcombe, 2007) with effects of improved child narrative elaboration and coherence observed into early adolescence (Reese et al., 2020). It therefore makes sense that the social context is also important for this relationship: associations of child language skill have been found with maternal education (Hoff et al., 2018) and socioeconomic status (Noel et al., 2008). Moreover, accounting for ethnicity and child gender was important for clarifying the positive relationship between maternal elaborative reminiscing and child language skills in a recent meta-analysis (Waters et al., 2019).

Viewed within Goodman and Gotlib's (1999) model, children's language may be a key cognitive capacity that is influenced by parenting mechanisms and underlies the development of child mental health difficulties. Indeed, in a sample of 4432 mother-child dyads from the *Growing Up in New Zealand* study, Bird et al. (2023) investigated the link between maternal depression symptoms during infancy, mother-child verbal interactions at age 2 and 4 years old, and children's language development at 4.5 years old. They found a direct negative association between maternal depression symptoms and language skills in children at age 4.5 years old, as well as an indirect effect through self-reported (at 2 years old) and observed (at 4.5 years old) mother-child interactions. As children age, they develop more complex language skills; however, children with emotional or behavioral difficulties often have significantly lower than average language skills, and often these have not been noticed or assessed due to the child's prevailing psychological issues (Chow & Hollo, 2022; Hollo et al., 2013). As lower early language skill has been linked with later mental health outcomes (see Salmon et al., 2016, for a review), understanding how child language is involved in the intergenerational transmission of mental health difficulties has important implications for the prevention and effective management of mental health difficulties.

The current study

The aim of the current study was to replicate and extend Swetlitz et al.'s (2021) novel finding of an indirect association of parent to child mental health through mother-child reminiscing. Much reminiscing research has been limited by small sample sizes, varying approaches to coding, and potential reporting biases in the measurement of child mental health. We utilized data from *Growing Up in New Zealand:* a longitudinal pre-birth cohort study that began in 2009-2010 with over 6000 families (Morton et al., 2013). The current analyses were based on reminiscing conversations from 1,234 mother-child dyads collected when children were 8 years old. This study extended existing findings by examining: both elaboration and resolution quality of mother-child reminiscing conversations; an independent measure of child language; child internalizing and externalizing symptoms (as reported by parents) and child anxiety and depression symptoms (self-reported by children). Specifically, we tested a serial mediation model of the

Figure 1. Conceptual Model Adapted from Goodman and Gotlib (1999).

intergenerational transmission of mental health symptoms, through mother-child reminiscing conversations and children's language. We hypothesized that 1) maternal depression symptoms would be related to both lower elaboration and resolution quality during reminiscing (Cimino et al., 2019; Reese et al., 2019), 2) both elaboration and resolution during reminiscing would mediate the relationship between parent and child mental health symptoms (Swetlitz et al., 2021), and 3) parent and child mental health would be related, through both elaboration and resolution during reminiscing and child language (see Figure 1 for a conceptual model).

Methods

Participants

Data for the current study was drawn from the pre-birth cohort study *Growing Up in New Zealand*. Participants were invited across three adjacent health boards of central North Island of New Zealand: Auckland, Manukau, and Waikato. The study was designed to investigate environmental factors that affect children's wellbeing and development (Morton et al., 2013). Face-to-face data collection began antenatally and continued at child aged 9-months old and 2, 4.5, 8 and 12 years old to date. The current study has a focus on a mother-child reminiscing task that was collected at the 8-year data collection wave (DCW). A total of 6,848 children are included in the larger cohort which is broadly representative of children born in Aotearoa New Zealand in 2009. The 8-year DCW included 5,012 dyads who completed the reminiscing task, of which approximately one quarter ($n = 1404$) were randomly selected and transcribed. To avoid repetition of the maternal data, twin and triplet sibling conversations were not included in the current analyses ($n = 47$). The final sample consisted of only those

with complete data at the 8-year DCW for our variables of interest, of which were then coded ($n = 1,234$; $n = 624$ boys, $n = 610$ girls).

Procedure

Growing Up in New Zealand received ethical approval from the New Zealand Ministry of Health's Northern Y Regional Ethics Committee (Morton et al., 2013). At the antenatal DCW (predominantly during the last trimester of pregnancy), mothers answered questions about themselves and their family. Infancy measures were collected (home visit; interviewer administered) at child aged 9 months. At age 8, parents completed an online survey and children completed survey measures with an interviewer face-to-face in the home. The reminiscing conversation was recorded in the family home (with additional informed consent received for audio recording).

Reminiscing task

At the 8-year DCW, mothers and children completed a reminiscing task in their home, which was audio recorded. Parent-child conversations were initially trialed with *Growing Up*'s pilot group Te Rōpū Piata/Leading Lights (n ≈ 140). Parents and children were provided with an open-ended discussion prompt, to choose a recent event where the child felt a little bit upset. Feedback from the pilot phase was that event selection was quite time-consuming and the decision was made to provide event selection options. The three most frequently discussed events from the pilot phase were then used in the full sample. Mothers and children chose from one of the three negative emotion topics: a time when the child had (1) a social disagreement, (2) injured themselves or (3) a disappointment (e.g., in a sports game or at school). Images were provided with the prompts to assist with topic selection, and the dyad were asked to

Table 1. Details of measures included across multiple growing up data collection waves (DCW)

Variable	Measure	DCW	Key reference(s)
Maternal Depression Symptoms	Edinburgh Postnatal Depression Scale (EPDS)	9 months	(J. Cox et al., 1987)
Child Mental Health and Language			
Internalizing and externalizing symptoms (Mother reported)	Strength and Difficulties Questionnaire (SDQ)	8 years	(R. Goodman, 2001)
Child-reported anxiety symptoms	Anxiety scale from PROMIS and NIH toolbox fear tool	8 years	(Irwin et al., 2010)
Child-reported depression symptoms	Centre for Epidemiologic Studies Depression Scale (CES-D-10)	8 years	(Fendrich et al., 1990)
Child language skills	NIH Toolbox Picture Vocabulary Test (PVT)	8 years	(Gershon et al., 2010)
Reminiscing Conversation Quality			
Emotion resolution	Emotion resolution scale (adapted) – Mother and child	8 years	(Koren-Karie & Oppenhiem, 2003)
Maternal elaboration	Elaborative Reminiscing Scale (adapted)	8 years	(Laible, 2004b; Leyva et al., 2020)

talk about the event 'as you usually would, for as long as you usually would.' Conversations lasted for approximately 5 to 10 minutes. Within the current sample, the topic of child injury was the most frequently discussed ($n = 691$), then social disagreement ($n = 320$) and child disappointment ($n = 223$).

Reminiscing task coding

Four researchers coded the first $\approx 1,400$ transcripts collected in temporal order. Separate coders coded for emotion resolution and maternal elaboration. The coding approaches utilized scale-based coding, which has been suggested as appropriate when examining child socio-emotional wellbeing (Leyva et al., 2020). Reliability coding was established (see below) and the remainder of the transcripts were coded independently. If any transcripts were unclear, the two coders consulted and decided on a score together to ensure continuity of reliability in coding. Once coding reliability was achieved, the initial coded transcripts were also re-checked.

Emotion resolution

Emotion resolution was adapted from the resolution/closure scale of Koren-Karie et al.'s (2003) Autobiographical Emotion Events Dialogue coding scheme. This scale focused on how mothers and children end their emotion discussion. Emotion resolution was coded on a 9-point scale, for mother and child separately. A low score of 1 would indicate that the mother enhanced negative emotions (e.g., "You could have died, you wouldn't stop bleeding"); for the child, they similarly may resist their mother's efforts for resolution and insist on repeating frightening details. A high score of 9 would indicate a conversation the mother or child ending with a positive moral or outcome, emphasizing the child's strength and resilience. A score of 5 would indicate the mother may try to end the story positively but does not insist and therefore the child is left without resolution of negative feelings; the child may shift to a different part of the story without resolving the negative feelings or may accept a parent's attempt at resolution without engaging in the ending. A random selection of transcripts was coded by two coders (the first and second author) for reliability ($n = 180$, 14.5%). An Intraclass Correlation Coefficient (ICC) was conducted, with a two-way random-effect model based on single measures and absolute agreement. ICC for maternal emotion resolution was .78, and for child emotion resolution was .79, both considered in the acceptable range (Syed & Nelson, 2015). The first author coded the remaining transcripts, with regular checks to prevent coding drift.

Maternal elaboration

Maternal elaboration was coded based on the Elaborative Reminiscing Scale (Laible, 2004a; Leyva et al., 2020). The scale is an overall measure of elaborative quality, which is rated on a 5-point Likert scale with one indicating low-elaborative reminiscing and five indicating high-elaborative reminiscing. A low score of 1 indicated that a mother used predominantly factual or closed questions, was repetitive and may have negated the child's contributions. A high score of 5 indicates the mother utilized mostly open-ended questions, confirmed and elaborated or expanded on the child's contributions and rather than repeat information, elicited more novel and in-depth information. A mid-score of 3 indicated that a mother used a balance of open and closed questions, elaborated on the child's contributions moderately, and were moderately repetitive in information provided. A random selection of transcripts was coded for reliability by two independent coders ($n = 173$, 14%). The two coders utilized this coding in their research investigating behavioral difficulties (Garnett et al., 2023) and infant temperament (Swearingen et al., 2023). Inter-rater reliability was calculated using ICC with a two-way random-effect model based on single measures and absolute agreement, at .81 in the acceptable range (Syed & Nelson, 2015).

Measures

Table 1 presents measures of relevance for the current study at each DCW. Further information about the range of measures, data collection waves and scope of the *Growing Up in New Zealand* study can be found at www.growingup.co.nz.

Sociodemographic variables

At the antenatal DCW, mothers self-reported sociodemographic information, which is reported in Table 2. This included maternal age, education level and self-prioritized ethnicity. Education level was reported as highest level of completed qualification. Mother's self-prioritized ethnicity was allocated to a single level 1 self-prioritized ethnic group for data analysis purposes: New Zealand European, Māori (Indigenous peoples of New Zealand), Pacific Peoples, Asian, MELAA (Middle Eastern, Latin American and African) and Other (Morton et al., 2020; Statistics New Zealand, 2005). Area-level socioeconomic deprivation was derived from the domicile address of participants, measured using the New Zealand Index of Deprivation (NZDep; Salmond et al., 2007) which

Table 2. Breakdown of participant demographics for current subsample (N = 1234)

Maternal Characteristics	n	%
Age (years) at 8-year DCW		
<30	115	9.3
30–39	507	41.1
40-44	402	32.6
45+	210	17
Ethnicity (n = 1230)		
European	743	39.4
Māori	169	13.7
Asian	178	14.4
Pacific	105	8.5
MELAA*	16	1.3
Other	19	1.5
Highest Education		
No secondary school	57	4.6
Secondary school	263	21.3
Diploma/trade certificate	373	30.2
Bachelor's degree	325	26.3
Postgraduate degree(s)	215	17.4
Deprivation Index		
<3: Low	312	25.3
4–7: Medium	515	41.7
8-10: High	407	33
Maternal mental health (antenatal)		
Depression diagnosis (self-reported, ever)	213	17.3
Anxiety diagnosis (self-reported, ever)	132	10.7
Child Characteristics		
Gender of child		
Male	624	50.6
Female	610	49.4
Conversation topic		
Injury	691	56
Disappointment	223	18.1
Social disagreement	320	25.9

Note. *Middle Eastern, Latin American, and African.

categorizes the relative deprivation level of small geographical areas across New Zealand from information gathered in the population-based census. Scores range from decile 1 indicating the 10% areas of least socioeconomic deprivation, to 10 – the most deprived areas (Salmond et al., 2007).

Maternal mental health

Edinburgh postnatal depression scale (EPDS) (Cox et al., 1987)
The EPDS is a 10-item measure of depression symptoms, commonly used in the postnatal period. Mothers completed the EPDS when infants were 9-months old. Each response item is scored on a four-point scale, with higher scores indicating higher distress. The EPDS has good user acceptability and may be used outside of the immediate perinatal window with satisfactory sensitivity and specificity (J. L. Cox et al., 1996) The EPDS has been widely used within the New Zealand population (Kim et al., 2020; Theunissen et al., 2022), in both antenatal and postnatal cohorts (Underwood et al., 2017). Cronbach's alpha for the EPDS in the current sample was 0.843.

Child mental health

Child self-reported anxiety
Ten items were used to measure child self-reported anxiety symptoms: eight items came from the PROMIS (Patient Reported Outcomes Measurement Information System Pediatric short form v2.0; Pilkonis et al., 2011) and two items from the NIH fear toolbox. For all ten items, children self-reported anxiety symptoms in the past seven days, on a Likert scale from 0 (never) to 4 (almost always). Examples of questions included "in the past 7 days I felt like something awful might happen" and "in the past 7 days, I worried when I went to bed at night". The PROMIS measure is validated for children aged 8–17 years old, and is reliable at 0.85 (Irwin et al., 2010). Cronbach's alpha for child anxiety in the current sample was 0.872.

Centre for epidemiological studies depression scale for children (Fendrich et al., 1990)
The CES-D-10 is a screening tool for symptoms of depression in children. Children responded to 10 items where they self-reported symptoms on a 4-point scale from 0 (not at all) to 3 (a lot). Items cover emotional symptoms of depressed mood, guilt, hopelessness, and physical symptoms of appetite, movement, and sleep difficulties. A recent validation study for the CES-D-10 using the larger *Growing Up in New Zealand* sample at the 8-year DCW, reported the tool to be valid and reliable without the 'hopeful' item (Cha et al., 2022); as such, we have excluded this item and the total score is the sum of the remaining nine items. Cronbach's alpha for the nine-item scale with the current sample was 0.724.

Strengths and difficulties questionnaire – parent report (R. Goodman, 2001)
Children's internalizing and externalizing difficulties were measured by mother-report on the Strengths and Difficulties Questionnaire (SDQ) at the 8-year DCW. The SDQ can be completed by a parent or teacher (for children aged 3-16 years old), or by the child themselves (11-16 years old). The SDQ is a 25-item questionnaire, with five subscales: emotional problems; peer problems; hyperactivity; behavioral problems; and prosocial behavior. Overall internalizing or externalizing constructs can be derived from the grouping of subscales and has been recommended as a viable option rather than the separate subscales more suitable for high-risk populations or screening for specific disorders (A. Goodman et al., 2010). The questions are rated on a 3-point scale of 0 'not true', 1 'somewhat true', and 2 'certainly true'. The sum of internalizing (emotional problems and peer problems) or externalizing (hyperactivity and behavioral problems) constructs ranges from 0 to 20. The SDQ has been reported to have good reliability and validity and is used in New Zealand in national screening programs in early childhood (R. Goodman, 2001; Richards et al., 2019).

Picture vocabulary test (PVT) (Gershon et al., 2010)

To measure children's receptive vocabulary, the PVT from the *NIH Toolbox Cognition Battery* was utilized (Gershon et al., 2010). The PVT is a measure of receptive vocabulary administered on an iPad for participants aged 3–85 years old. The measure takes approximately four minutes to administer, as it uses computerized adaptive testing to tailor questions based on the previous response. Children were presented with four images and an audio recorded word and asked to select the picture that most accurately corresponds with the word. The application automatically scores the test and provides age-corrected and uncorrected standard scores. The PVT has high test-retest reliability and good construct validity (Gershon et al., 2014), and the PVT has been successfully utilized in previous *Growing Up in New Zealand* research (Neumann et al., 2021).

Data analysis

Analyses were conducted using IBM Statistical Package for the Social Sciences version 28.0. Categorical variables were dummy coded in preparation for analysis (maternal education, ethnicity, and conversation topic). Four dummy variables for maternal self-reported ethnicity were created: New Zealand European vs. other (all other ethnic groups), Māori (Indigenous peoples of New Zealand) vs. other, Asian vs. other and Pacific Peoples vs. other. The remaining category of MELAA (Middle Eastern, Latin American and African) participants ($n = 16$) was too small to create a separate dummy variable for analysis. Continuous variables were deemed normally distributed and had no univariate outliers. Prior to analysis assumptions were tested, and no significant multicollinearity was detected. Covariates were selected for their known associations with reminiscing in current and previous samples (Garnett et al., 2023; Swearingen et al., 2023). Multivariable regression analyses were conducted to identify covariates for inclusion in the serial mediation models.

The main analyses consisted of serial mediation modelling with bootstrapping to test the relationship between maternal depression symptoms to child mental health outcomes through reminiscing and child language using Hayes (2009) PROCESS macro. The PROCESS macro uses bias-corrected bootstrapping based on 5000 bootstrap samples with a 95% confidence interval (CI) (Preacher & Hayes, 2004, 2008). When the confidence intervals do not cross zero, the indirect pathway is supported. Separate serial mediation models were conducted for each combination of the reminiscing measures (elaboration and emotion resolution) and child mental health measures (depression, anxiety, internalizing and externalizing), totaling 12 mediation models which concurrently tested all three hypotheses. When testing specific models and not exploring latent variables, PROCESS produces comparable results to a structural equation modelling approach (Hayes, 2017).

Results

Preliminary analyses

Missing data varied across scales (see Table 3). Only complete data for scales were included in the analysis, and analyses were conducted on reduced samples for those variables with missing data. Descriptive statistics conducted for mother and child variables of interest are shown in Table 3. Table 4 details bivariate correlations between study variables. Multivariable regression analyses were conducted with separate models for maternal elaboration, maternal emotion resolution, and child emotion resolution (Table 5) to identify covariates for inclusion in the serial mediation models. For

maternal elaboration quality, mother age ($\beta = .013$, $p = .01$), injury topic vs other ($\beta = -.349$, $p = <.001$), and maternal education ($\beta = .224$, $p = <.001$) were significant predictors, together explaining 7.2% of the variance. Demographics of area deprivation, ethnic groups, the disappointment topic, and child gender did not significantly contribute to the model. For maternal emotion resolution, disappointment topic ($\beta = .566$, $p = <.001$), and maternal education ($\beta = .259$, $p = .002$) were significant predictors, together explaining 6.4% of the variance. Mother age, child gender, the injury topic, area deprivation and ethnic groups were not significant predictors for maternal emotion resolution. For child emotion resolution, maternal education ($\beta = .233$, $p = .008$), and the injury ($\beta = .278$, $p = .001$), and disappointment topics ($\beta = .527$, $p = <.001$) were significant predictors, together explaining 3.9% of the variance. Mother age, child gender, area deprivation and ethnic groups were not significant predictors of child emotion resolution. Those variables significantly associated were included as covariates in subsequent reminiscing mediation models.

Indirect pathways

Mediation models are reported in Table 6. Across all twelve models, greater maternal depression symptoms were significantly associated with lower elaboration and lower resolution quality, whilst accounting for covariates. Simple mediation revealed no significant indirect pathway between maternal depression symptoms and child symptoms when accounting for covariates in the models. Partial serial mediation was found from maternal depressions symptoms through maternal elaboration and child language skills for models predicting children's anxiety (effect = .0015, $SE = .0010$, 95% CIs = .0001; .0041), depression (effect = .0009, $SE = .0006$, 95% CIs = .0001, .0023; shown in Figure 2 as a visual depiction of the serial mediation models), and externalizing symptoms (effect = .0003, $SE = .0003$, 95% CIs = .0000; .0011). Similarly, partial serial mediation was observed for models including maternal emotion resolution and child language, for children's anxiety (effect = .0020, $SE = .0013$, 95% CIs = .0000; .0050), depression (effect = .0011, $SE = .0007$, 95% CIs = .0000, .0027), and externalizing symptoms (effect = .0005, $SE = .0004$, 95% CIs = .0000; .0014). There was no support for an indirect pathway between maternal depression symptoms and child outcomes, through child emotion resolution and child language. Of note, effect sizes are shown in Table 6.

Discussion

Drawing on data from a large, diverse, contemporary longitudinal cohort study, the current findings enrich our understanding of the mechanisms involved in the intergenerational transmission of mental health difficulties. There was support for our first hypothesis that maternal depression symptoms would be associated with reminiscing. After controlling for covariates, maternal depression symptoms measured during infancy were associated across time with maternal elaboration, maternal emotion resolution, and child emotion resolution at age 8 years in all models. Secondly, we hypothesized that reminiscing outcomes would mediate the pathway between maternal depression symptoms and child mental health outcomes. However, contrary to findings by Swetlitz et al. (2021), we found no simple mediation through reminiscing. Instead, findings supported our third hypothesis that the relationship between maternal depression symptoms and child outcomes would be mediated through both reminiscing and child language skills. That is, together maternal reminiscing and

Table 3. Descriptive statistics for main study variables

Variable	*n*	Mean	Std. Deviation	Range	Skewness	Kurtosis
Maternal Elaboration	1,234	2.96	0.96	1–5	−.01	−.34
Maternal Emotion Resolution	1,234	6.03	1.27	1–9	−.79	.960
Child Emotion Resolution	1,234	5.69	1.30	1–9	−.43	−.18
Child Anxiety	1,226	9.85	7.91	0–40	.74	−.06
Child Depression	1,226	6.51	4.46	0–21	.67	.13
Internalizing symptoms	1,104	2.88	2.80	0–17	1.37	2.19
Externalizing symptoms	1,102	4.42	3.27	0–16	.77	.11
Maternal Depression Symptoms	1,232	6.10	3.35	1–20	1.07	.89
Picture Vocabulary Test	1,206	102.04	13.30	59–165	.56	1.20

Table 4. Bivariate correlations between study variables

	1	2	3	4	5	6	7	8	9	10	11
1. Maternal resolution quality	–	.776***	.280***	−.105***	−.018	−.047	−.046	−.063*	.084**	.085**	−.065*
2. Child resolution quality		–	.260***	−.084**	−.022	−.064*	−.048	−.066*	.071*	.033	−.062*
3. Elaboration			–	−.106***	−.015	.029	−.093**	−.036	.084**	.121**	−.087**
4. Maternal depression symptoms				–	.079**	.075**	.183***	.141***	−.078**	−.034	.065**
5. Child anxiety symptoms					–	.594***	.177***	.178***	−.139***	−.037	.136***
6. Child depression symptoms						–	.189***	.199***	−.117***	−.063*	.114***
7. Child internalizing							–	.400***	−.051	−.146***	.113***
8. Child externalizing								–	−.111***	−.090**	.060*
9. Picture Vocabulary Test									–	.143***	−.099***
10. Mother age										–	−.173***
11. Deprivation index											–

*$p < 0.05$. **$p < 0.01$. ***$p < .001$.

child language skills partially explain the association between parent and child mental health outcomes. Serial mediation with small effect sizes was observed for both maternal elaboration and maternal resolution, but not child resolution, through child language skills. Supported models predicted child self-reported anxiety and depression, and mother-reported externalizing symptoms, but not mother-reported internalizing symptoms. These findings provide novel insight into the intergenerational transmission of mental health difficulties through mother-child interaction and child language.

Maternal depression symptoms were significantly related to maternal elaborative reminiscing, maternal emotion resolution, and child emotion resolution in all models. Support for a longitudinal association (spanning more than 7 years) between early maternal depression symptoms and later maternal elaboration is notable, considering the mixed findings in past literature. Only Swetlitz et al. (2021) has reported a significant longitudinal association after controlling for covariates (cf. Reese et al., 2019). As suggested by past research, scale-based elaboration coding may better reflect associations with wellbeing or mental health outcomes rather than frequency or utterance-based coding (Leyva et al., 2020; Valentino et al., 2014). This may be due to the ability to draw meaning from the conversation in totality, which is likely to be more relevant as children develop greater

language and narrative skills in middle childhood (Grysman & Mansfield, 2020). The longitudinal association between maternal depression and both mother and child emotion resolution quality are also in line with Cimino et al.'s (2019) concurrent finding of lower maternal sensitive guidance for mothers with a depression diagnosis.

More limited access to coping skills may explain the relationship between maternal depression symptoms and lower emotion resolution, for both mothers and children. As demonstrated by Dyad A (Appendix A), a high-quality resolution may require the parent to scaffold multiple potential ways of coping with the emotions triggered by the event, seeking support from others, and/or preventing this type of event recurring. For some mothers, it may be difficult to resolve emotions due to difficulty recalling specific instances of adaptive information; over general memory (OGM) is not only often comorbid with depression but is a mechanism which predicts its onset and course (Valentino, 2011). OGM may affect the recall of positive details to adaptively resolve the emotion for their children (Gibbs & Rude, 2004). OGM has also been implicated in the intergenerational transmission of mental health through reminiscing (Valentino, 2011).

It is noteworthy that two existing longitudinal studies did not find an association between maternal depression symptoms and

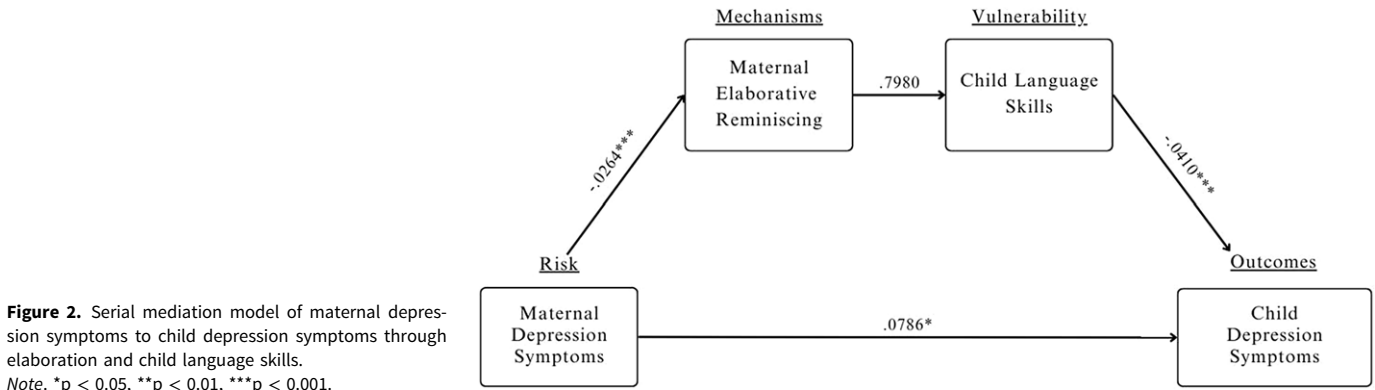**Table 5.** Regression model predicting reminiscing variables

Maternal elaboration quality	B [95% CI]	β	p	sr²
Mother age	0.01 [0.00, 0.02]**	0.07	.010	0.01
Child gender	0.02 [−0.08, 0.12]	0.01	.716	0.00
Injury topic	−0.35 [−0.47, −0.23]**	−0.18	<.001	0.02
Achievement topic	−0.11 [−0.27, 0.05]	−0.04	.186	0.00
Maternal university education	0.22 [0.10, 0.35]**	0.10	<.001	0.01
Deprivation	0-.01 [−0.03, 0.01]	−0.04	.145	0.00
European ethnicity	0.27 [−0.04, 0.59]	0.14	.089	0.00
Māori ethnicity	0.23 [−0.11, 0.57]	0.08	.180	0.00
Pacific ethnicity	−0.00 [−0.36, 0.35]	−0.00	.982	0.00
Asian ethnicity	−0.11 [−0.44, 0.23]	−.04	.54	0.00
Maternal emotion resolution quality				
Mother age	0.01 [−0.01, 0.02]	0.04	.230	0.00
Child gender	−0.09 [−0.23, 0.05]	−0.04	.194	0.00
Injury topic	0.09 [−0.08, 0.25]	0.03	.314	0.00
Achievement topic	0.57 [0.35, 0.78]**	0.17	<.001	0.02
Maternal university education	0.26 [0.09, 0.43]**	0.09	.002	0.01
Deprivation	−0.01 [−0.04, 0.02]	−0.02	.518	0.00
European ethnicity	0.35 [−0.08, 0.77]	0.13	.109	0.00
Māori ethnicity	−0.03 [−0.48, 0.43]	−0.01	.912	0.00
Pacific ethnicity	0.13 [−0.35, 0.61]	0.03	.588	0.00
Asian ethnicity	−0.07 [−0.52, 0.38]	−0.02	.769	0.00
Child emotion resolution quality				
Mother age	−0.00 [−0.02, 0.01]	−0.01	.862	0.00
Child gender	0.04 [−0.10, 0.19]	0.02	.565	0.00
Injury topic	0.28 [0.11, 0.45]**	0.11	.001	0.01
Achievement topic	0.53 [0.31, 0.75]**	0.16	<.001	0.02
Maternal university education	0.23 [0.06, 0.41]**	0.08	.008	0.01
Deprivation	−0.02 [−0.04, 0.01]	−0.04	.230	0.00
European ethnicity	0.35 [−0.08, 0.79]	0.13	.114	0.00
Māori ethnicity	0.04 [−0.43, 0.51]	0.01	.866	0.00
Pacific ethnicity	0.32 [−0.18, 0.81]	0.07	.212	0.00
Asian ethnicity	0.13 [−0.33, 0.60]	0.04	.578	0.00

Note. N = 1,234; *p <.05. ** p <.01.

reminiscing in early childhood (Raikes & Thompson, 2006; Reese et al., 2019), particularly given reminiscing style is thought to be consolidated during this developmental period. Given that developmental effects are cumulative (Sroufe, 2013), associations between maternal depression in infancy and reminiscing in middle childhood may reflect compounding differences in reminiscing which become more apparent as children age. These associations may also reflect transactional relationships between parent mental health and emerging child mental health difficulties, both with influence on the emerging dyadic reminiscing style. Further research is needed measuring parent and child mental health and reminiscing at multiple points across the preschool and childhood years.

Our second and third hypotheses were tested concurrently. The second hypothesis predicted that reminiscing would mediate the

pathway between mother and child mental health. However, no simple mediation effect through reminiscing was found, suggesting that although the relationship between early maternal depression and reminiscing at age 8 occurs, a more complex mediation may explain the relationship with child mental health outcomes. Swetlitz et al. (2021) previously observed mediation of maternal depression symptoms (6 months post-partum) to child externalizing symptoms (school/teacher reported at 7 years old) through maternal elaborative reminiscing. The differences between studies may be due to differences in research design. Swetlitz et al. (2021) did not include child language in their models as a variable or covariate. Indeed, when adding child language skills to the model, there was support for hypothesis 3. We predicted a serial mediation of mental health symptoms from mother to child,

Figure 2. Serial mediation model of maternal depression symptoms to child depression symptoms through elaboration and child language skills.
Note. *p < 0.05, **p < 0.01, ***p < 0.001.

through mother-child reminiscing and child language. Serial mediation models predicting child-reported anxiety and depression, and mother-reported child externalizing symptoms were all significantly mediated through maternal reminiscing (elaboration and resolution but not child resolution) and child language skills.

The finding of serial mediation through reminiscing and child language is a novel and significant contribution to our understanding of the intergenerational transmission of mental health. Children who experience lower parental elaboration are more likely to have smaller receptive vocabularies, likely through a lack of exposure to rich and complex language (Salmon et al., 2016). Interestingly, our findings also supported a serial mediation pathway through parent resolution and child language. As observed in the provided transcript excerpt, a high-quality resolution tends to label internal states, highlight different internal states and perspectives, and extends temporally from what happened in the past to how this could be managed differently in the future. Our findings suggest that this linguistic complexity is related to children's receptive vocabulary development and in turn associated with reduced externalizing difficulties and anxiety and depression symptoms.

Our serial mediation parallels Swetlitz et al.'s (2019) simple mediation in prediction of externalizing but not internalizing symptoms on the SDQ. As suggested by Swetlitz et al. (2021), these patterns of results may not necessarily suggest a different pathway for internalizing difficulties, but an age-related expression of symptoms. Younger children typically exhibit externalizing symptoms; as children develop there is a shift toward internalized difficulties (Loth et al., 2014). As noted by Swetlitz et al., in relation to their teacher report measurement of child symptoms, it may be more difficult to capture internalizing symptoms when reported by others due to the covert and inward nature of internalizing symptoms (Martin et al., 2004). Historically, internalizing symptomology has lower parent and child agreement than externalizing difficulties (Karver, 2006; Martin et al., 2004). The current study addressed this potential limitation by also including two *self-reported* measures of child internalizing symptoms and it is important to note that all serial mediation models predicting children's self-reported anxiety and depression symptoms through maternal reminiscing and child language skills were supported.

Notably, none of the models with indirect pathways through child resolution were supported, despite the association between maternal depression symptoms and child emotion resolution. This pattern could indicate that parents' input in resolution at this age is more influential for children's mental health or could suggest another mechanism may be associated with child emotion resolution in the mediation process. In their model, Goodman

and Gotlib (1999) predicted the development of vulnerabilities in the intergenerational transmission of maternal mental health to child mental health difficulties. Here we have tested child language skills as a key vulnerability; however, other cognitive and affective skills, such as emotion understanding (Raikes & Thompson, 2006) or emotion regulation (Compas et al., 2017), may better elucidate a path with children's emotion resolution quality. In support, Van Bergen and Salmon (2010) found that both maternal elaboration and discussion of the causes of their child's emotions were concurrently associated with children's emotion understanding.

Strengths and limitations

Strengths of this study include the large and diverse sample, the longitudinal design, measurement of child mental health across internalizing and externalizing symptoms and measurement of internalizing symptoms based on both parent and child report. The findings should, however, be interpreted alongside consideration of limitations. The effect sizes, although significant, are small. This pattern indicates that there are likely other pathways that also explain the intergenerational transmission of mental health difficulties. Other specific mechanisms that may mediate this pathway include heritability of depression, innate dysfunction of neuroregulatory mechanisms, exposure to stressful environments, and other types of parent-child interactions (Goodman & Gotlib, 1999). In particular, Swetlitz et al. (2021) tested their reminiscing pathway against observed harsh-intrusive and sensitive parenting, but we did not have another observed interaction to test alongside reminiscing in this way. In addition, our measure of child language reflects receptive vocabulary knowledge, but expressive language will likely also be important to consider (Aoyagi et al., 2019; Girard et al., 2016; Ripley & Yuill, 2005).

Moreover, our study only investigated mother-child dyads; the limited research investigating parent gender differences shows mixed results but suggests maternal and paternal reminiscing may fulfill unique functions (Aznar & Tenenbaum, 2015; Buckner & Fivush, 2000; Pavlova et al., 2022). As such, these results should be interpreted for mother-child dyads only and further research is needed to examine both intergenerational transmission of paternal mental health difficulties and how one parent's mental health and/or reminiscing style might buffer or moderate the impact of another parent's mental health symptoms (Goodman & Gotlib, 1999). The design of this study does not allow for a true longitudinal model; future research should also investigate the association of reminiscing from age 8 to later child mental health (Mitchell & Reese, 2022). Future research could also examine whether maternal mental health at other developmental stages

Table 6. Indirect effect coefficients for the serial mediation models of maternal depression on child mental health, mediated through parent-child reminiscing (m1) and child language (m2)

Child mental health outcome	Direct effect: maternal depression symptoms to child mental health	Maternal depression symptoms to reminiscing (m_1)	Reminiscing (m_1) to child language (m_2)	Reminiscing (m_1) to child mental health	Child language (m_2) to child mental health	Indirect effect of simple mediation model (through reminiscing m_1) Effect [95% CI]	Indirect effect of maternal depression symptoms to child outcome via serial mediation Effect (95% CI)	Effect size (%)
M₁: Maternal Elaboration								
Covariates: Maternal education, injury topic, and maternal age								
Anxiety	.1443*	−.0264***	.7980	.0541	−.0734***	−.0014 [−.0162, .0118]	.0015 [.0001, .0041]*	0.92
Depression	.0786*	−.0264***	.7980	.2584	−.0410***	−.0068 [−.0167 .0002]	.0009 [.0001, .0023]*	1.09
Internalizing	.1507***	−.0250**	.6641	−.1703	−.0001	.0043 [−.0003 .0112]	.0000 [−.0003, .0003]	0.19
Externalizing	.1322***	−.0251**	.6792	−.0128	−.0194**	.0003 [−.0053 .0062]	.0003 [.0000, .0011]*	0.22
M₁: Maternal Emotion Resolution								
Covariates: Maternal education, and achievement topic								
Anxiety	.1407*	−.0427***	.6231*	.0061	−.0733***	−.0003 [−.0155 .0149]	.0020 [.0000, .0050]*	1.24
Depression	.0681	−.0427***	.6231*	−.1015	−.0408***	.0043 [−.0043 .0143]	.0011 [.0000, .0027]*	1.31
Internalizing	.1559***	−.0352**	.6426	−.0495	−.0027	.0017 [−.0025 .0072]	.0001 [−.0003, .0005]	0.06
Externalizing	.1309***	−.0355**	.6496*	−.0993	−.0203**	.0035 [−.0022 .0111]	.0005 [.0000, .0014]*	0.35
M₁: Child Emotion Resolution								
Covariates: Maternal education, achievement topic, and injury topic								
Anxiety	.1448*	−.0333**	.5392	.0093	−.0731***	−.0003 [−.0129 .0115]	.0013 [−.0001, .0037]	0.79
Depression	.0700	−.0333**	.5392	−.1246	−.0407***	.0042 [−.0021 .0125]	.0007 [−.0001, .0020]	0.82
Internalizing	.1558***	−.0288*	.5890	−.0670	−.0026	.0019 [−.0016 .0072]	.0000 [−.0002, .0004]	0.13
Externalizing	.1313***	−.0292*	.5927	−.1098	−.0202**	.0032 [−.0013 .0096]	.0004 [−.0001, .0012]	0.28

Note. *p < .05. **p < .01 ***. p < .001.

(i.e., beyond infancy) is also related to child outcomes through reminiscing and child language. This pathway should also be investigated in a clinical cohort; recent research observed concurrent associations between maternal depression symptoms and quality of elaborative reminiscing, although only for parents in a community cohort, not the clinical cohort of children referred with internalizing symptoms (Russell et al., 2023). It would also be helpful to extend measurement of maternal mental health beyond depression, for example to consider personality and/or trauma difficulties (Judd et al., 2018). Moreover, different trajectories of transmission may appear over time and should be investigated within the context of ongoing cumulative socialization. We also conducted multiple serial mediation models which may increase risk of Type 1 error and replication of these findings in further samples is needed.

Our study included mother's self-prioritized ethnicity in preliminary regression models to account for any variance; however, this was not a significant predictor of reminiscing and was therefore not included in subsequent mediation models. Despite this, reminiscing occurs within a socio-cultural context. It is likely that more nuanced measurement of reminiscing (particularly utterance and content-based coding) would elucidate differences in reminiscing based on ethnicity. Reminiscing has been shown to be important for Māori, with increased cultural affiliation being associated with more frequent reminiscing about a diverse range of topics (Reese & Neha, 2015). Research using a similar sample from *Growing Up in New Zealand* found differences

in reminiscing as a function of maternal ethnicity; however, maternal ethnicity did not moderate the association between maternal elaboration and child mental health (Garnett et al., 2023). Previous research has also shown European-American mothers to focus more on internal states and causes and consequences, promoting self-understanding, and Chinese mothers to focus more on subjective states with others, reflecting group-oriented relatedness (Wang et al., 2010; Wang & Fivush, 2005). Of note, Song and Wang (2020) found stronger associations between parent causal, social, and coping talk during reminiscing and positive self-concept for children of Chinese immigrant mothers compared with children of European-American mothers. Further research is needed to understand the specific aspects of parent-child reminiscing that relate to more positive wellbeing outcomes for different cultural groups. At the age 8 DCW, children were asked about their gender identity, however inclusion of this was outside the scope of this study and we opted to include only sex assigned at birth. Gender is socially constructed and there is some evidence of associations between gender typical identity and emotion expression when recalling memories (Grysman et al., 2017). We would therefore like to acknowledge the limitation in considering only binary gender.

Conclusions

Maternal reminiscing, along with child language, serially mediated the pathway from maternal depression symptoms in infancy to

child mental health outcomes of anxiety, depression, and externalizing difficulties. Early maternal depression was consistently linked with both mother and child reminiscing at age 8. These findings highlight the importance of mother-child emotion reminiscing for children's developing mental health and point to opportunities for disruption of this transmission pathway at three modifiable stages: early maternal depression, mother-child reminiscing conversations, and children's language acquisition (Corsano et al., 2019; Reese et al., 2010; Reese & Newcombe, 2007; van Bergen et al., 2009). Reminiscing is modifiable for both community and clinical families (Corsano et al., 2019). Moreover, the benefits of reminiscing coaching have been observed with only a handful of sessions (1-6; Corsano et al., 2019), suggesting this may be a cost-effective and scalable approach to promote healthy mother-child relationships and support children's mental health.

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