ABSTRACT

GROVENSTEIN, TIFFANY NICOLE. The Socialization of Narrative Coherence: Linkages between Maternal Reminiscing and Children's Later Independent Narratives (Under the direction of Dr. Lynne Baker-Ward).

In this dissertation, I investigated mothers' socialization of children's narrative skills by examining linkages between maternal characteristics during mother-child reminiscing conversations and children's later independent narratives. Specifically, I investigated the extent to which the joint and independent narratives situated the reported actions in time and place, provided a chronology, and conveyed the narrator's interpretation of the events. These event components constitute narrative coherence. I also examined if maternal narrative coherence mattered over and above the effect of maternal elaborations on the child's narrative coherence. Although an extensive literature documents the importance of mothers' scaffolding of children's conversations in memory development, associations between maternal reminiscing and children's later narrative coherence remain to be fully understood.

Investigators with the Durham Child Health and Development Study shared data for analysis. Mothers and their children (*n* = 90 dyads) participated in a mother-child reminiscing task when the child was approximately 72 months and the same children provided independent narratives approximately 1 year later, now at 84 months. I examined maternal narrative coherence in the reminiscing conversation and scored the narrative coherence of the child in independent narrative by adapting coding rules from the Narrative Coherence Coding Scheme (NaCCS; Reese et al., 2011). Hierarchical regression analyses were conducted to determine if maternal elaborations during the reminiscing task predicted the child's narrative coherence in the independent narrative task, while controlling for verbal ability and other demographic variables. Contrary to expectations, maternal elaborations did not predict the child's coherence, thus rejecting hypothesis 1. Next, hierarchical regressions were conducted to see if the mother's use

of coherence predicted the child's later use of coherence, while controlling for verbal ability and other demographic variables. Contrary to expectations, the mother's use of coherence did not predict the child's use of coherence, thus rejecting hypothesis 2. However, in additional follow up analyses, I demonstrated that mothers who were more elaborative were also more coherent in all three dimensions, although maternal elaborations and coherence did not affect the child's independent narrative skills.

Last, conducted Repeated Measures (Mixed) ANCOVAs to examine the relation between event valence (positive versus negative) and coherence in children's independent narratives (n = 115). Contrary to expectations, the child's coherence did not significantly differ with the positive versus negative event after controlling for the child's verbal ability.

In the discussion, I provide possible explanations for the results and suggestions for future research.

The Socialization of Narrative Coherence: Linkages between Maternal Reminiscing and Children's Later Independent Narratives

by
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DEDICATION

I dedicate this work to my family, particularly my parents, who have always supported me in my goals.

BIOGRAPHY

Tiffany Nicole Grovenstein grew up in Durham, North Carolina. She obtained her Bachelor of Arts in Psychology, summa cum laude, and a minor in Sociology, from North Carolina State University in May 2010. She enrolled in the Lifespan Developmental Psychology Program at North Carolina State University in August 2010 under the supervision of Dr. Lynne Baker-Ward. She earned her Master of Science in May 2013. After earning her masters, she continued in the same program, working towards her Ph.D. In addition to working towards the completion of the Ph.D. program, she started working as an Adjunct Instructor at Wake Technical Community College in August 2014 and as a full time Instructor at Wake Technical Community College in August 2015. She continues to work full time at Wake Technical Community College, now as an Associate Professor of Psychology. She also taught as an Adjunct Instructor at Meredith College for one semester in Fall 2014. Her research focuses on autobiographical memory and narrative development during childhood.

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TABLE OF CONTENTS

LIST OF TABLES

Introduction

The personal narratives that we construct about our experiences impact our understanding of those events, as well as our ability to represent them in memory and share them with others. Moreover, learning to construct narratives that are coherent is particularly important for development in a number of domains. As defined by Reese et al. (2011), coherent personal narratives make sense to the listener, convey the meaning of the described events to the narrator, and situate the reported actions in time and place. The importance of coherent narratives for development is clear in a number of domains, including autobiographical memory (e.g., Bauer et al., 2019; Bauer & Larkina, 2019; Morris et al., 2010; Peterson et al., 2014; Peterson et al., 2018; Vanderveren et al., 2019; Wang et al., 2014), psychological well-being and mental health (e.g., Chen et al., 2012; Mitchell et al., 2020; Vanaken et al., 2022; Waters & Fivush, 2015) peer acceptance (e.g., Davidson et al., 2017), and communication (e.g., Peterson et al., 1999; Vanaken & Hermans, 2021). Additionally, narrative coherence plays a significant role in more applied domains, such as children's forensic interviews and eyewitness testimony (e.g., Szojka et al., 2022; VanMeter et al., 2023), child psychopathology (e.g., Miragoli & Camisasca, 2022), and provides a way to examine the success of an intervention program for children's narrative skills (e.g., Leyva et al., 2022). See Waters and Köber (2018) for an overview of the research on narrative coherence. Although the importance of developing coherent narratives is clearly documented, many factors influencing the development of a child's narrative coherence are still to be determined. As such, this study examined the mother-child reminiscing conversation as one potential factor that could impact the development of children's narrative coherence.

Extending Vygotsky's sociocultural theory (Vygotsky, 1978), Nelson and Fivush (2004) argue that narrative development originates in conversations between children and their caregivers. Language, as a cultural tool, allows us to have those conversations (Fivush, 2019). Furthermore, reminiscing through conversations with adult caregivers about the past provides a special opportunity for children to learn how to narrate their own life story later in development (Salmon & Reese, 2016). For example, extensive research by Fivush, Reese, and their colleagues (e.g., Fivush et al., 2006; Fivush, 2014; Salmon & Reese, 2016; Swearingen et al., 2023) has shown that parents support their children's contributions to reminiscing conversations by asking many open-ended questions and providing elaborations, or more information in successive questions, otherwise known as an elaborative reminiscing style. However, parents vary in the extent they use this elaborative reminiscing style, with some using it more frequently and others using it less frequently and instead repeating the existing information (Fivush, 2019).

Despite the literature documenting the importance of mothers' reminiscing style for memory development (see Fivush et al., 2006; Fivush, 2019; and Waters et al., 2019 for a meta-analytic review), linkages between maternal elaborative reminiscing and children's later narrative coherence remain to be fully understood. Additionally, the direct link between mothers' use of coherence and the child's subsequent narrative coherence has yet to be examined. Lastly, although researchers have examined the impact of valence on the coherence of the event, most of the literature has focused on more traumatic negative events (e.g., scary events related to asthma or witnessing violence; Fivush et al., 2003; Fivush et al., 2008) rather than everyday or routine negative (e.g., getting punished for not completing homework) and positive events.

Building on previous research, the aims of the present study were threefold. First, I examined the extent to which maternal elaborations while reminiscing predicted the child's later independent narrative coherence. Second, I examined the extent to which the narrative coherence mothers co-construct with their children in a reminiscing conversation predicted the coherence of their child's later independent narratives. To determine whether socialization of coherence is more than just an elaborative style, I examined the extent to which measures of coherence contributed to predictions of the child's later independent narrative coherence, over and above the effects of maternal elaborations. Third, I determined if children generated more coherent narratives when reporting positive or negative personal experiences.

Age-Related Changes in Narrative Coherence

Reese and colleagues (2011) developed the Narrative Coherence Coding Scheme (NaCCS), arguing that narrative coherence consists of three separate dimensions. They define a coherent narrative as "one that *makes sense* to a naïve listener—not just in terms of understanding when, where, and what event took place, but also with respect to understanding the meaning of that event to the narrator" (Reese et al., 2011, p. 425). Hence, in a coherent narrative, a naïve listener should be able to understand the *context*, or where and when the event took place; the *chronology* of the actions that transpired in the reported event; and the overall *theme*, or important affective and evaluative information that conveys the narrator's interpretation of the experience. Although initial expressions of these three dimensions of coherence are evident in early childhood, each dimension has a different developmental trajectory. Specifically, according to the NaCCS, children incorporate chronology in their narratives in late preschool, whereas it is only adolescents who typically reach the highest level on the scale for context, while theme is typically fully represented only in adulthood (Reese et al., 2011). Since the creation of the scale, the NaCCS has been utilized in a number of studies with children or adolescents (e.g., Bauer et al., 2019; Bauer & Larkina, 2019; Davidson et al., 2017; Leyva et al., 2022; Miragoli & Camisasca, 2022; Mitchell & Reese, 2022; Peterson et al., 2018; Reese et al., 2020; VanMeter et al., 2023) and adults (e.g., Bakir-Demir et al., 2023; Vanaken et al., 2022; Vanaken & Hermans, 2021) and was reported as one of the main ways in which to measure coherence of single event narratives (Waters & Köber, 2018).

Given the developmental trajectory just discussed, the age at which narrative coherence is examined in participants influences the rationale and conclusions that can be made in the research. Consistent with Vygotsky's (1978) concept of the zone of proximal development, scaffolding is most effective when a skill is emergent. Therefore, in order to understand influences on narrative coherence, the factors should be examined when children are still developing the capacity to produce coherent narratives. Children younger than about three years old tell impoverished narratives, failing to include key points of the story and generally only confirming or denying information provided by someone else (Bauer, 2014). Across the preschool years, children use more temporal markers (see review by Pathman & St. Jacques, 2014), including words such as *then*, *first*, *second*, and *next* (chronology; Fivush et al., 1995), and are able to stay on topic during narrative reports (theme; Reese et al., 2011). However, preschool children still produce very limited narratives, scoring low on all dimensions of coherence, and the assessment of coherence is often confounded with the length of the narrative at this age level (Reese et al., 2011). Elementary school children, in comparison to preschoolers, contribute more to autobiographical independent narratives (see review by Bauer, 2014) and score higher on each dimension of coherence (e.g., Morris et al., 2010; Peterson et al., 2014; Reese et al., 2011) by providing general information about time and/or place (i.e., context), including more temporal order (i.e., chronology), and providing more elaborations (i.e., theme) (Reese et al., 2011). Further, the coherence of narratives begins to represent a distinct quality separate from narrative length across the elementary school years (Reese et al., 2011). As such, elementary school provides a great opportunity to examine the development of children's narrative coherence.

Bauer and Larkina (2019) provided support for the previously mentioned trajectory of the development of coherence. Specifically, child independent narratives at 4 years of age were on average thematically on topic but had minimal development (i.e., score of 1, range 0-3, on the NaCCS) but by 10 years of age had increased to a more developed narrative through evaluations, interpretations, and/or causal linkage (i.e., score of 2). Given the limited research on changes during this period, Bauer and Larkina argued that more research needs to be conducted to understand changes in narratives throughout middle childhood and early adolescence. Additionally, Swearingen and colleagues (2023) argued that middle childhood (i.e., ages 6 to 12 years of age) is often overlooked in the reminiscing literature and that age group in particular was a strength of their recent publication. Therefore, to understand the potential influence of scaffolding on the development of narrative coherence, I examined mother-child reminiscing conversations when the children were approximately 72 months of age, a point at which children provide initial expressions of the dimensions of coherence but were still developing the capacity to produce coherent narratives. Given that I was particularly interested in the influence of maternal socialization and scaffolding of narrative coherence, I focused on the mother's contributions during the reminiscing conversations.

Narrative Socialization through Joint Reminiscing

Previous research supports the notion that mothers socialize their child's narrative skills through reminiscing. For example, the extent to which mothers elaborate in co-constructing past experiences with their children predicts a number of child outcomes, including children's memory (see Fivush, 2021, for a summary of this research and Waters et al., 2019, for a meta-analytic review), language development (Fivush et al., 2006; Salmon & Reese, 2016; see Waters et al., 2019, for a meta-analytic review), and their socioemotional skills (Salmon & Reese, 2016).

Additionally, in previous analyses of the present dataset, Langley and colleagues (2016) reported that the frequency of maternal elaborations during mother-child reminiscing increased not only with the child's increasing age (from 3 to 6 years) but also with the child's increasing involvement in the task, indicated by their greater use of elaborations across the age span. Furthermore, when examining another part of the narrative with a sample of children all eligible for subsidized child care (e.g., Head Start), Kelly and Bailey (2013) demonstrated that mothers' proportion of contributions of macrostructure details (e.g., *orientations* which provide contextual details, *complicating actions* which describe the action of the narrative, and *evaluations* which expose the narrator's attitudes) to narratives co-constructed with their children at ages 3-, 4-, and 5-years old decreased as their children subsequently gained the capacity to spontaneously generate these narrative components on their own. Kelly and Bailey argue that although this finding may seem contradictory to previous findings in which elaboration increases over time, it can be explained by the type of narrative coding conducted (macrostructure details versus elaboration). In other words, even though the availability of macrostructure details can be considered to be limited, and hence because there is a limited range between the details provided by members of a dyad, the number of possible elaborations can vary more freely. Another study utilized the same original sample as in the Kelly and Bailey study just discussed (i.e., data from the Harvard Home-School Study of Language and Literacy Development that focused on children who were eligible for subsidized childcare) but included a larger sample of mother-child dyads (i.e., 59 dyads versus 31 in the previous study) in the analyses (Bailey et al., 2020). Bailey and colleagues (2020) found similar results in which orientations, complicating actions, and evaluations decreased or remained mostly consistent while the child aged from 3- to 5-years-old. Additionally, the type of scaffolding the mother provided changed over time, such as the mothers provided more orientation information (i.e., main actors, location or setting, time) when the children were 3 years old, allowed for more child autonomy at 4-years-old, and mothers prompted more challenging evaluation aspects of the narrative at 5-years-old. Bailey and colleagues argue the changes from 4- to 5-years-old must be interpreted with caution, given the type of narrative elicited also changed across these timepoints (i.e., a mother nominated recent event versus a recent scary event). Despite this limitation, these findings are consistent with Vygotsky's postulation that mothers adjust their conversations based on the child's level of competence in the task.

Despite changes in the extent of their contributions over time, mothers' overall reminiscing style remains consistent within the reminiscing context (e.g., Fivush, 2014, 2019; Hedrick, 2021; Langley et al., 2016; Reese et al., 2020). In other words, mothers who are highly elaborative will continue to use more elaborations when talking with their children compared to mothers who are less elaborative. As early as preschool, children internalize the mothers' consistent reminiscing style and include similar amounts of details and elaborations in their own narratives (Fivush et al., 2006; Fivush, 2014; Larkina & Bauer, 2010).

The previously mentioned studies demonstrate the influence of maternal reminiscing on children's narratives is clear. However, what influences *why* and *how* mothers use more macrostructure details, elaborations, etc., is still being examined. Swearingen and colleagues (2023) adapted Bronfenbrenner's model for "the factors that shape mothers' reminiscing with their children" (p. 2249) that help address these questions. In this model, Swearingen and colleagues include four factors that pertain to the present study, the child's identified gender and the child's language skills both at the microsystem level, the mother's socioeconomic circumstance at the exosystem level, and how culture (e.g., ethnicity and/or race) influences the reminiscing conversation at the macrosystem level. Even though these four factors were not major questions of the present study and were included more as markers of systematic attrition and control variables, potential inclusion of these four factors in my analyses allowed for a greater understanding of the complexity of maternal reminiscing on child development. For example, although early research indicated that mothers reminisced with their daughters and their sons differently (e.g., Reese & Fivush, 1993), more recent research does not always find a difference between daughters and sons (e.g., Swearingen et al., 2023; Waters et al., 2019). Additionally, Western European American parents compared to Asian parents were more elaborative when reminiscing with their children (see Wang, 2021 for a literature review). However, it should be noted that whereas the families in this study may have represented the environment from which their data was collected, the contributions of gender, race, and income were limited to the mothers' reports of these constructs and should be interpreted cautiously. Furthermore, although these four factors are typically discussed with maternal *elaborations* and reminiscing, applying these same four factors to the understanding of maternal narrative *coherence* allows for more continuity in the field when examining differences and similarities between maternal elaborations and narrative coherence.

Evidence for the Socialization of the Child's Coherence through Maternal Elaborations

Preliminary research provides some evidence that maternal elaborative reminiscing predicts children's subsequent use of coherence in independent narratives, although more research is clearly warranted. In an unpublished thesis, Hoffman (2014) examined reminiscing conversations among mother-child dyads when the children were 54- and 72-months-old, and also analyzed the independent narratives the children produced at 72 months. Hoffman reported that the extent of maternal elaborative and/or repetitive questions predicted the number of children who scored low versus high on dimensions of coherence in the independent narrative task. However, Hoffman's results must be interpreted with caution, given the multiple comparisons involving subsets of the small sample (*N*s = 53-58) and the resulting likelihood of type 1 errors, as well as the apparent absence of a peer review. To clarify these findings, I compared maternal elaborations during reminiscing conversations when the child was 72 months old to the child's independent narrative at 84 months of age. This also enabled an examination of the effects of provision of coherence over and above the effects of elaboration.

A series of intervention studies (i.e., Marshall & Reese, 2022; Mitchell & Reese, 2022; Reese et al., 2020) provided more preliminary evidence that mothers' elaborative reminiscing may predict the child's narrative coherence. Specifically, Reese and colleagues (2020) completed a 9-year follow-up to an elaborative reminiscing intervention with mothers when their children were 21, 25, and 29 months of age, compared to a control group in which the mothers were not given this intervention. The intervention asked mothers to engage in frequent conversations with their children and to use open-ended elaborative questions, among other things (see Reese & Newcombe, 2007 for the original intervention study). At 11-years-old, these same children (now adolescents) and their mothers were asked to complete a mother-child reminiscing conversation about a positive and a negative event. The 11-year-olds also were asked to independently discuss a "high" and "low" point in their life. Mothers in the intervention group remained more elaborative at this time point compared to mothers who were not in the intervention group. Given the limited variance in chronology (i.e., majority at ceiling, scored 3 on the NaCCS), this dimension of coherence was not examined further. However, for the low-point narratives, adolescents' contextual and thematic coherence were significantly higher if their mother completed the intervention, compared to the adolescents' whose mother was in the control group. It should be noted that significant findings were found only for the low-point, or negative narratives, compared to the positive narratives and it could indicate that adolescents have processed the negative event more. I suggest the valence of the event itself could also have had an influence (to be discussed further in the Narrative Coherence and Valence section).

Mitchell and Reese (2022) completed another follow-up when the original children were now 15 years old. This time the adolescents were asked to provide a turning-point narrative (i.e., an event that had significance on what their life is like), which was coded for causal coherence (i.e., how much the adolescent describes the effect of the turning point on their personality or perspective on life) and thematic coherence. Although causal and thematic coherence were moderately intercorrelated, only causal coherence reached a significant level. Specifically, adolescents whose mothers were in the intervention group had a more causal coherent narrative in adolescence, compared to the adolescents whose mothers did not receive the elaborative reminiscing training. Mitchell and Reese describe their surprise that thematic coherence was not significant but suggest this could be a result of the narrative task being specific to turning-points only, which naturally include a high level of thematic coherence, and recommend other types of narratives be examined. As a further follow up, when the emerging adults were now 21 years old, Marshall and Reese (2022) found that those whose mothers were in the intervention group had higher causal coherence in their turning point narratives compared to those whose mothers did not receive the elaborative reminiscing training (thematic coherence was not measured in this study).

Although these sets of studies are impressive and provided preliminary evidence that mothers' use of elaborations may predict the child's coherence, particularly for the *theme* dimension, there are cautions that must be mentioned. First, as typical with longitudinal datasets, some attrition and different samples of participants were examined over time, such as the study originally including 115 mother-child dyads at the intervention timepoint, 76 children at age 11 (Reese et al., 2020), 93 adolescents at age 15 (Mitchell & Reese, 2022), and 94 emerging adults at age 21 (Marshall & Reese, 2022). Additionally, the sample lacked diversity with the majority of families coming from New Zealand European (86%) background and the mothers having completed some post-secondary education (i.e., on average 13 or 14 years; Reese et al., 2020). Second, the type of narrative elicited (i.e., high or low point narratives versus everyday event narratives), and the potential for repeated testing effects, may have influenced the results. To clarify these findings, I will take a step back to a shorter time between the mother-child conversation and the child's independent narrative. It could be, with the combination of other factors as we age through childhood and adolescence, such as formal schooling, the initial direct impacts from mother-child conversations weaken over time. Additionally, as Mitchell and Reese (2022) suggest, and as I previously mentioned, the type of narrative itself could impact the coherence. Therefore, I examined everyday events in both the mother-child conversations and the child independent narratives, as they would be naturally discussed.

Evidence for the Socialization of the Child's Coherence through Mothers' Coherence

The research examining the direct impact of maternal coherence on the child's narrative coherence is even more limited than the previously discussed literature. Some of the preliminary research is further discussed, such as work by Peterson and McCabe (1992, 1994, 2004). Throughout a period of 18 months, 10 mother-child pairs (children aged 25 to 27 months) recorded their reminiscing conversations and the children provided independent narratives to researchers monthly (Peterson & McCabe, 1994). Peterson and McCabe found that children of mothers who discussed and prompted the provision of context (i.e., defined by labeling when or where) while reminiscing were more likely to include the location or time of the event in their independent narratives they reported after an extended delay. Extending this research, Peterson and colleagues (1999) trained 14 low-income mothers over the course of one year to spend more time conversing with their children, to ask more *wh*- questions, and to elaborate on the child's contributions more frequently. A year after the intervention ended, the children of the trained mothers, in comparison to the children of mothers in the control group, produced more and longer independent narratives that were also more likely to reference time and place. (See Peterson & McCabe, 2004, for a full review of these studies.)

Despite the small sample sizes in these studies, Peterson and colleagues have established a causal link between mothers' use of an elaborative reminiscing style and the presence or absence of children's provision of time or place, a simplified version of the current coding of context. However, the literature on the contributions of maternal narrative coherence as co-constructed during joint mother-child reminiscing to the coherence of children's independent narrative coherence remains limited. Kelly and colleagues (2022) provided some information by examining mother-child conversations about three shared events, in 65 dyads when the children were approximately 39- to 76-months of age. Kelly and colleagues provided descriptive information on *how* mothers responded to the child's utterance that altered the chronology of the event (i.e., called a *child leapfrog*). When mothers responded to the chronological digression (i.e., ignoring the times the mother did not respond or address the digression), more than half of the mothers would respond to the child's chronological digression with an explicit reference to repair this digression with words such as “before,” “after,” or “beginning” or specifically ask the child about the order (i.e., “but remember the top one that came out first”; Kelly et al., 2022, p. 439). This suggests that mothers are scaffolding their child’s narrative contributions during joint conversations.

It is important to point out the limitations and cautions with conclusions from this study. First, this study was not a longitudinal study, so examining the impact of mother’s scaffolding over time on the child’s independent narrative was not possible. Second, the way in which the mother scaffolded the conversation was only descriptive and the direct quantitative relationship between mother’s socialization and the child’s independent narrative was not examined. Additionally, only the mothers’ responses to their children’s off chronology turn (i.e., leapfrog) was examined, thereby excluding the other turns in which mothers may have also scaffolded the temporal order of the event.

To address the limitations in these previously mentioned studies (i.e., Kelly et al., 2022; Peterson & McCabe, 2004) and the gaps in the existing literature, I quantitively examined the socialization of narrative coherence using three separate dimensional scales defined by Reese et al. (2011). To do so, I examined the impact of maternal coherence through mother-child reminiscing and children’s independent narratives with a sample of children who were older than the participants examined by Peterson and McCabe (2004). Additionally, the sample for this study greatly extended the number of participants analyzed by Peterson and colleagues.

Narrative Coherence and Valence

Despite the growing literature on the development of children’s narrative coherence, much remains to be explained when it comes to the valence of the narrative itself. Scaffolding can be provided by properties of the task as well as through social interaction (Cox et al., 1991).

For example, children's memory performance varies in response to the extent that the task provides information processing supports and utilizes prior knowledge (for a review see Haden, 2013; Ornstein et al., 1988). These contextual supports may be particularly important when skills are not yet well established (Ornstein et al., 1988). In generating independent narratives, the valence of the to-be-reported event may affect the coherence reflected in the child's report. Research by Fivush and colleagues (Fivush et al., 2003; Fivush et al., 2008) concluded that children's (ages 5- to 12-years-old) negative event narratives (e.g., scary events related to asthma or witnessing violence) were more coherent than their reports of positive events (e.g., birthday parties). Additionally, Reese and colleagues (2011) discovered that 12- and 14-year-old children told more coherent narratives in reporting negative compared to positive events. Despite these initial findings, very few current studies using the NaCCS have taken into account the potential differences in coherence scores for everyday positive and negative events, thus warranting more research on the subject.

There are several possible explanations for these findings. First, the components of negative events (e.g., injuries, accidents, arguments), in comparison to positive events, appear to be more contingent, in that one action leads to another action (e.g., landing on a sharp object requires a fall). Such enabling relations (e.g., Bauer & Fivush, 1992; Bauer, 1992) could provide scaffolding for the greater inclusion of chronology in the narrative. In addition, given the nature of the negative event reports, these experiences might be more conducive to personal evaluations and a logical conclusion than positive events. Supporting this possibility, Wang and Fivush (2005) discovered that both mothers and children were more likely to include attributions (emotional states or reactions) and explanations (the causes of the emotion) in their discussions of negative compared to positive events. In a review of the literature, Fivush and Salmon (2023) also suggest when reminiscing about negative events, mothers focus on the causes and resolution whereas with positive events, mothers focus more on the event itself. Through hundreds of these conversations, children, in turn, “are internalizing narrative forms that help them understand and regulate their emotions” (Fivush & Salmon, 2023, p. 3) and it could be hypothesized that children would demonstrate this emotion knowledge in their own independent narratives. However, the absence of a description of the participants’ social background, makes the generalizability of these findings unknown. Therefore, to the extent that this is the case, negative events are likely to score higher on the theme dimension of coherence, which references the presence of evaluations and a completed narrative with a conclusion of the episode. Last, distinctive events are more memorable than less distinctive events (see review by Howe, 2006) and it may be that negative events are more distinctive and thus more memorable because they often have more consequences than neutral or positive events. Supporting this postulation, Van Bergen and colleagues (2015) discovered that 5- and 6-year-old children from two higher-SES schools in New Zealand and Australia recalled more details for negative stories (i.e., an animal was *sad* and missing someone; an animal was *scared* and getting into trouble) presented one hour earlier compared to positive stories (i.e., an animal was *happy* when playing with friends; an animal was *excited* when making delicious food). Hence, to the extent that negative events are more distinctive, they are likely to be reported with more personal details and elaborations and hence to be rated higher on theme.

On the other hand, because positive events are more frequently discussed by parents (e.g., Farrant & Reese, 2000; Fivush & Vasudeva, 2002; Morris et al., 2010), children may be better prepared to coherently narrate pleasant experiences. Theme may be higher in children’s positive event narratives because children have been exposed to more elaborations and details about positive compared to negative events during reminiscing conversations. For example, Wang and Fivush (2005) discovered that mothers included twice as many turns, elaborations, and evaluations when reminiscing about positive events compared to negative events. Additionally, the positive events children narrate are typically everyday events that are integrated parts of their lives (e.g., birthday parties, family vacations), so children can be expected to have greater prior knowledge of these positive versus negative events. This prior knowledge enables the child to encode more details of the event (see review by Baker-Ward et al., 2009), which allows for a greater number of elaborations and in turn, higher theme.

Given the limited amount of information regarding valence and everyday coherence in the literature, more research is clearly warranted. Understanding the potential impact, if any, of valence on coherence of everyday events will help provide a comparison to the growing literature on the impact of coherence on extreme negative events such as sexual abuse testimony (Miragolia & Camisasca, 2022; VanMeter et al., 2023). In other words, to understand the complexity of narrative coherence and valence, research needs to be conducted on everyday events in addition to ongoing research on traumatic events. Thus, in this study, I extended the literature by examining the child’s independent narrative accounts of recent positive and negative experiences, to determine if there was a difference in dimensions of narrative coherence between positive and negative everyday events.

Present Study

In the present study, I examined an existing longitudinal dataset. I examined the linkage between maternal narrative skills (i.e., elaborations and coherence) during mother-child reminiscing conversations when the child was 72 months old and the child’s independent narrative coherence at 84 months. By 72 months, children are beginning to include all dimensions of coherence in their narratives, but these skills are still developing and therefore within the zone of proximal development. However, by 84 months of age, children can spontaneously provide reports of past events (e.g., Gordon et al., 2001; Ornstein et al., 1997), suggesting that this age was a prime time to examine children's emerging narrative coherence.

Because the original ("parent") investigation was designed to ensure inclusion of two racial groups (i.e., European Americans and African Americans) and two income groups (i.e., below and above poverty), I was also able to assess differences in coherence according to family income and child identified race. As mentioned previously, applying Swearingen and colleagues' (2023) adaptation of Bronfenbrenner's model to maternal reminiscing allows for a greater understanding of the complexity of factors that influence maternal reminiscing. Previous work with this sample found only main effects of family income and the child's identified race on rates of maternal elaboration during reminiscing conversations, with mothers of European American children generating more elaborations than mothers of African American children, and mothers from above-poverty families providing more elaborations than mothers from below-poverty families (Langley et al., 2016). Although we do not know the meanings of these effects (whether child outcomes are similar or different across these groupings or whether these are emergent due to other causes), and I am utilizing the same data set, it seemed useful to see whether or not the previous findings replicated when examining narrative coherence rather than maternal elaborations. As in Langley et al. (2016), only main effects were examined, given inadequate power to examine interactions. Furthermore, I examined whether mothers reminisced differently with their daughters compared to their sons. Although early research suggested mothers did reminisce differently with their daughters compared to their sons, more recent studies have not found a gender difference (e.g., Swearingen et al., 2023; Waters et al., 2019).

As such, I did not expect to find differences in the ways in which mothers elaborated or coherently narrated their reminiscing conversations with their daughters or sons.

In addition to the contributions stated above, I added to the existing literature in three major ways. First, I determined if maternal elaborations in a mother-child reminiscing conversation would predict the child's dimensions of coherence in an independent narrative task one year later. Given that coherence may be linked with language ability (Reese et al., 2011), I controlled the child's verbal ability at the time of the reminiscing conversation (i.e., 72 months). Second, I examined whether the socialization of maternal coherence through mother-child reminiscing was more than the use of a highly elaborative maternal style. Specifically, I determined the contributions of maternal coherence, over and above elaborations and verbal ability, to the prediction of each dimension of coherence. Given the similarities between maternal elaborations and the thematic dimensions of coherence, it may be that the relation differs across dimensions. Third, given the limited previous research, I determined if the child's independent narrative coherence at 84 months differed according to the valence (i.e., positive or negative) of the event.

The hypotheses in the present study were: (1) Maternal elaborations at 72 months will predict the coherence of theme of the child's independent narrative at 84 months, over and above the effects of verbal ability. Due to the lack of sufficient evidence to make a supported prediction, no hypothesis was made regarding the coherence dimensions of chronology or context, but I examined these dimensions as research questions. (2) Maternal coherence on context, chronology, and theme at 72 months, as observed in reminiscing conversations, will predict the coherence of the corresponding dimension of the child's independent narrative at 84 months, over and above the effects of verbal ability and maternal elaborations. (3) The child's coherence score in the independent narrative for chronology will be higher in the negative narrative report compared to the positive narrative report after controlling for verbal ability and maternal elaborations. As research questions, with no hypothesis due the lack of sufficient previous evidence to make a supported prediction, I also examined the valence of the child's independent narrative at 84 months as a predictor of the theme and context of the narrative. (See Appendix A for the conceptual model illustrating these hypotheses).

Method

Participants

Mother-child dyads who participated in the Durham Child Health and Development Study (DCHDS) conducted by the Center for Developmental Science at the University of North Carolina at Chapel Hill participated in this investigation. (For a description of this investigation and previous work using this sample, see Barnett et al., 2008, 2010; Bedford et al., 2017; Hill-Soderlund et al., 2008; Langley et al., 2016; Lynch et al., 2022; Mills-Koonce et al., 2007, 2011; Pungello et al., 2009; Volpe et al., 2019; Wagner et al., 2016, 2017; Willoughby et al., 2011). The DCHD investigators recruited an original sample of 206 participants. The original design provided representation of two self-identified, orthogonal racial groups and two economic statuses as determined by an income-to-needs ratio (i.e., 200% above poverty and 200% below poverty). This resulted in a family sample of mothers who had identified their child as primarily African American and from an above poverty family (n = 47), African American and from a below poverty family (n = 70), European American and from an above poverty family (n = 53), or European American and from a below poverty family (n = 36). (See Table 1 for more descriptive information on the original sample.)

Potential participants in the parent longitudinal study were excluded based on complications experienced by the child at birth (e.g., prematurity) and specified characteristics of the mother (e.g., multiple births, plans to leave the area within 3 years, younger than age 18). Starting in 2002-2003, families, typically mothers and their child, participated in the experimental tasks approximately every 6 months from 3- to 36-months of age and then approximately once a year from kindergarten through second grade (i.e., at 84 months in 2011). The families received compensation for each visit. Data examined in this study came from participants (n = 90) who provided data that met the criteria for inclusion (more information provided on this in the results section) in the 72-month assessment and the 84-month assessment for hypothesis 1 and 2. An additional 25 participants were included (totaling to n = 115) for hypothesis 3 that only examined the 84-month time point. See Table 1 for more descriptive information on participants who completed the 72-month time point (n = 90) and 84-month time point (n = 115).

To determine if there were differences in the original sample (n = 206) compared to the dyads who participated in the 72-month time point (n = 90) on demographic variables (i.e., child's identified gender, child's race, and family income), I conducted chi square analyses. More specifically, I created a categorical variable for those who participated in the 72-month time point = 1, versus those that did not participate = 0 to compare to the demographic variables. The analyses indicated that girls and boys (χ^2 (1, N = 206) = .87, p = .35) or African American and European American children (χ^2 (1, N = 206) = .29, p = .59) were not more likely to drop out of the study from the initial visit (3 months) compared to the 72-month visit. However, more children from families below the poverty line were likely to drop out (χ^2 (1, N = 206) = 10.11, p = .001). Another set of chi-square analyses were conducted to see if the 25 participants added back in at the 84-month time (n = 115), differed from the original sample (N = 206). Similar results were found in that girls and boys (χ^2 (1, N = 206) = 2.11, p = .15) or African American and European American children (χ^2 (1, N = 206) = .58, p = .45) were not more likely to drop out of the study from the initial visit (3 month) compared to the 84-month visit. However, more children from families below the poverty line were likely to drop out (χ^2 (1, N = 206) = 13.68, p < .001) compared to families above the poverty line. These results were not surprising given that many of the families from below the poverty line were from surrounding rural communities and likely had greater travel time to participate in the study.

Procedure

The Institutional Review Board at the University of North Carolina at Chapel Hill approved all procedures before data collection, and the Institutional Review Board at North Carolina State University approved further analyses of the existing data and data security (protocol number 9322). The children and mothers typically completed the tasks in the laboratory, although a few tasks were conducted in the participants' homes. The laboratory setting was a private room that was set up to be a comfortable environment for the tasks, with a table and chairs for the child, mother, and research assistant. No toys, except for toys involved in the task, or toys given to the children during other tasks, were in the room so there was minimal distraction to the child. During each visit, mothers completed questionnaires, provided demographic information, and participated in mother-child tasks. Depending upon the task, the mother and/or research assistant were either in the room with the child or outside of the room. The children also completed a battery of assessments, measuring different developmental outcomes. (For a description of this investigation and previous work using this sample, see Barnett et al., 2008, 2010; Bedford et al., 2017; Hill-Soderlund et al., 2008; Langley et al., 2016;

Lynch et al., 2022; Mills-Koonce et al., 2007, 2011; Pungello et al., 2009; Volpe et al., 2019; Wagner et al., 2016, 2017; Willoughby et al., 2011).

For the purpose of this study, data from two main tasks measured maternal and child outcomes, specifically, the Mother-Child Reminiscing Task and the Child Independent Narrative. An additional task, the Picture Peabody Vocabulary Test, assessed receptive language development and was used as a covariate in the analyses. The Mother-Child Reminiscing Task consisted of a conversation about three previous events between a 72-month-old child and their mother. The Picture Peabody Vocabulary Test was also administered when the child was 72 months old. The majority of the children at 72 months were in first grade (Time 1). Approximately a year later, the child (now 84 months and majority in second grade) completed the Child Independent Narrative Task in which they discussed two personal experiences with a research assistant.

Tasks / Measures

Mother-Child Reminiscing (MRM) Task

Mother–child dyads completed the reminiscing task in the laboratory. The task was modeled after similar procedures reported in the literature and focused on mothers (rather than fathers), which is also consistent with the previous literature (Fivush, 2019; Waters et al., 2019). Prior to the administration of the task and without the child present, research assistants asked the mother to nominate three events to discuss with their children. Each event had to have occurred within approximately the past month, to be a novel (or one-time) event (e.g., flying on an airplane, visiting a special museum), and to be a shared experience by the mother and child. If the mother nominated a routine event (e.g., grocery shopping), the research assistant guided her in identifying a unique event (including a specific episode of a repeated event) for discussion with the child. The decided-upon nominated events were written on a notecard that the mother brought with her to the MRM assessment.

During the administration of the MRM task, the research assistant asked the mother to discuss each of the three events with the child, in any way with which the mother felt comfortable, and then typically left the room so the mother and child were alone to discuss the events. The research assistant did not intervene with the conversation until the mother indicated the conversation was over or the mother and child had spent approximately 10 minutes discussing the three events. Conversations were audio and video recorded for later coding. Having the audio and video allowed research assistants to include verbal and non-verbal communication (e.g., head nods) and behavioral information (e.g., child was off task and playing with a toy) when transcribing the interview, which was important for coding the narratives (described in more detail below).

Data Preparation. Research assistants, who were trained to use the CLAN module (Computerized Language Analysis) in the CHILDES program (Child Language Data Exchange System, URL: http://talkbank.org/clan/), transcribed the conversations verbatim. Nonverbal cues that were important to the narrative (e.g., head nods, off task behavior) were also noted in the transcript. Most of the transcripts were checked for accuracy by a second trained research assistant.

Descriptive Coding. Two variables were coded from the MRM for descriptive purposes only (i.e., to describe the events the mothers discussed with their children, but not used in data analysis for major hypotheses): Category Coding and Emotion Coding.

Category Coding. To describe the type of events discussed, the events were coded into different categories based mainly on the maternal prompts and not the child's responses. The classifications utilized in this study were based on previous research (Fivush et al., 2003; Haden et al., 2009). Each event was coded into 1 of the following 12 mutually exclusive categories: trips and vacations; holiday/religious observances, ceremonies, celebrations, and milestones/rituals; outings; performance, sports, and competition; family transitions; peer and/or sibling interactions; illness, death, injury, doctor visits, and accidents; mischief and punishment; change in plans; school activities; home activities; and other/incomplete. (See Appendix B for the coding manual.)

To ensure that the narrative topics corresponded to event categories generated in previous research in mother-child reminiscing, two trained research assistants classified each event into one of the 12 mutually exclusive categories described above on event narratives not included in this study and a small set of events from this study. Then, approximately 25% of the events were randomly selected for independent coding to establish reliability between the two coders, as suggested by Haden and colleagues (2013). Cohen's kappa, k = .76, was considered fair to good (Haden & Hoffman, 2013) or moderate (McHugh, 2012). After reliability was established, events for which the coders disagreed were discussed and a final code was decided. The remaining events were coded independently by the two coders with consultation as needed.

Emotion Coding. Given that the child independent events were selected for their emotional tone (i.e., positive and negative; as discussed below), emotion was coded for the MRM task. The emotional tone of the events was determined by examining all on-task comments from the mother and the child, the coder's personal knowledge of events, and inclusion of emotion terms. Four mutually exclusive categories represented the emotional tone: neutral (i.e., no negative or positive emotional words or behavioral items), positive, negative, and mixed (i.e., approximately equal positive and negative pieces of the narrative). (See Appendix C for the coding manual.)

Two coders were trained on event narratives not included in this study and a small set of events from this study. Then, approximately 25% of the events were randomly selected for independent coding to establish reliability between the two coders. Total agreement was reached on 61 out of 69 events, or 88.4% agreement. After reliability was established, events that the coders disagreed on for the reliability coding were discussed and a final code was decided. The remaining events were coded independently by the two coders with consultation as needed.

Coding of Predictor and Outcome Variables. Two variables derived from performance on the MRM and were used in the main analyses: Maternal Elaborations and Three Dimensions of Maternal Coherence.

Maternal Elaborations. The coding scheme for maternal reminiscing elaborations was adapted from previous research (Haden, 1998; Reese et al., 1993). The reminiscing data were previously coded by Langley et al., (2016). Research assistants coded each independent clause (i.e., noun and verb) separately and calculated the mean frequencies of clauses (utterances) for maternal and child contributions across the three event reports. This study examined the *maternal average elaboration score*, or the sum of the average frequency of three categories of elaborations across the events. The elaboration categories consisted of *open-ended questions* that asked the child to provide new memory information; *yes-no questions* that asked the child to confirm or deny a new piece of memory information; and *statement elaborations* or any declarative comment from the mother that provided new information. Fivush and colleagues (e.g., Fivush et al., 2006; Fivush & Fromhoff, 1988) have extensively examined these three types of elaborations since they were first researched in the late 1980s to measure maternal elaborative reminiscing style (Fivush et al., 2006). In this investigation, two research assistants coded 25% of the transcripts and established inter-rater reliability at each of the three time points in the original parent investigation (36- and 60- and 72-months). Percent agreement averaged greater than 85% and no single estimate was less than 80% (Langley et al., 2016). See Langley et al. (2016) for more information.

Three Dimensions of Maternal Coherence. I first prepared the transcripts of the three events for the coding of maternal coherence. Specifically, the transcripts were marked to indicate where to begin and end per event. Consistent with previous work (e.g., Leyva et al., 2008) all "off task" comments were ignored. Given that this was a conversation, sometimes the mother and/or child returned to a previous event, despite having moved onto the next. In this case, each event was coded as a separate entity, meaning that no turns contributed to more than one event, but all information about the event was included, whether it was discussed at once or interspersed within the discussion of another event.

Mothers' socialization of coherence was operationalized by maternal turns. Maternal turns have been used in previous reminiscing research studies (e.g., Ensor & Hughes, 2008; Kelly, 2016; Leyva et al., 2008) and have been shown to be a better predictor of brain development compared to other measures, including SES, IQ, and adult-child utterances (Romeo et al., 2018)[1]. As suggested for narrative coding (e.g., Syed & Nelson, 2015), the events were marked for the unit of analysis of maternal turns. Maternal turns were defined as when the mother "held the floor" followed by a child utterance or placeholder (e.g., nonverbal head nod), as seen in previous research (e.g., Kelly, 2016; Leyva et al., 2008). Maternal wrap ups at the end

[1] Thanks to Dr. Carole Peterson, a Fellow of the Royal Society for Canada, for her expertise and advice on conversational turns.

of the event conversation (e.g., "Great! I'm glad you had a good time") were coded as a separate turn, despite the absence of the child's response. Given that the length of the pauses in the narrative were not timed and consistently marked, pauses and laughter did not count as a turn. Future talk (i.e., something that has not happened yet) by the mother did not count as a turn, whereas fantasy talk or hypothetical talk did count. (See Appendix D for the full instructions.)

After the previous markings were made, the total number of maternal conversational turns was calculated. Narratives that did not contain at least 2 "on-task" turns from the mother and two "on-task" responses from the child were deemed not to be a true conversation and were thus excluded from further coding, which is similar to previous narrative research in which the child must provide at least two unique pieces of information (e.g., Haden, 1998; Reese & Fivush, 1993; Reese et al., 1993).

To code maternal coherence, I adapted the Narrative Coherence Coding Scheme (Reese et al., 2011) for use with co-constructed narratives. To my knowledge, the NaCCS has been rarely used in this manner before and thus was exploratory in nature. Given that the purpose of this study focused on the socialization of maternal coherence in the narrative and the explorative complexity of this coding scheme, only the coherence of maternal turns was examined. In other words, the child's contribution to the co-constructed narrative was not directly analyzed in this study. Only analyzing the contributions of the mother is consistent with some of the previous research on elaborations (e.g., Bauer & Larkina, 2019; Swearingen et al., 2023; see Waters et al., 2019 for a meta-analysis in which only 38 out of the 51 studies that met the criteria included a child component, meaning 13 studies did not). Additionally, given the developmental trajectory of coherence mentioned previously, it would be expected for mothers to still be driving the conversation, with children providing some, but limited coherence at 72 months of age (Reese et al., 2011). (For an example, see differences in independent narrative coherence scores for 4-year-olds versus 10 -year-olds [Bauer & Larkina, 2019]).

In each maternal turn, research assistants looked for the presence or absence of each coherence dimension separately (i.e., *context*, *chronology*, and *theme* described in more detail below), resulting in three separate codes for each turn. The mother could provide the information herself (e.g., "we went to the *park*," with *park* representing the *context* dimension) or ask the child for the information (e.g., "Where did we go?", with the question asking for a location, representing the *context* dimension). If the coherence dimension occurred at least once in the turn, the turn received a score of 1 for that dimension. If the coherence dimension did not occur in the turn, the turn received a score of 0 for that dimension. Note the maximum rating a turn could receive was 1 for each coherence dimension, even if the coherence dimension occurred more than once within the same turn (e.g., "*Yesterday* we went to the *park"* contained two instances of *context*, but the final code was 1). Repetitions in separate turns were both counted, given that I was interested in how much the mother saturated the narrative with each dimension. The number of turns containing a coherence dimension (i.e., context, chronology, or theme) were totaled to receive a total frequency score for each event, for each dimension. I analyzed a composite average total frequency score across the 3 (or 2) events for each dimension. Data from mothers who only discussed 1 event were excluded from further analyses.

The *context* dimension assessed how much information the mother provided regarding the time and location of the event in each narrative, at any level of specificity. In other words, a general location (e.g., park) versus a specific location (e.g., Lake Johnson Park) would contribute to a score of 1. (See Appendix E for the coding manual.)

Two coders were trained on event narratives not included in this study and a small set of events from this study. Then, approximately 25% of the events were randomly selected for independent coding to establish reliability between the two coders. Agreement was compared across all turns for the selected events (i.e., yes context or no context), totaling to 1458 turns across 68 events. Cohen's kappa, k = .95, reached the excellent level (Haden & Hoffman, 2013). After reliability was established, events that the coders disagreed on for the reliability coding were discussed and a final code was decided. The remaining events were coded independently by the two coders with consultation as needed.

The *chronology* dimension assessed to what extent the mother brought attention to the order of actions in the narrative. For example, words with temporal order (e.g., then, after that, first, last) and the content of the narrative (e.g., "took *another* shot," after one shot in a basketball game was mentioned) were coded as indicating chronological order. (See Appendix F for the coding manual.)

Two coders were trained on event narratives not included in this study and a small set of events from this study. Then, approximately 25% of the events were randomly selected for independent coding to establish reliability between the two coders. Agreement was compared across all turns for the selected events (i.e., yes chronology or no chronology), totaling to 1458 turns across 68 events. Cohen's kappa, k = .88, reached the excellent level (Haden & Hoffman, 2013). After reliability was established, events that the coders disagreed on for the reliability coding were discussed and a final code was decided. The remaining events were coded independently by the two coders with consultation as needed.

The *theme* dimension assessed the extent to which the mother included development of the narrative through causal linkages, elaborations, emotions, personal reflections, dialogue and quotes, and/or included a resolution to the action described in the event, or links to other autobiographical experiences, or implications for self-concept or identity. (See Appendix G for the coding manual.)

Two coders were trained on event narratives not included in this study and a small set of events from this study. Then, approximately 25% of the events were randomly selected for independent coding to establish reliability between the two coders. Agreement was compared across all turns for the selected events (i.e., yes theme or no theme), totaling to 1447 turns across 68 events. Cohen's kappa, k = .88, reached the excellent level (Haden & Hoffman, 2013). After reliability was established, events that the coders disagreed on for the reliability coding were discussed and a final code was decided. The remaining events were coded independently by one coder. See Table 2 for an overview of the coherence coding.

Picture Peabody Vocabulary Test III (PPVT-III)

The PPVT-III (Dunn & Dunn, 1997) is a standardized measure of receptive vocabulary and verbal ability that can be completed in 10 to 15 minutes and is normed for people aged approximately 2 to 90 years old (Campbell, 1998; Williams, 1999). The PPVT-III has good reliability (i.e., internal consistency, alternate-form, and test-retest; scores exceeded $r = .86$) and concurrent and criterion validity (Campbell, 1998; Williams, 1999). Further, previous research indicates that the PPVT-III is significantly correlated (rs $\geq .51$) with another language measure, the Expressive Vocabulary Test (Condouris et al., 2003; Qi et al., 2006; Thomas-Tate et al., 2006), justifying the use of the PPVT-III as a control for verbal ability in the present study, which relies on expressive language. The research assistant administration the PPVT-III as was described in the manual (i.e., children viewed four pictures at a time and were asked which pictures best represented the word spoken by the experimenter) when they were 72 months old. The standardized scores (*M* = 100, *SD* = 15, Range = 40 to 160) were used in the analyses.

Child Independent Narrative (CIN) Task

A research assistant and child completed this task with the child in the laboratory when the child was 84 months of age. The procedure was based on similar assessments as reported in the literature (Bauer & Larkina, 2019; Bauer et al., 2019; Haden et al., 1997). Before this task was administered to the child, a research assistant asked the mother to nominate two events, one a positive experience for the child and the other a negative experience, that the research assistant could later discuss with the child. The criteria for these events were similar to those applied in the reminiscing task, except that mothers could select events for which they were not present. After the mother identified the event, the research assistant instructed the mother to provide a "title" for the event. The titles were to be specific enough so that the child could identify the event, but also concise so that as little information about the event as possible would be conveyed ("Going to the circus with Pop-pop" could be shortened to "Going to the circus" if this was the only time the child had been to the circus). The research assistant also instructed the mother to provide two "highlights" or unique aspects of the event that could be used as cues for prompting the child's recall during the interview (e.g., buying a souvenir). Lastly, if the mother was in the room during the administration of the task, the research assistant asked her to refrain from intervening in the child's conversation.

When administering the task to the child, the research assistant prompted the child to talk about the mother-nominated positive event followed by the negative event. For each event, children were allowed to discuss the event as long as they wanted, followed by content empty prompts (e.g., "tell me more"), two specific mother-nominated cues presented one at a time, and one last open-ended prompt (see Appendix H for full instructions). Lastly, the research assistant asked the child for a child-nominated school event that happened recently, and the research assistant followed up with open-ended cues to elicit more information (e.g., "what else can you tell me?")[2]. The three events were always presented to the child in this order, though the research assistant may have returned to a previous event if initially the child refused. Conversations were audio and video recorded and later transcribed verbatim for coding. This task was expected to last no longer than 15 minutes.

Data Preparation. As was the case with the reminiscing task, research assistants transcribed the independent narratives using the CLAN module and the majority of transcripts were checked by a second research assistant for accuracy.

After examination of the last event narrative, the school event narrative, it was evident that children often struggled with this prompt and had difficulty in generating the report of a specific event; the children frequently reported repeated events (e.g., lunchtime). Therefore, these school event narratives were not included in this study and instead only the positive and negative events were examined.

Descriptive Coding. One variable was coded from the CIN task for descriptive purposes only (i.e., to describe the events the mothers discussed with their children, but not used in data analysis for major hypotheses): Category Coding.

Category Coding. As with the independent narratives, for descriptive purposes, the child independent event narratives were coded into the same 12 categories. The entire narrative was reviewed by the coders, but coding focused on the prompts and cues given by the research

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[2] The school event narratives were excluded from analyses, as explained further in the data preparation section.

assistant during the task and not the child's responses. In other words, the child's comments could be included for clarification if need be, but more "weight" was placed on the prompt and cues. (See Appendix B for the coding manual.)

Three coders were trained on event narratives not included in this study and a small set of events from this study. Then, approximately 25% of the events were randomly selected for independent coding to establish reliability between the three coders (i.e., between the main coder and two additional coders). Compared to the main coder's work, both coders reached good to fair agreement, k = .77 and k = .73 (Haden & Hoffman, 2013). After reliability was established, events that the coders disagreed on for the reliability coding were discussed and a final code was decided. The remaining events were coded independently by the three coders with consultation as needed.

Coding of Outcome Variable. One variable was of interest from the CIN and used in the main analyses: Three Dimensions of Child Coherence.

Child Coherence. The coding scheme for the child's coherence was adapted from the Narrative Coherence Coding Scheme (Reese et al., 2011), measuring three dimensions of coherence. Only the child's speech was coded during this task, excluding all comments and questions from the research assistant. Coders rated each coherence dimension (i.e., context, chronology, and theme) separately on a scale of 0 (no evidence of coherence) to 3 (fully coherent narrative) for each event narrative.

The *context* dimension assessed how much additional information (i.e., added to what was provided in the research assistant prompt) the child provided regarding the time and place of the event. The child's information was also rated at the level of specificity (i.e., "at the McDonald's near my house" was a specific reference to location versus "at McDonald's" was a general reference) for both time and place. Context was scored throughout the entire narrative, including the child's responses to the two specific cues provided by the research assistant. A final score of 0 indicated the child did not provide any time or place information, whereas a score of 3 indicated both time and place were mentioned and specific. (See Appendix I for the coding manual.)

Approximately 25% of the narratives were randomly selected for establishing reliability between three coders, with one coder serving as the "main" coder. Consistent with previous research (e.g., Peterson et al., 2014), intraclass correlations (ICC) were calculated for each coder in comparison to the main coder. ICC estimates were calculated based on two-way random-effects model based on single measures and consistency agreement. Both coders reached acceptable levels with the main coder, ICC = .80, $p < .001$ and ICC = .81, $p < .001$. These ICC levels are similar to ICC levels reached with the same coding scheme in other published work (e.g., Peterson and colleagues (2018), ICC = .85). After reliability was established, events that the coders disagreed on for the reliability coding were discussed and a final code was decided. The remaining events were coded independently by the three coders with consultation as needed.

The *chronology* dimension assessed whether or not a naïve listener could place the components of the narrative on a timeline with a temporal order. Chronology was scored until the research assistant provided the first open-ended cue (e.g., "Can you tell me more?"), or in another complete section of the narrative without research assistant interruptions. Confirmations from the research assistant (e.g., "uh-huh," "mmhhmm") did not stop the coding of chronology. A final score of 0 indicated the child did not place any of the actions in the narrative on a timeline whereas a final score of 3 indicated the child placed at least 75% or more of the actions on a timeline. (See Appendix J for the coding manual.)

Approximately 25% of the narratives were randomly selected for establishing reliability between two coders. Consistent with previous research (e.g., Peterson et al., 2014), intraclass correlations (ICC) were calculated for the coder in comparison to the main coder. ICC estimates were calculated based on two-way random-effects model based on single measures and consistency agreement and reached an acceptable level, ICC = .75, $p < .001$. This ICC level is similar to ICC levels reached with the same coding scheme in other published work (e.g., Peterson and colleagues (2018), ICC = .82). After reliability was established, events that the coders disagreed on for the reliability coding were discussed and a final code was decided. The remaining events were coded independently by the two coders with consultation as needed.

Last, the *theme* dimension assessed the extent to which the narrative content was on topic, elaborated on, and developed. This theme was scored until the research assistant provided the first cue or specific information (e.g., "well your mom told me that you were angry when this happened"). A final score of 0 indicated the child was mostly off topic and a theme or "title" for the narrative was hard to identify, whereas a score of 3 indicated the child was on topic, made the story personal (e.g., included emotions, personal reflections), and included a link to their self-concept or a resolution. (See Appendix K for the coding manual.)

Approximately 25% of the narratives were randomly selected for establishing reliability between two coders. Consistent with previous research (e.g., Peterson et al., 2014), intraclass correlations (ICC) were calculated for the coder in comparison to the main coder. ICC estimates were calculated based on two-way random effects model based on single measures and consistency agreement and reached an acceptable level, ICC = .87, $p < .001$. This ICC level is similar to ICC levels reached with the same coding scheme in other published work (e.g., Peterson and colleagues (2018), ICC = .77). After reliability was established, events that the coders disagreed on for the reliability coding were discussed and a final code was decided. The remaining events were coded independently by the two coders with consultation as needed. See Table 3 for an overview regarding the level of the coding categories for each dimension.

Results

Descriptive Analyses

Most results were calculated using IBM's SPSS version 19 and some with SPSS version 29 (e.g., effect sizes could be calculated in version 29 but were unavailable in the earlier version).

Descriptives for the Longitudinal Data (Hypotheses 1 & 2) - 72- & 84-Month Time Points

Mother-child dyads met the criteria for inclusion in the analysis if the mother and child completed the Mother-Child Reminiscing (MRM) task with two or three event narratives (i.e., potential range 1-3), had existing maternal elaboration data from a previous study (Langley et al. 2016)[3], and the child reported at least 1 measurable event narrative (out of 2) in the Child Independent Narrative (CIN) task at the 84-month time point. This resulted in a final sample of 90 dyads. Of the 90 children in the dyads, 29 (32.22%) were African American girls, 18 (20.00%) were European American girls, 24 (26.67%) were African American boys, and 19 (21.11%) were European American boys. Fifty-five (61.1%) of the dyads were from above the poverty line families and 35 (38.9%) were from below the poverty line families. (See Table 1 for more descriptive statistics.)

For the MRM task, 72 mothers discussed all three requested event narratives with their child and 18 mothers discussed only two event narratives with their child, totaling to 252 event

[3] Given the different inclusion criteria used in this analysis, the total number of dyads utilized in this study is smaller than the total number analyzed in Langley and colleagues (2016).

narratives across the 90 dyads. To describe the type of events that were reported and verify these were everyday events, each of the event narratives were coded into 1 of 12 categories. As expected, these events were categorized as mostly typical events, specifically outings (*n* = 100, 40.0%), holiday ceremonies and celebrations (*n* = 44, 17.6%), and home activities (e.g., watching videos; *n* = 30, 12.0%)[4]. (See Table 4 for more information.) Additionally, as expected, the majority of the events were coded as positive (*n* = 174, 69.1%), with some neutral (*n* = 33, 13.1%) or mixed (*n* = 29, 11.5%), and very few negative (*n* = 16, 6.4%) events across all dyads.

The descriptives for the main variables of interest from the MRM task are described next. As previously mentioned, a composite score across the 3 (or 2) event narratives for each mother-child dyad was created for maternal elaborations (i.e., sum of the average of *open-ended questions* + average of the *yes-no questions* + average of the *statement elaborations*). The average of maternal elaborations was *M* = 17.75 (*SD* = 10.09, range = 4.33 - 47.50).

Similarly to the maternal elaboration score, a composite average score was created across the 3 (or 2) event narratives for each mother-child dyad, for the average number of maternal turns (*M* = 22.38, *SD* = 10.00), number of maternal turns containing context (*M* = 4.41, *SD* = 2.77), number of maternal turns containing chronology (*M* = 0.83, *SD* = 0.86), and number of maternal turns containing theme (*M* = 6.16, *SD* = 3.88). (See Table 5 for the descriptive variables.)

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[4] Two events were discovered after category coding was complete and therefore were not included in this total count.

The Picture Peabody Vocabulary Measure, administered at 72 months, was included as a co-variable in further analyses. The average score on the Picture Peabody Vocabulary measure was *M* = 108.07 (*SD* = 16.20, range = 68 - 149)[5].

For the CIN task, children reported one positive and one negative event, and each event was scored for a dimension of coherence using the NaCCS. Descriptive variables for the performance of the 90 dyads included in this analysis were as follows: for the positive events, context (*M* = 1.28, *SD* = 0.92), chronology (*M* = 1.44, *SD* = 1.05), and theme (*M* = 1.22, *SD* = 0.52); for the negative events, context (*M* = 0.90, *SD* = 0.77), chronology (*M* = 1.07, *SD* = 1.15), and theme (*M* = 1.44, *SD* = 0.61). (See Table 5.) Although these ratings have been dichotomized in previous research with children (e.g., Morris et al., 2010), I determined there was sufficient variability in the scores and therefore the full ratings were analyzed. (See Table 6.)

Descriptives for the 84-Month Time Point (Hypothesis 3)

For this hypothesis, children were included in the analysis if they completed the CIN task with one or two event narratives (i.e., potential range 1-2) and at least one dimension of coherence that could be coded for at least 1 of the 2 events. This resulted in an additional 25 children being added to the sample previously discussed, totaling to 115 children. Of the 115 children, 37 (32.17%) were African American girls, 31 (26.96%) were African American boys, 24 (20.87%) were European American girls, and 23 (20.00%) were European American boys. Sixty-nine (60.0%) of the children were from families above the poverty line and 46 (40.0%) were from families below the poverty line. These numbers were generally on par with the previous descriptives for hypothesis 1 and 2, meaning the distribution of demographics did not

[5] One child did not fully complete the PPVT and therefore the *n* for this average is 89.

change with the addition of these 25 children. (See Table 1 for a comparison of the demographics at each time point.)

Out of the 115 children, 112 children discussed both positive and negative events with measurable coherence data and three children only discussed the positive event with measurable coherence data. To describe the type of events that were reported and verify that these were everyday events, each of the event narratives were coded into 1 of 12 categories. As expected, the positive events were categorized as mostly everyday events, specifically outings (n = 26, 22.6%) and holiday, ceremonies, and celebrations (n = 26, 22.6%) were reported the most frequently, followed by performances, sports and competitions (n = 17, 14.8%). The negative events were mostly categorized as mischief and punishment (n = 41, 36.6%), followed by illness, death, injury, doctor visits, and accidents (n = 24, 21.4%) and home activities (n = 10, 8.9%). (See Table 4 for all 12 categories).

As previously mentioned, children's positive and negative narratives were coded for coherence (i.e., context, chronology, and theme). The descriptives for the larger sample (n = 115) were similar to the means previously described in the smaller sample (n = 90) and can be further reviewed in Table 7.

Preliminary Analyses

Correlations Between Variables of Interest

First, I ran correlations among the 3 levels of coherence at each time point, to see if the dimensions were highly correlated. For the MRM task (n = 90), two of the dimensions of maternal coherence were positively correlated with one another (context and chronology, r = .39, p < .001; context and theme, r = .35, p = .001), while theme and chronology were not correlated (r = .14, p = .20). While these dimensions were designed to be completely independent of each other (Reese et al., 2011), given that the significant correlations were only of a medium effect size ($r < .50$), I proceeded with examining context, chronology, and theme as 3 separate dimensions of coherence. Additionally, each coherence dimension was positively correlated with the total number of turns (context, $r = .64$; chronology, $r = .36$; theme, $r = .68$; all $p < .001$).

Next, correlations were conducted for the CIN task, using the same longitudinal sample ($n = 90$). Two dimensions of the child's coherence for the positive events were not significantly correlated (context and chronology, $r = .20$, $p = 0.07$; chronology and theme, $r = .11$, $p = 0.32$), while context and theme were positively correlated ($r = .22$, $p = 0.04$) with one another. None of the dimensions of coherence were significantly correlated for the negative events (context and chronology, $r = .16$, $p = 0.16$; chronology and theme, $r = .11$, $p = 0.32$; context and theme, $r = .15$, $p = 0.16$). These mostly nonsignificant correlations were expected based on the previous literature in which the coherence codes were created to be largely independent (Reese et al., 2011), as previously discussed.

Additionally, correlations were conducted among the dimensions between the positive and negative events in the CIN task. One significant positive correlation emerged between the positive and negative events for context ($r = .26$, $p = 0.01$) and nonsignificant correlations were observed between the positive and negative events for chronology ($r = .22$, $p = 0.05$), and positive and negative events for theme ($r = .18$, $p = 0.11$). Given the limited correlations and the proposed expectation the positive and negative narratives could be different from one another, separate further analyses were conducted for the positive versus negative events.

Last, correlations were conducted between the MRM Task measures of maternal coherence and maternal elaborations. Because elaborations enter into the coherence measure of theme, it is possible that these measures would be highly correlated. Maternal elaborations were significantly positively correlated to the average context score (r = .68), chronology (r = .43), and theme (r = .62). All correlations were significant at the $p < .001$ level. These significant correlations were taken into consideration on whether or not maternal elaborations could be entered into further models and will be addressed further when discussing the specific models. (See Table 5 for descriptives and the correlations.)

One Way Analyses of Variance (ANOVAs) to Determine Control Variables

Next, I ran a series of ANOVAs to determine the additional control variables (if any) to be used in further analyses. Specifically, separate ANOVAs were conducted to see if any of the main predictor variables of interest for hypothesis 1 (i.e., maternal elaborations) and hypothesis 2 (i.e., maternal coherence of context, chronology, and/or theme) differed by the demographic variables (i.e., child's gender, family income, and child's race) among the 90 mother-child dyads. The first potential demographic control variable examined was the child's parent-reported gender (girls = 0, boys = 1). In contrast to some previous research, reported gender did not predict maternal elaborations, maternal context, maternal chronology, or maternal theme, $F(1, 88) \geq 0.08$, $p \geq .22$. (See Table 8 for more information.) Given these nonsignificant findings and the consistency with recent research (e.g., Swearingen et al., 2023; Waters et al., 2019), the child's gender was not included as a co-variable in further analyses.

I next examined family income (0 = below poverty, 1 = above poverty) as a potential covariate. There was a significant effect of family income on maternal elaborations, $F(1, 88) = 11.48$, $p = .001$, $\eta^2 = .12$, in that families experiencing poverty (M = 13.48) versus not experiencing poverty (M = 20.47) had mothers with fewer elaborations. These results were not only consistent with a previous analysis of the same data (Langley et al., 2016) but also replicated similar results in the literature (e.g., Swearingen et al., 2023). When examining the effect of family income on maternal context, Levene's test showed that the variances were not equal, $F(1, 88) = 4.35$, $p = .04$; therefore the Welch F-ratio was reported. There was a significant effect of family income on maternal context, $F(1, 85.61) = 5.57$, $p = .02$, $\eta^2 = .05$, in that mothers from below poverty families included less context ($M = 3.61$) in their narratives compared to mothers from above poverty families ($M = 4.91$). There was not a significant effect of family income on maternal chronology, $F(1, 88) = 0.08$, $p = .78$. There was a significant effect of family income on maternal theme, $F(1, 88) = 6.30$, $p = .01$, $\eta^2 = .07$, in that mothers from below poverty demonstrated lower levels of thematic development ($M = 4.91$) in their narratives compared to mothers from above poverty families ($M = 6.96$). (See Table 9 for more information.) Given these findings, when examining hypothesis 1 (i.e., maternal elaborations), family income was included in the model. For hypothesis 2 (i.e., maternal coherence), family income was also included in the model, given that 2 out of the 3 coherence predictors were affected by income, and the desire to run equivalent statistical models for all dimensions of coherence.

The next potential demographic control variable examined was the child's identified race (0 = African American, 1 = European American). There was a significant effect of the child's race on maternal elaborations, $F(1, 88) = 13.56$, $p < .001$, $\eta^2 = .13$, in that mothers with African American children had fewer elaborations ($M = 14.69$) than mothers with European American children ($M = 22.14$). These results were consistent with a previous analysis of the same data (Langley et al., 2016). There was not a significant effect of the child's race on maternal context, maternal chronology, or maternal theme in the analysis of coherence. All ANOVAs of coherence were $F(1, 88) \geq 1.18$, $p \geq .095$. (See Table 10 for more information.) These results suggest that the pattern for maternal elaboration and maternal coherence may not be the same when it comes to the race of the child. Given these findings and the difference in predictor variables in question for hypothesis 1 and 2, the child's race was included as a control variable for hypothesis 1, but not hypothesis 2.

Given the limited power available in the study, and that a previous report using the same data found no interaction between race and family income (Langley et al., 2016), the meaningful interaction was not examined in this study. Specifically, according to G*Power analyses, I had an adequate sample size for detecting a large (N = 48) effect size with the inclusion of 2 predictors and 2 control variables in the model, but not for a moderate (N = 107) effect.

Regression Analyses to Determine Between-Subject Variables Included in Further Analyses

Next, I ran a series of regression analyses to determine the additional between-subject variables (if any) to be used in further analyses. Specifically, I ran a series of regression models to see if the demographic variables (i.e., child's reported gender, child's race, and family income level) predicted the child's coherence in the independent narrative task, in the sample of 115 children who completed the 84-month time point. Separate regression models were conducted for each dimension of coherence (i.e., context, chronology, and theme) and for the positive and negative events.

The coherence dimension of *context* was examined first. Specifically, the first regression model examined the child's gender, child's race, and family income level as predictors of the child's context score for the positive event. The overall model was not significant, $R^2 = .04$, $F(3, 111) = 1.35$, $p = .26$, nor were any of the predictors (gender, $\beta = .06$, $p = .55$; race, $\beta = .06$, $p = .51$; family income, $\beta = .15$, $p = .14$). The same model was repeated for the child's context score of the negative event. As before, the overall model was not significant, $R^2 = .01$, $F(3, 108) =$

0.50, $p = .69$, nor were any of the predictors (gender, $\beta = -.09$, $p = .37$; race, $\beta = -.06$, $p = .54$; family income, $\beta = .08$, $p = .44$).

The coherence dimension of *chronology* was examined next, with the same predictors entered into the model (i.e., child's gender, child's race, and family income). For the positive event, the overall model was not significant, $R^2 = .02$, $F(3, 107) = 0.72$, $p = .54$, nor were any of the predictors (gender, $\beta = .06$, $p = .57$; race, $\beta = -.11$, $p = .26$; family income, $\beta = -.05$, $p = .65$). Similarly, for the negative event, the overall model was not significant, $R^2 = .04$, $F(3, 101) = 1.31$, $p = .28$, nor were any of the predictors (gender, $\beta = .11$, $p = .28$; race, $\beta = -.09$, $p = .40$; family income, $\beta = .15$, $p = .14$).

The coherence dimension of *theme* was examined last, with the same predictors entered in the model (i.e., child's gender, child's race, and family income). For the positive event, the overall model was not significant, $R^2 = .02$, $F(3, 109) = 0.80$, $p = .50$, nor were any of the predictors (gender, $\beta = -.09$, $p = .35$; race, $\beta = -.03$, $p = .80$; family income, $\beta = .13$, $p = .19$). In contrast to the previous analyses, for the negative event, the overall model was significant, $R^2 = .16$, $F(3, 104) = 6.46$, $p < .001$. Two of the three demographic variables significantly predicted the child's theme score for the negative event. Gender ($\beta = -.26$, $p = .01$) negatively loaded and family income ($\beta = .24$, $p = .01$) positively loaded onto the child's theme score. Given that both of these variables were dummy coded, this indicates that girls (i.e., girls = 0, boys = 1) had higher scores of thematic coherence and children from above poverty families (i.e., below poverty = 0, above poverty = 1) had higher scores of thematic coherence. Race was not a significant predictor ($\beta = .17$, $p = .08$). (See Table 11.)

Given these findings from the separate regression models, the child's gender, child's race, and family income levels were not included in the analyses for hypothesis 3 for the models examining the child's score of context or chronology. However, the child's gender and family income were included in the examination of the child's score of thematic coherence.

Hierarchical Regressions

Role of Maternal Elaborations in Children's Thematic Coherence

My first hypothesis was that maternal elaborations in the reminiscing task would predict the child's level of coherence of theme in the independent narrative task, over and above the effects of the child's verbal ability (i.e., PPVT-III scores). Two hierarchical regression models were conducted to determine if I could accept or reject my first hypothesis. Additional covariates of family income (below poverty = 0, above poverty = 1) and the child's race (African American = 0, European American = 1) were included in the model based on the preliminary analyses previously described. Separate hierarchical regression models were conducted for the child's positive and child's negative event, with the model for the positive event described first.

The hierarchical regression for the positive event was conducted in two steps. The overall fit of the final model was not significant, $R^2 = .09$, $F(4, 83) = 2.10$, $p = .09$, and therefore the model should not be interpreted, but the steps are still described below.

Step one, $R^2 = .03$, $F(3, 84) = 0.92$, $p = .43$, included the PPVT scores (i.e., verbal ability), family income, and the child's race as control variables. Step two, $R^2 = .09$, $F(4, 83) = 2.10$, $p = .09$, examined the unique contribution of maternal elaborations on the child's thematic coherence of the positive event. Although maternal elaboration was a significant predictor ($\beta = -.28$, $p = .02$) and the model change was significant ($\Delta R^2 = .06$, $p = .02$), this finding was not interpretable given that the overall final model was not significant. (See Table 12.)

The hierarchical regression for the negative event revealed similar results. The overall fit of the final model was not significant, $R^2 = .11$, $F(4, 79) = 2.36$, $p = .06$, and therefore the model should not be interpreted, but the steps are still further described.

Step one, $R^2 = .10$, $F(3, 80) = 3.06$, $p = .03$, included the PPVT scores, family income, and the child's race as control variables. Although the overall model in step one was significant, none of the predictors were significant. Step two, $R^2 = .11$, $F(4, 79) = 2.36$, $p = .06$, examined the unique contribution of maternal elaborations on the child's thematic coherence of the negative event. (See Table 13.) Given these results, the first hypothesis was rejected; maternal elaborations during the reminiscing task did not predict the child's thematic coherence in the independent narrative task 1 year later.

Although no hypotheses were made for the maternal elaborations predicting the child's other dimensions of coherence (i.e., context and chronology), exploratory regression analyses were conducted. More specifically, 4 additional hierarchical regression models were conducted (i.e., context of the positive event, context of the negative event, chronology of the positive event, and chronology of the negative event) with PPVT, family income, and the child's race as covariates.

The first hierarchical regression model examined the child's contextual coherence of the positive event. Step one included the PPVT scores, family income, and race and was not significant, $R^2 = .04$, $F(3, 85) = 1.14$, $p = .34$. Step two examined the unique contribution of maternal elaborations on the child's contextual coherence for the positive event. The overall model was not significant, $R^2 = .04$, $F(4, 84) = 0.87$, $p = .49$, and was not interpreted further.

The second hierarchical regression model examined the child's contextual coherence of the negative event. Step one included the PPVT scores, family income, and race, and was not significant, $R^2 = .02$, $F(3, 83) = 0.61$, $p = .61$. Step two examined the unique contribution of maternal elaborations on the child's contextual coherence for the negative event. The overall model was not significant, $R^2 = .03$, $F(4, 82) = 0.66$, $p = .62$, and was not interpreted further.

The third hierarchical regression model examined the child's chronological coherence of the positive event. Step one included the PPVT scores, family income, and race and was not significant, $R^2 = .02$, $F(3, 83) = 0.49$, $p = .69$. Step two examined the unique contribution of maternal elaborations on the child's contextual coherence of the positive event. The overall model was not significant, $R^2 = .02$, $F(4, 82) = 0.42$, $p = .80$, and was not interpreted further.

Last, the fourth hierarchical regression model examined the child's chronological coherence of the negative event. Step one included the PPVT scores, family income, and race and was not significant, $R^2 = .03$, $F(3, 79) = 0.79$, $p = .50$. Step two examined the unique contribution of maternal elaborations on the child's contextual coherence. The overall model was not significant, $R^2 = .03$, $F(4, 78) = 0.65$, $p = .63$, and was not interpreted further.

Therefore, putting the results of these six hierarchical regression models together, maternal elaborations during the reminiscing task did not significantly predict the child's coherence (i.e., context, chronology, or theme) during the independent narrative task, when controlling for verbal ability, family income, and the child's identified race[6].

Maternal Coherence Predicting the Child's Coherence

My second hypothesis was that the mother's coherence score in the reminiscing task would predict the child's level of coherence in the independent narrative task, over and above the effects of the mother's elaboration score and the child's verbal ability (i.e., PPVT-III scores).

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[6] Several logistic regression models were conducted with dichotomizing the outcome variable, the child's coherence score into low (i.e., 0 and 1) versus high (i.e., 1 & 2). Similar results were found as reported here.

Six hierarchical regression models were conducted to determine if I could accept or reject my second hypothesis. An additional covariate of family income (below poverty = 0, above poverty = 1) was included in the models based on the preliminary analyses previously described. Separate hierarchical regression models were conducted for the child's positive and child's negative event, with the model for the positive event described first.

The first hierarchical regression model predicted the child's contextual coherence for the positive event. The overall fit of the final model was not significant, $R^2 = .07$, $F(4, 84) = 1.53$, $p = .20$, and therefore the model should not be interpreted, but the steps are still described below.

Step one, $R^2 = .03$, $F(3, 85) = 0.86$, $p = .46$, included the PPVT scores (i.e., verbal ability), family income, and maternal elaborations as control variables. Note even though maternal elaborations were positively correlated with maternal coherence, it was still included in the model given my hypothesis. Both tolerance (≥ .46) and VIF levels (≤ 2.16) were in the acceptable range, so multicollinearity was not seen as an issue with this inclusion. Step two, $R^2 = .07$, $F(4, 84) = 1.53$, $p = .20$, examined the unique contribution of maternal context during reminiscing on the child's level of context for the positive event. (See Table 14.)

The second hierarchical regression model predicted the child's contextual coherence for the negative event. Step 1 included PPVT, family income, and maternal elaborations and step 2 included maternal context. The overall fit of the final model was not significant, $R^2 = .03$, $F(4, 82) = 0.62$, $p = .65$, and hence was not interpreted further. Therefore, based on the results from the first two regression models, the mother's use of context in the reminiscing task did not predict the child's score of context in the independent narrative task.

The third hierarchical regression model predicted the child's chronological coherence for the positive event. The overall fit of the final model was not significant, $R^2 = .03$, $F(4, 82) =$

0.65, p = .63, and therefore the model should not be interpreted, but the steps are still described below.

Step one, R^2 = .01, $F(3, 83) = 0.29$, p = .83, included the PPVT scores, family income, and maternal elaborations as control variables. Step two, R^2 = .03, $F(4, 82) = 0.65$, p = .63, examined the unique contribution of maternal chronology during reminiscing on the child's level of context for the positive event. (See Table 15.)

The fourth hierarchical regression model predicted the child's chronological coherence for the negative event. Step 1 included PPVT, family income, and maternal elaborations and step 2 included maternal chronology. The overall fit of the final model was not significant, R^2 = .03, $F(4, 78) = 0.60$, p = .67, and was not interpreted further. Therefore, based on the results from the third and fourth regression models, the mother's use of chronology in the reminiscing task did not predict the child's score of chronology in the independent narrative task.

The fifth hierarchical regression model predicted the child's thematic coherence for the positive event. The overall fit of the final model was significant, R^2 = .12, $F(4, 83) = 2.87$, p = .03). Step one, R^2 = .09, $F(3, 84) = 2.83$, p = .04, included the PPVT scores, family income, and maternal elaborations as control variables. One variable, maternal elaborations, significantly regressed onto the child's score of theme. With each increase in maternal elaboration the child's thematic score decreased in tandem (ß = -0.28, p = .02). This was in the opposite direction as expected.

Step two, R^2 = .12, $F(4, 83) = 2.87$, p = .03, examined the unique contribution of maternal theme during reminiscing on the child's level of context for the positive event. Even though the final model was significant, the change to model 2 was not significant (ΔR^2 = .03, p = .10). Additionally, no predictors were significant in model 2. (See Table 16.)

The sixth hierarchical regression model predicted the child's chronological coherence for the negative event. Step 1 included PPVT, family income, and maternal elaborations and step 2 included maternal theme. In contrast to the results for the positive event, the overall fit of the final model was not significant, $R^2 = .11$, $F(4, 79) = 2.34$, $p = .06$ and should not be interpreted further. However, given the difference in this model compared to the previous model with the positive event, the steps are described below.

Step one, $R^2 = .10$, $F(3, 80) = 3.08$, $p = .03$, included the PPVT scores, family income, and maternal elaborations as control variables. Step two, $R^2 = .11$, $F(4, 79) = 2.34$, $p = .06$, examined the unique contribution of maternal context during reminiscing on the child's level of theme in the independent narrative. (See Table 17.)

Based on the results from the fifth and sixth regression models, the mother's use of theme in the reminiscing task did not predict the child's score of theme in the independent narrative task. Therefore, hypothesis 2 was rejected; mother's use of coherence in the maternal reminiscing task did not predict the child's score of coherence in the independent narrative task, even after accounting for the child's verbal ability and the mother's maternal elaborations[7].

Repeated (Mixed) Measures ANCOVAs

Three paired sample *t* tests were conducted to examine if the valence of the narrative (positive versus negative) affected the level of each dimension of coherence (i.e., context, chronology, theme) in the child's independent narrative. Given that only the 84-month time point was examined in these analyses, the 25 additional participants who completed this time

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[7] Several logistic regression models were conducted with dichotomizing the outcome variable, the child's coherence score, into low (i.e., 0 and 1) versus high (i.e., 1 & 2). Similar results were found as reported here. Additionally, several hierarchical models were repeated with using a ratio coherence score for the mother (i.e., number of coherence turns divided by total number of turns). Similar results were found as reported here.

point, but did not complete the 72-month time point, were added to the sample. Thus, the final sample analyzed was 115 (see descriptives for more information on this sample), though some dimensions of coherence could not be coded and thus the number may be smaller in those analyses. The child's report of the positive event (M = 1.27) had significantly higher levels of context compared to the negative event, M = 0.91, $t(111) = 3.58$, $p = .001$. Additionally, the child's report of the positive event (M = 1.23) had significantly lower levels of theme compared to the negative event, M = 1.42, $t(105) = -2.60$, $p = .01$. There was no significant difference between the positive and negative event for chronology ($p = .22$). (See Table 18.)

Although the previous results were interesting, to fully investigate my third hypothesis, additional analyses had to be conducted. My third hypothesis was that the child's chronology coherence score would be higher for the negative event compared to the positive event after controlling for verbal ability and maternal elaborations. To accept or reject this hypothesis, a Repeated Measures ANCOVA was conducted. While originally the hypothesis included maternal elaborations as another control variable, given the previous nonsignificant findings, it was decided to remove maternal elaborations from this analysis. Although the dimensions of coherence were operationalized as ordinal data, previous research has treated these dimensions as interval data (e.g., Burch et al., 2008; Waters et al., 2013), making this an appropriate statistical analysis.

The Repeated Measures ANCOVA treated the child's rating of chronological coherence on the positive compared to the negative event as the within-subjects factor. The child's verbal ability measure (PPVT-III) was entered as a covariate. There was not a significant within-subjects effect of valence, $F(1, 96) = 1.67$, $p = .20$, $\eta^2 = .02$, nor was there a significant valence interaction with the covariate of PPVT, $F(1, 96) = 1.22$, $p = .27$, $\eta^2 = .01$. (See Table 19.) Given these results, hypothesis 3 was rejected; there was no significant difference between the child's positive and negative event for the dimension of chronology, even after controlling for the child's verbal ability.

Although no hypotheses were made for the other dimensions of coherence, exploratory analyses were conducted. More specifically, two additional types of ANOVA models were conducted to examine if there was a significant difference between the positive and negative events for context and theme, after controlling for verbal ability.

The first additional analysis focused on the coherence dimension of context. A Repeated Measures ANCOVA treated the child's rating of contextual coherence on the positive compared to the negative event as the within-subjects factor. The child's verbal ability measure (PPVT-III) was entered as a covariate. Results revealed there was not a significant within-subjects effect of valence, $F(1, 104) = 0.04$, $p = .85$, $\eta^2 = .00$, nor was there a significant valence interaction with the covariate of PPVT, $F(1, 104) = 0.52$, $p = .47$, $\eta^2 = .01$. (See Table 20.)

The second additional analysis focused on the coherence dimension of theme. Based on the preliminary analyses described earlier, gender and family income were also included in the model. Specifically, a Repeated Mixed Measures ANCOVA treated the child's rating of thematic coherence on the positive compared to the negative event as the within-subjects factor. The child's verbal ability measure (PPVT-III) was entered as a covariate. The child's gender and family income were entered as between-subject factors. Main between-subject effects were examined and Levene's test was violated for the positive event, $F(3, 97) = 3.41$, $p = .02$, but not for the negative event, $F(3, 97) = 1.60$, $p = .19$. Therefore, the following results were interpreted with equal variances not assumed for the positive event. The main between-subject effects were not significant for the covariate of PPVT, child's gender, family income, or child's gender by family income interaction ($p \geq .054$). There was not a significant within-subjects effect of valence, $F(1, 96) = 3.41$, $p = .07$, partial $\eta^2 = .03$, valence by child's gender interaction, $F(1, 96) = 1.87$, $p = .17$, partial $\eta^2 = .02$, valence by family income interaction, $F(1, 96) = 0.00$, $p = .998$, partial $\eta^2 = .00$, or theme by child's gender by family income interaction, $F(1, 96) = 0.95$, $p = .33$, partial $\eta^2 = .01$. However there was a significant within-subjects interaction with the covariate of PPVT, $F(1, 96) = 4.61$, $p = .03$, partial $\eta^2 = .05$. Parameter estimates revealed that the covariate PPVT scores were not significantly related to the positive event, $t(96) = -.17$, $p = .86$, partial $\eta^2 = .00$. However, as covariate PPVT scores significantly increased for the negative event, so did the child's theme score, $t(96) = 2.50$, $p = .01$, partial $\eta^2 = .06$. (See Table 21.)

Therefore, although the paired sample *t* tests revealed a significant difference between the positive and negative events for the dimensions of context and theme, further Repeated Measures ANCOVA analyses revealed these results no longer remained when the child's verbal ability score was included as a covariate. Interpretations between these analyses must be made cautiously given the minor loss in sample size in the ANOVA analyses compared to the paired sample *t* tests[8].

Additional Analyses

Analyses that were not part of the initial set of hypotheses were conducted to further understand the data. As done in other research studies using elaboration data and, in another study using this same dataset (Langley et al., 2016), elaboration scores have been dichotomized to examine the difference between high and low elaborative mothers relative to the other mothers in the sample. To do this a median split was performed with the elaboration data. The median

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[8] Several participants did not complete the PPVT measure at the 72-month time point, therefore the sample size decreased when including that variable in the model.

elaboration score was 14.33 and thus the mothers were coded as 0 for low elaboration scores (i.e., 14.33 or below; $n = 46$) or 1 for high elaboration scores (i.e., above 14.33; $n = 44$)[9]. To examine whether or not low elaborative mothers versus high elaborative mothers differed in the amount of coherence they provided in their co-constructed narratives with their child, 3 separate independent sample *t*-tests were conducted. All three tests violated Levene's test for equality of variances ($F \geq 5.99$, $p < .016$), so results were reported with equal variances not assumed. Low elaborative mothers had less context, chronology, and theme in their narratives compared to mothers who were highly elaborative (all p values < .001)[10]. Cohen's d indicates all differences had a large effect ($d > -0.82$). (See Table 22 for more information.) These findings suggest that mothers who are considered highly elaborative are also more likely to use more context, chronology, and thematic language in their narratives, which is congruent with expectations based on the previous literature. However, the explanations for why this did not impact the child's independent narrative (i.e., rejection of hypotheses 1 and 2) are still unclear.

Discussion

This study examined some societal and cultural influences associated with the development of narrative coherence. Although multiple factors potentially influence the development of narrative coherence and remain to be determined, researchers have argued that the child's narrative development originates in conversations between parents and their caregivers (e.g., Nelson & Fivush, 2004). Therefore, I sought to examine the mother-child conversation further. More specifically, I researched the potential effect of maternal

[9] Three participants scored the median for elaboration score (14.33), so equal groups could not be created.
[10] These analyses examine the total frequency coherence scores and do not take into account the length of the narrative.

elaborations, which have also been shown to have a positive impact on child development (e.g., cognitive abilities, autobiographical memory, and language development; see Waters et al., 2019 for a meta-analytic review) on the child's independent narrative coherence. Additionally, to my knowledge, this study was the first to examine the prediction of maternal coherence during a mother-child reminiscing task towards the child's independent narrative coherence one year later. In this discussion section, I critically evaluated my findings and discussed their implications to the field. Suggestions for future research are discussed throughout along with limitations of the current study. Final conclusions stress the importance of continued research to understand more fully the development of narrative coherence.

Maternal Elaborations and Children's Independent Narrative Coherence

My first hypothesis was that maternal elaborations would predict the child's independent narrative coherence of theme, after controlling the child's verbal ability. The coherence dimensions of context and chronology were explored as well, although no specific prediction was made. Based on preliminary analyses, family income and the child's race were also controlled in the models. Separate hierarchical regression models revealed nonsignificant results in support of the prediction, indicating that maternal elaborations during the reminiscing task when the child was approximately 72 months of age did not predict the child's level of coherence in the independent narrative task at 84 months of age, after controlling for verbal ability and demographic variables. These findings thus rejected my initial hypothesis.

While these results were not expected, they do not go completely against the limited available literature. For example, Bauer and Larkina (2019) discovered that maternal narrative style (i.e., maternal elaborations divided by maternal repetitions) during a mother-child reminiscing task that was similar to the one used in this study, did not contribute to the added explained variance of the child's independent narrative thematic coherence once other predictors were included in the model (e.g., non-autobiographical story recall, domain-general cognitive abilities). Furthermore, in a series of early intervention studies, Reese and colleagues (2020) discovered that 11-year-olds had significantly higher levels of context and theme in an independent low point narrative if their mothers completed the elaborative reminiscing training when the children were young, compared to adolescents whose mothers did not complete the training. However, no effect was observed for the high-point narratives (Reese et al., 2020) and the effect was no longer found in a follow up study when the adolescents were 15 years old (Mitchell & Reese, 2022). It is unclear why maternal elaborations impact the child's narrative coherence at certain ages (e.g., 11-year-old but not 15-years-old), but not others, or for certain types of narratives, but not others (e.g., low point narrative, but not high point or turning point narrative) warranting the need for more research.

Mothers' Reminiscing Coherence and the Child's Independent Narrative Coherence

I expected mothers' use of coherence (i.e., context, chronology, and theme) would predict the child's subsequent independent narrative coherence (i.e., context, chronology, and theme), after controlling for the mother's elaboration score and the child's verbal ability. Based on preliminary analyses, family income was also controlled in the models. Separate hierarchical regression models revealed no overall significant prediction, indicating that the maternal score of coherence during the reminiscing task when the child was approximately 72 months of age did not predict the child's level of coherence in the independent narrative task at 84 months of age, after controlling for maternal elaborations, verbal ability, and family income. These findings thus led to the rejection of my second hypothesis.

In one of the hierarchical regression models examining the dimension of theme of the positive event, one result did emerge in the opposite direction as expected. Specifically, as mothers increased in elaborations, the child's use of thematic coherence decreased. This result was especially surprising given that it was not found in hypothesis 1, although the child's race was also controlled for in that model but was not in hypothesis 2 based on the preliminary analyses. Given that the effect disappeared in the final model for the second hypothesis and that the effect was not present in the first hypothesis when controlling for race, it can be assumed that this effect did not have a major impact on the child's level of thematic coherence. However, possible explanations were still explored. Given the age of the children in this study, it could be that mothers were still taking most of the speaking role in the reminiscing conversations, with limited contributions from the child. In turn, mothers who thought their children's verbal abilities were weaker (e.g., less coherent) may have taken on an even stronger role, providing more elaborative information. Supporting this notion, in a series of studies, Kelly and Bailey (2013) and Bailey and colleagues (2020) showed that mothers' proportion of contributions of narrative details when having a conversation with their 3-, 4-, and 5-year-old child decreased as their child gained the capacity to generate the narrative components on their own. In other words, the mothers provided more information when the child's ability was still limited. Furthermore, the type of scaffolding (e.g., orientation information, child autonomy, prompts for challenging evaluation aspects) the mother provided changed over time (Bailey et al., 2020). So, although the mother's elaboration score generally remains consistent over time (e.g., Langley et al., 2016), the mother may change in other narrative coherence components that in turn affect the child's narrative coherence. This interpretation is consistent with Vygotsky's (1978) postulation that mothers adjust their conversations based on the child's level of competence in the task.

Future research should examine the contributions of the child, in addition to the mother's contributions to the reminiscing conversation, to examine this further (to be discussed further in the limitations and future directions section).

Explanation for Findings - Potential Underestimation of Coherence Scores

Explanations for the main hypothesis' nonsignificant findings were further explored, starting with the potential underestimation of coherence in the mother's reminiscing narratives. While maternal turns have been used in previous reminiscing research studies (e.g., Ensor & Hughes, 2008; Kelly, 2016; Leyva et al., 2008) and have been shown to be a better predictor of brain development compared to other measures (Romeo et al., 2018), examining the frequency of coherence at the turn level may have underestimated the total amount of coherence provided by the mother. For example, from the coding used in this study, if a mother included two instances of theme within the same turn, only a score of 1 was given for that turn for the theme dimension. Future researchers may want to consider how to account for multiple instances of a coherence dimension within the same turn.

Additionally, when examining the mother's reminiscing narratives, only explicit markers of coherence were included, which could have led to underestimated frequency scores. For instance, the overall use of chronology in the mother's reminiscing narratives in this study was very low; mothers on average did not include one turn with chronology in their reminiscing narratives. Given that chronology is the first coherence dimension to develop (Reese et al., 2011), these at floor scores were rather surprising. Low frequency scores could have been due to the nature of the events the mothers choose to discuss, such as outings to the fair or a family entertainment center (e.g., Chuck E Cheese). In these types of events, the order in which mothers discuss the actions in the event (e.g., the child riding a particular ride or playing different games) may not be a major component of the narrative and the mothers may have asked the children for their "favorite part" instead. Furthermore, chronology was scored based on explicit words, such as then, next, after, and before. It could be there were other ways to communicate the order of actions within the event that were not accounted for in this coding. Future research should examine different types of narratives, to see if mothers do not include much chronology overall, or if the level of chronology depends upon the type of event. For example, would the mother include more chronology when discussing an event with a more natural order, such as going to the movie (i.e., first buy tickets, second pick out food to eat, third go to your seats), compared to an event that likely has less order (e.g., Chuck E Cheese), or would their level of chronology stay the same across both events?

A second explanation for the nonsignificant findings may have been due to the underestimation of coherence in the child's independent narratives. Previous researchers (e.g., Bauer & Larkina, 2019; Reese et al., 2011) could not code the dimension of context because the research assistant included aspects of the dimension in the prompt given to the child. Instead of completely excluding the narrative for the coding of context, I coded any additional information provided by the child for that dimension throughout the entire narrative. For example, see the fictional narrative below in which the research assistant (RA) provided cues for context (i.e., time and location) in the narrative:

> RA: Your mom told me that you *recently* [specific time] went to the *park* [general location]. Tell me all you can remember about going to the park.
>
> CHI: Oh yeah! I went to the park *in my neighborhood* [additional specific location] on *Sunday after we went to church* [additional specific time].

As highlighted in the narrative, the child added additional contextual information to the material the researcher provided in the prompt. Coding for this additional information allowed for fewer narratives to be eliminated from coding, but still likely provided an underestimation of the child's potential coherence score.

Similarly, Bauer and Larkina (2019) when examining independent narratives in 4-, 6-, and 8-year-olds over time, could not code for chronology because the children did not provide enough information before the follow up prompts that disrupted the chronology of the event. Instead of eliminating the narratives in the present study, I coded the narratives until the first prompt of "what else can you tell me about…." However, stopping at this point resulted in the shortest narrative length segment to code of the three coherence dimensions and could have provided an underestimation of the child's potential chronology score. Last, the coding of theme stopped at the first specific cue (i.e., well your mom told me that…) due to the cue potentially providing hints for thematic language. Given that the entire narrative was not coded, the level of theme provided in the narrative could have also been underestimated.

Despite these concerns of potentially underestimating the coherence scores, the scores reported in this study were on par (Bauer & Larkina, 2019) or higher (Peterson et al., 2018) for theme, on par or higher for chronology (Peterson et al., 2018), and on par or lower for context (Peterson et al., 2018) than the values obtained in previous recent research with 72- to 84-month-old children. However, note the comparisons to Peterson and colleagues (2018) must be interpreted in perspective of a very low participant size (n = 12). Future research should see if there are ways in which the research assistant can prompt the child for the event narratives, without providing any coherence information. Also, research assistants should wait as long as possible before providing additional prompts, to allow the child to fully discuss the event before any interruptions.

Explanation of Findings - Developmental Perspective

From a developmental perspective, it could be that examining the impact of the mother's use of coherence when the child was 72 months of age was too late to measure this maternal effect. Supporting this notion, as previously discussed, Kelly and Bailey (2013) and Bailey and colleagues (2020) found that mothers contributed less to mother-child conversations as children aged. As such, it could be that mothers, with children at this age, were allowing the child to provide more of the narrative information, with mothers simply prompting the child as needed. However, this does not mean that mothers may have not previously included more coherence in their reminiscing conversations with their child. Supporting this notion, many of the intervention studies had mothers complete the intervention with their children who were much younger (e.g., 21-29 months of age, Reese & Newcombe, 2007; *m* = 3.7 years, Peterson et al., 1999; 4-year-old, Reese et al., 2010) and found significant effects on the child's narrative skills. While examining the child's level of coherence at 84 months of age was still a prime age for the child to include the initial dimensions of coherence (e.g., Reese et al., 2011), the maternal impacts may have been underestimated by the time the child was 72 months of age. Consequently, future research should examine the impact of maternal coherence during reminiscing conversations with their child at younger ages (e.g., 3-, 4-, or 5-years-old) compared to the child's later independent narrative coherence (e.g., 72 or 84 months).

Additional Analyses

Despite the nonsignificant results for the major hypothesis, one interesting result did emerge from the additional analyses. Given the unexpected findings as just discussed, I decided to further investigate the relationship between maternal reminiscing and the mother's use of coherence. A median split was performed for maternal elaborations, separating mothers into either low elaborations or high elaborations. An independent sample *t* test was then conducted comparing maternal low or high elaboration to their coherence score, for each dimension. Mothers who were rated as highly elaborative in this sample were also significantly higher in the number of turns containing context, theme, and chronology. Given the importance of maternal elaborations on child outcomes, and the importance of narrative coherence in child development, it seems plausible that simultaneously examining both efforts in intervention studies may have more meaningful effects than only focusing on one.

Child's Positive and Negative Event Coherence

I expected that the child's chronological coherence score would differ according to the valence of the event. More specifically, the child's chronology score would be higher for the negative compared to the positive event, after controlling for the child's verbal ability and maternal elaborations. First, a paired sample *t* test was conducted between the positive and negative event which revealed no significant difference. Next, a Repeated Measures ANCOVA was conducted with the child's verbal ability added as a covariate. Although maternal elaborations were originally included in the hypothesis, given the nonsignificant findings for hypothesis 1 and 2, it was determined that this analysis was not needed in this model. The results of the overall analysis were also nonsignificant. These findings thus rejected my third hypothesis.

One explanation for the rejection of this hypothesis could be due to the nature of the events the children discussed. As discussed in the introduction, it was suggested that the components of negative events for injuries and accidents appear to be more contingent in that one action leads to another (e.g., landing on a sharp object requires a fall). From the category coding, the largest percentage of the positive events discussed were about holiday/religious observances, ceremonies, celebrations, and milestones/rituals (22.6%) and outings (22.6%), and few were about illness, death, injury, doctor visits, and accidents (2.0%). While more negative events did discuss illness, death, injury, doctor visits, and accidents (21.4%), the largest percentage of negative events were about mischief and punishment (36.6%) which may not demonstrate the same contingent actions. Therefore, these events discussed may not have had such enabling relations (e.g., Bauer & Fivush, 1992; Bauer, 1992) that would have provided scaffolding for a greater inclusion of chronology in the narrative.

Although no specific hypotheses were made, exploratory analyses were conducted to see if valence impacted the other two dimensions of coherence, context and theme. Paired sample *t* tests revealed that context was higher for the positive event compared to the negative event, while theme was higher for the negative event compared to positive event. These results partially supported the previous limited research which showed that negative events were more coherent than positive events (e.g., Fivush et al., 2003; Fivush et al., 2008; Reese et al., 2011). Again, returning to the types of events discussed by the child, these results were not surprising. When discussing events regarding mischief and punishment (i.e., 36% of the negative events, 0% of the positive events), it seems plausible that the child would include more emotion (i.e., theme) and explanations for actions (i.e., theme) compared to putting the event at a particular time and place (i.e., context). Whereas when discussing holidays (i.e., 22.6% of the positive events, 2.7% of the negative events) and outings (i.e., 22.6% of the positive events, 3.6% of the negative events), it seems plausible that the child would include more information about the location of the event.

The previous results must be interpreted cautiously, however, given that follow-up analyses no longer showed a significant valence effect. More specifically, when conducting a Repeated Measures ANCOVA for context and controlling for the child's verbal ability, there was not a significant difference between the positive and negative event. Based on the preliminary analyses, it was determined to also add in family income and the child's gender when examining the child's thematic coherence of the positive and negative event. As such, a Repeated Mixed Measures ANCOVA was conducted with valence as the within-subjects factor, gender and family income as the between-subject factors, and the child's verbal ability as the covariate. There was no difference in the negative versus positive event for theme, though an interaction emerged between the valence and child's verbal ability, where, as the child's verbal ability increased, so did their thematic score for the negative, but not the positive, event. Given these results, and previous analyses with language (e.g., Reese et al., 2011), it is imperative that future research consider the child's verbal ability when examining their narrative coherence.

Several cautions must be discussed when interpreting the overall results for hypothesis 3. First, it should be noted that the sample size slightly decreased when running the various ANOVAs compared to the paired sample *t* tests, given that not all children had verbal ability scores. Thus, while I interpreted the results as controlling verbal ability as the reason for the change in significance, statistical power could also be a contributing factor.

In addition, the order of the positive and negative events during the child independent narrative was not counterbalanced, and consequently, I could not statistically analyze for order effects in this dataset. Hence, any conclusions regarding the effect of valence on children's independent narrative production must be qualified. However, given the results of the paired sample *t* tests, in that the negative (or second event) was higher for thematic coherence compared to the positive (or first event), the likelihood that order had a significant effect in this study was reduced. Regardless, future research should counterbalance the order to eliminate this potential confound.

Limitations and Future Directions

Examining narrative coherence in this study was a unique contribution to the literature, however, it was not without potential limitations. One limitation was that only the mothers' and not the child's contributions in the mother-child reminiscing task were examined. While this procedure was justified by existing work in the literature (e.g., Bauer & Larkina, 2019; Swearingen et al., 2023; Waters et al., 2019), not examining the child's contributions could have missed some of the meaningful effects of how the mother scaffolds the narrative. For example, if the mother responded "yes" or "no" to a child's response, no coherence was coded given that I did not examine *what* the mother was responding to. However, if the child's contributions were accounted for, it could be the case that this was another opportunity in which the mother confirmed coherence information (e.g., child asked if they are talking about the *park* [context] and the mother confirms yes). Future research should examine the mother's contributions in conjunction with the child's contributions of narrative coherence.

Additionally, when thinking about the contributions to measure in a future study, one should carefully consider how to quantify the contributions. As Waters and colleagues (2019) discuss in their meta-analysis on maternal elaborations, the field is mixed on what is the "best method for compositing elaborative conversation talk" (p. 1096). An average total frequency score was utilized in this study, for both the elaboration and coherence data. While preliminary analyses were conducted using a coherence ratio score (i.e., coherence divided by total length) that yielded similar results as to what was reported here, it is important to note that the length of the narrative was not taken into account in the major analyses. As Waters and colleagues (2019) state, "frequency counts may better reflect the child's exposure to elaborative questions…" and in this case dimensions of coherence, "…in the home in terms of quantity while ratio data may capture an added element of quality (i.e., the extent to which conversations center on elaborations" (p. 1097). Future research should take these different approaches into consideration when designing the most fitting measure for elaboration and coherence.

A second limitation was that although this study extended the literature on valence and coherence by examining everyday positive and negative events, I could not determine the intensity of the emotion experienced at the time of the event. Events that may seem more mundane to an adult and were therefore nominated by the adult for the child to discuss in this study (e.g., not getting to go to the park as originally planned; getting their video games taken away as punishment) may be intensely experienced by a child. Additionally, research has shown that parents reminisced with their 4-year-old children differently about events involving pain (i.e., less emotion words and explanations) compared to fearful or sad events (Pavlova et al., 2022), demonstrating that the type or intensity of the negative event may matter when it comes to the parent's socialization of the event. Therefore, my conclusions regarding the influence of valence on the coherence of the event were limited, and future research should focus on the intensity and type of the experienced emotion at the time of the event.

Lastly, the child's development of narrative coherence skills is a complicated feat, with many likely influences. As Swearingen and colleagues (2023) illustrated in their adapted Bronfenbrenner model, there are many factors that influence how mothers reminisce with their children. While Swearingen and colleagues apply this model directly to maternal elaboration, I suggest the model could be expanded to include the influence of narrative coherence through reminiscing also. Although I controlled for the child's verbal ability to account for some of the cultural patterns of reminiscing, only the events for which both the mother and child were present could be examined. Other types of family storytelling, as suggested in the mesosystem level (Swearingen et al., 2023), are likely to have an impact on narrative development, such as vicarious family stories (i.e., stories that have not been experienced by the narrator, but have been told in the family). For example, in a study with adults from either Turkey or New Zealand, the adults from Turkey had higher thematic coherence when telling vicarious family stories compared to the adults from New Zealand (Bakir-Demir et al., 2023). Bakir-Demir and colleagues (2023) claim that the reasoning behind the purpose for telling the stories (e.g., expressing emotions, identity connections) may have explained this difference. Future research should look at the impact of vicarious family stories on children's development of coherence. Additionally, as also suggested by other researchers (e.g., Reese, 2019; Swearingen et al., 2023), the role of the father in addition to other caregivers is often overlooked in the literature and should be examined further.

Furthermore, other microsystem and macrosystem factors should be examined in future research. The results of this study supported recent research in that gender differences that were once seen in the field, may not be found today (e.g., Swearingen et al., 2023; Waters et al., 2019). Specifically, mothers did not reminisce differently with their daughters or sons in terms of their use of elaborations or narrative coherence. However, when examining the valence of the children's independent narratives, girls had higher thematic coherence compared to boys. I interpret these findings cautiously, considering that a complete picture of the social influence on gender development was not examined in this study, nor was a major question. Furthermore, given the complexity of gender socialization through family, peers, school, and toys and media (see Coyle & Fulcher, 2022 for a review), examining the impact of the child's gender alone may not be as meaningful as examining other influences or the reasons behind *why* mothers may reminisce with children in various ways. For example, in a recent study examining the potential impact of maternal depression on maternal reminiscing with preschoolers, *maternal sensitivity*, compared to other factors (e.g., maternal depression, child's language, child's joint attention, child's gender) was the strongest predictor of mothers' elaborations during reminiscing of a negative fearful event (Reese et al., 2019). As Waters and colleagues (2019) suggest, gender differences when found, could be explained by other variables. Therefore, examining gender in this way alone may not provide the explanations researchers truly desire and instead mask other important influences.

Additionally, when considering our evolving view of what gender and gender identity means in the field (see Cook et al., 2022 for a review), we can question if gender exists in differences between two categories, or if our historical view of examining two categories now presents an outdated view. Cook and colleagues (2022) provide an overview of new ways to conceptualize gender identity, such as examining how the child relates to *both* genders, not just one's identified gender. Furthermore, given the fluidity of gender, researchers are now faced with questions on how to best assess the child's affirmed gender and the meaning behind that social category. As such, future research should critically evaluate how gender is reported and constructed and whether that categorical variable addresses the questions that developmental psychologists seek to understand.

The same cautions were also applied to examining differences, or lack thereof, of two identified racial groups in this study. Although the families in this study were recruited to represent two racial groups, the inclusion of only two groups without a full racial demographic background limits the generalizability of the results. As Roberts and colleagues (2020) recommend, future research should allow the participants to provide their own open-ended identity and researchers should more clearly justify the racial demographics of their participants. Additionally, the lack of statistical power in this study did now allow for the intersectional approach in which "multiple social identities [are considered] simultaneously rather than as separate variables; considering the underlying histories of oppression and privilege associated with gender, race/ethnicity" (Cook et al., 2022, p. 144). Future research should strive to assess the complete social identity of their participants, rather than examining several separate limited categories that do not fully demonstrate the historical complexity of the child's social identity development.

Conclusions

Although the importance of maternal elaborations and coherence on children's narrative skills as separate entities has been established in the literature, the relationship between the two warranted further research. As Langley and colleagues (2016) suggested, examining the child's narrative coherence in an independent narrative in relation to maternal elaborations was a necessary next step in the literature. Furthermore, the measure of coherence applied in this study, the Narrative Coherence Coding Scheme (NaCCs), was designed to examine the dimensional changes in the development of narrative coherence across the lifespan (Reese et al., 2011). Although this scale has been utilized many times in research since its creation, the full understanding of what factors influence the developmental trajectory of narrative coherence remains to be established. As such, this study took these necessary next steps, examining the potential maternal impact on the child's independent narrative coherence over a year timespan. Although the major results were not as expected, it is imperative that we continue to research the factors that impact the development of narrative coherence. The child's verbal ability, as demonstrated in this study and as shown in previous research (e.g., Reese et al., 2011), has an impact on early narrative coherence development and should be included in future research when examining coherence in children. Additionally, the child's narrative coherence should be examined in different types of narratives (e.g., reminiscing, independent narratives, storytelling) to understand a complete picture of the complexity of narrative coherence. Given the vast importance of coherent narratives for autobiographical memory (e.g., Bauer et al., 2019; Bauer & Larkina, 2019), psychological well-being and mental health (e.g., Miragoli & Camisasca, 2022; Mitchell et al., 2020; Vanaken et al., 2022) peer acceptance (e.g., Davidson et al., 2017), communication (e.g., Vanaken & Hermans, 2021), and children's forensic interviews and eyewitness testimony (e.g., Szojka et al., 2022; VanMeter et al., 2023), more research to understand how narrative coherence develops in children is warranted.

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Table 1

Number of Children in the Longitudinal Durham Child Health and Development Study by Background Characteristics and Time Point.

Characteristics	Income Level							
	Above Poverty				Below Poverty			
	Girls		Boys		Girls		Boys	
	n	%	*n*	%	*n*	%	*n*	%
Original Sample (*N* = 206)								
African American	23	11.17	24	11.65	38	18.45	32	16.99
European American	25	12.14	28	13.59	14	6.80	22	10.68
72 Month (*n* = 90)								
African American	14	15.56	13	14.44	15	16.67	11	12.22
European American	12	13.33	16	17.78	6	6.67	3	3.33
84 Month (*n* = 115)								
African American	17	14.78	16	13.91	20	17.39	15	13.04
European American	17	14.78	19	16.52	7	6.09	4	3.48

Table 2

Maternal Coherence Coding for MRM Task.

Dimension	Code	Description	Examples
Context	0	No information about time or location.	On vacation we went skiing.
	1	Mother mentions time or *location* at any level of specificity.	When you started *school* Places with names (e.g., towns, counties, and countries)
		Mother asks child for time or location.	What did we do *last week?* Where did we *go?*
Chronology	0	No information is provided about temporal order.	A lion. A snake. Ate lunch.
	1	Mother provides an explicit marker of temporal order.	We went to the zoo last weekend and saw lions. *Then* we saw the bears.
		Mother asks child with an explicit marker for temporal order.	We went to the zoo last week. What did we do *first?*
		Mother's content includes temporal order.	In the *middle of the last quarter* of the basketball game…
Theme	0	No thematic language is present.	You and I went shopping last weekend. I bought you a dress.
	1	Mother includes or asks for a causal linkage.	We did that because… Why did we go to the park?
		Mother elaborates or asks for an elaboration.	We went to the park downtown, *the one with the big climbing wall*. Can you tell me your speech again? (i.e., patterned speech)
		Mother includes an emotion or asks the child for an emotion.	You were *sad* when grandma went back home. How did you *feel* when grandma left to go home?
		Mother includes or asks for a personal reflection.	I thought I was wrong. Were you hungry?
		Mother provides or asks for dialogue or quotes.	Your teacher said "you won the spelling bee."
		Mother provides links to the child's self-concept or a resolution.	After that you decided to be a baseball player instead of a soccer player.

Table 3

Child Coherence for the Child Independent Narrative (CIN) Task.

Dimension	Score	Description	Examples
Context	0	No information about time or location.	On vacation we went skiing.
	1	Mention of *time* or *location* at any level of specificity.	When I *started kindergarten* (specific time) At the *library* we... (general location)
	2	Mention of both *time* and *location*, but no more than one dimension is specific.	*Last week* (specific time) I went to *McDonald's* (general location) *Recently* (general time) we went to *grandma's house* (specific location)
	3	Mention of both *time* and *location* and both are specific.	*After my 6th birthday* (specific time), I moved to *Raleigh* (specific location)
Chronology	0	No information is provided about temporal order.	A lion. A snake. Ate lunch.
	1	Coder can place some but fewer than 50% of the actions on a timeline.	"I ate all my frosting out of my bowl. We went to the grocery store and got 'em. And we had to wait until the gingerbread houses were ready."
	2	Coder can place between 50-75% of the actions on a timeline.	"I found a giraffe, but the giraffe was sick. And then we looked under a blanket, you know what we found? The baby elephant. I saw fishes. Goldfish. A zebra eating. And then I saw a tiger when doing his (unintelligible) dance. And then I saw the koala jumping around the tree. After the banana he burps."
	3	Coders can place almost all (>75%) of the actions on a timeline.	"We won 2-1, and it wasn't—it was sort of our best game, because usually all through the main season we didn't do very well in the games, and then when we went in the tournament, we did pretty well. And our team, well on our team, no one really got hurt at the game, so we and the other team didn't get hurt. And lots of times—the one time that the ball went in, the player just went right past the defense and got it in, just like right into the corner. And one of ours was like that, and the other—I can't remember what the other one was like."

Table 3 (continued).

Theme	0	Theme is difficult to identify due to the narrative being substantially off topic and/or including multiple digressions with no attempt to repair digressions.	"I got a dress. Me and Shelley got a dress. And Jessie's gonna get on her computer and send it to us. We're gonna buy it. And buy the shoes with flowers on the side. I got the shoes with the flowers on the side."
	1	Narrative is on topic with an identifiable theme. Narrative includes minimal development of theme through a limited number of causal linkages, or personal evaluations and reactions, or elaborations of actions.	"I was a small child about age 5. I was held by my parents on a famous bridge. It was in winter and I was wearing a hat. Then I took off my hat, and threw it outside the bridge, mimicking some sound of the plane."
	2	Narrative substantially develops the theme by conveying a personal story. Narrative includes several instances of causal linkages, and/or interpretations (e.g., personal reflections, emotions, dialogue), and/or elaborations of actions.	"I was kind of scared because they might have to put that trache in, and I didn't know what it would affect to my asthma, on my lungs. I just didn't know because I was kind of crying and I was kind of scared. And I just didn't like the sound of it. I thought it was going to do something to me like not let me breathe anymore or something. And I just didn't really like it, and it just hurt me really bad."
	3	All of the above are present. In addition, the narrative includes a resolution that brings closure to the event or links to other autobiographical experiences or self-concept or identity.	"It wasn't really the fact of getting into medical school that was thrilling, even though it was a good thing, but just what I had gone through to get there and all the hard work and the struggle had paid off. And that's because I basically had, for the last 4 years, I saw myself through school [link to other autobiographical experiences]. I've had to like work between two to four jobs, and at the same time, I'm getting four degrees and two minors, and I remember times I'd work like third shift from 11 pm to 7 am and then have to go to chemistry class at 8 am and go through rush hour traffic in the morning and all that, so it just made it all worth it like, when I saw the first letter I just felt good that all the hard work was not in vain[link to self-concept]. It paid off, and it just shows that if you are willing to work hard, you can succeed."

**Note:* The coding scheme was adapted from Reese et al. (2011) and Baker-Ward et al. (2007). The examples provided in quotes were taken directly from Reese et al. (2011).

Table 4
Descriptive Event Coding for the Narratives.

Category	72 Month *n* = 250 events[a], across the 90 dyads		84 Month Positive *n* = 115 events		84 Month Negative *n* = 112 events[b]	
	n	%	*n*	%	*n*	%
Trips and Vacations	21	8.4	13	11.3	2	1.8
Holiday/ religious observances, ceremonies, celebrations, and milestones/rituals	44	17.6	26	22.6	3	2.7
Outings	100	40.0	26	22.6	4	3.6
Performance, sports, and competition	17	6.8	17	14.8	5	4.5
Family transitions	5	2.0	3	2.6	2	1.8
Peer and/or sibling interactions	13	5.2	11	9.6	7	6.3
Illness, death, injury, doctor visits, and accidents	5	2.0	0	0.0	24	21.4
Mischief and punishment	0	0.0	0	0.0	41	36.6
Change in plans	0	0.0	0	0.0	7	6.3
School activities	8	3.2	9	7.8	6	5.4
Home activities	30	12.0	8	7.0	10	8.9
Other / incomplete	7	2.8	2	1.7	1	0.9

[a]2 events are missing from the 72-month time point.
[b]3 children did not report a measurable negative event.

Table 5

Descriptive Statistics and Correlations for the Study Variables.

Variable	*n*	*M*	*SD*	Range	1	2	3	4	5	6	7	8	9	10	11	12
PPVT	89	108.07	16.20	68 - 149	–											
Maternal Elaborations	90	17.75	10.09	4.33 - 47.50	.39***	–										
Maternal Turns	90	22.38	10.00	7.33 - 52.50	.22*	.81***	–									
Maternal Context	90	4.41	2.77	1.00 - 13.00	.25*	.68***	.64***	–								
Maternal Chronology	90	0.83	0.86	0.00 - 4.67	.13	.43***	.36***	.39***	–							
Maternal Theme	90	6.16	3.88	0.67 - 16.00	.23*	.62***	.68***	.35**	.14	–						
Child Context – Pos	90	1.28	0.92	0.00 - 3.00	.15	.07	-.05	-.10	.11	.03	–					
Child Context – Neg	88	0.90	0.77	0.00 - 3.00	.10	-.04	-.06	-.09	-.08	.10	.26*	–				
Child Chronology – Pos	88	1.44	1.05	0.00 - 3.00	-.10	-.03	.01	-.11	.13	.04	.20	.10	–			
Child Chronology – Neg	84	1.07	1.15	0.00 - 3.00	.01	.04	.12	.16	.06	.22*	-.05	.16	.22	–		
Child Theme – Pos	89	1.22	0.52	0.00 - 2.00	.12	-.15	-.23*	-.17	.02	-.23*	.22*	.08	.11	.15	–	
Child Theme – Neg	85	1.44	0.61	0.00 - 3.00	.31**	.20	.05	.12	.22*	.07	.12	.15	.19	.11	.18	–

Note. Pos = positive; Neg = Negative
* $p < .05$, ** $p < .01$, *** $p < .001$.

Table 6

Frequency Coherence Scores in the Child Independent Narrative (CIN) Task.

Coherence	*n* = 90		*n* = 115	
	Positive	Negative	Positive	Negative
Context				
0	19	30	27	35
1	37	38	45	54
2	24	19	29	21
3	10	1	14	2
Chronology				
0	23	39	34	50
1	17	13	25	16
2	34	19	36	22
3	14	13	16	17
Theme				
0	4	3	4	6
1	61	44	79	56
2	24	36	30	41
3	0	2	0	5

**Note*. Not all events could be coded for each coherence dimension.

Table 7

Descriptive Statistics for the Child's Independent Narrative (CIN) Task at the 84 Month Time Point.

Coherence	Positive - Event 1				Negative - Event 2			
	n	*M*	*SD*	Range	*n*	*M*	*SD*	Range
Context	115	1.26	0.96	0 - 3	112	0.91	0.75	0 - 3
Chronology	111	1.31	1.06	0 - 3	105	1.06	1.16	0 - 3
Theme	113	1.23	0.50	0 - 2	108	1.42	0.67	0 - 3

Note. The coherence dimensions contain different *n*s given the different coding rules for each dimension. Also, the scores presented here represent the full sample at this timepoint (n = 115) whereas the scores presented in Table 5 represent the mother-child dyads who had data at both timepoints (n = 90).

Table 8

Means, Standard Deviations, and One-Way Analyses of Variance (ANOVA) in Maternal Predictor Variables by Child's Gender.

Measure	Girls		Boys		$F(1, 88)$	η^2
	M	*SD*	*M*	*SD*		
Elaborations	18.08	10.28	17.38	9.99	0.11	.00
Context	4.49	3.03	4.32	2.49	0.08	.00
Chronology	0.94	0.96	0.71	0.74	1.56	.02
Theme	5.99	3.86	6.35	3.95	0.20	.00

* $p < .05$.

Table 9

Means, Standard Deviations, and One-Way Analyses of Variance (ANOVA) in Maternal Predictor Variables by Family Income.

Measure	Below Poverty		Above Poverty		ANOVA		
	M	*SD*	*M*	*SD*	*F* ratio	*df*	η^2
Elaborations	13.48	9.24	20.47	9.74	11.48**	1, 88.00	.12
Context	3.61	2.23	4.91	2.98	5.57*	1, 85.61	.05
Chronology	0.80	0.99	0.85	0.78	0.08	1, 88.00	.00
Theme	4.91	3.81	6.96	3.75	6.30*	1, 88.00	.07

Note. Maternal context violated Levene's test, so the Welch F-ratio was reported.
* $p < .05$, ** $p < .01$.

Table 10

Means, Standard Deviations, and One-Way Analyses of Variance (ANOVA) in Maternal Predictor Variables by Race.

Measure	African American		European American		$F(1, 88)$	η^2
	M	*SD*	*M*	*SD*		
Elaborations	14.69	8.33	22.14	10.87	13.56***	.13
Context	4.00	2.57	4.99	2.97	2.85	.03
Chronology	0.75	0.88	0.95	0.83	1.18	.01
Theme	5.65	3.64	6.89	4.16	2.23	.03

* $p < .05$, ** $p < .01$, *** $p < .001$.

Table 11

Regression Results for Child's Thematic Coherence of the Negative Event.

					95% CI for *B*				
	B	*SE B*	Beta (ß)	*t*	*LL*	*UL*	Tolerance	VIF	R^2
									.16***
(Constant)	1.28	.11		11.28***	1.06	1.51			
Gender	-0.35	.12	-.26**	-2.86	-0.59	-0.11	.99	1.01	
Race	0.23	.13	.17	1.78	-0.03	0.48	.93	1.07	
Family Income	0.33	.13	.24*	2.56	0.07	0.59	.93	1.08	

a. Dependent Variable: Thematic Coherence

Note. CI = Confidence Interval; *LL* = lower limit; *UL* = upper limit

$*p < .05$, $**p < .01$, $***p < .001$.

Table 12

Hierarchical Regression Results for Child's Thematic Coherence of the Positive Event.

					95% CI for *B*					
	B	*SE B*	Beta (ß)	*t*	*LL*	*UL*	Tol	VIF	R^2	ΔR^2
Step 1									.03	.03
(Constant)	.891	.450		1.98	-.00	1.79				
PPVT	.002	.005	.08	0.53	-.01	0.01	.56	1.80		
Family Income	.154	.130	.15	1.18	-.11	0.41	.77	1.31		
Race	-.055	.136	-.05	-0.41	-.33	0.22	.68	1.47		
Step 2									.09	.06*
(Constant)	.935	.439		2.13	.06	1.81				
PPVT	.004	.005	.12	0.83	-.01	0.01	.55	1.83		
Family Income	.219	.130	.21	1.69	-.04	0.48	.73	1.37		
Race	.006	.135	.01	0.04	-.26	0.28	.65	1.53		
Elaborations	-.014	.006	-.28*	-2.34	-.03	-0.00	.79	1.27		

a. Dependent Variable: Thematic Coherence

Note. CI = Confidence Interval; *LL* = lower limit; *UL* = upper limit. Tol = Tolerance

*p < .05.

Table 13

Hierarchical Regression Results for Child's Thematic Coherence of the Negative Event.

					95% CI for *B*					
	B	*SE B*	Beta (ß)	*t*	*LL*	*UL*	Tol	VIF	R^2	ΔR^2
Step 1									.10*	.10*
(Constant)	.451	.507		0.89	-.56	1.46				
PPVT	.008	.005	.22	1.55	-.00	-0.02	.56	1.78		
Family Income	.105	.150	.09	0.70	-.19	0.40	.77	1.30		
Race	.103	.156	.08	0.66	-.21	0.41	.69	1.44		
Step 2									.11	.00
(Constant)	.437	.510		0.86	-.58	1.45				
PPVT	.008	.005	.21	1.46	-.00	0.02	.55	1.81		
Family Income	.088	.154	.07	0.57	-.22	0.39	.74	1.35		
Race	.086	.159	.07	0.54	-.23	0.40	.67	1.49		
Elaborations	.004	.007	.07	0.58	-.01	0.02	.81	1.23		

a. Dependent Variable: Thematic Coherence

Note. CI = Confidence Interval; *LL* = lower limit; *UL* = upper limit. Tol = Tolerance

**p* < .05.

Table 14

Hierarchical Regression Results for Child's Contextual Coherence of the Positive Event.

					95% CI for *B*					
	B	*SE B*	Beta (ß)	*t*	*LL*	*UL*	Tol	VIF	R^2	ΔR^2
Step 1									.03	.03
(Constant)	.517	.711		0.73	-.90	1.93				
PPVT	.006	.007	.11	0.86	-.01	0.02	.71	1.42		
Family Income	.182	.237	.10	0.77	-.29	0.65	.72	1.38		
Elaborations	-.001	.011	-.01	-0.11	-.02	0.02	.82	1.23		
Step 2									.07	.04
(Constant)	.630	.703		0.90	-.77	2.03				
PPVT	.006	.007	.11	0.84	-.01	0.02	.71	1.42		
Family Income	.175	.234	.09	0.75	-.29	0.64	.72	1.38		
Elaborations	.016	.014	.18	1.13	-.01	0.05	.46	2.16		
Maternal Context	-.090	.048	-.27	-1.86	-.19	0.01	.53	1.90		

a. Dependent Variable: Contextual Coherence

Note. CI = Confidence Interval; *LL* = lower limit; *UL* = upper limit. Tol = Tolerance

**p* < .05.

Table 15

Hierarchical Regression Results for Child's Chronological Coherence of the Positive Event.

					95% CI for *B*					
	B	*SE B*	Beta (ß)	*t*	*LL*	*UL*	Tol	VIF	R^2	ΔR^2
Step 1									.01	.01
(Constant)	2.120	.813		2.61*	0.50	3.74				
PPVT	-0.007	.008	-.11	-0.84	-0.02	0.01	.72	1.40		
Family Income	-0.011	.271	-.01	-0.04	-0.55	0.53	.74	1.35		
Elaborations	0.004	.012	.04	0.30	-0.02	0.03	.83	1.21		
Step 2									.03	.02
(Constant)	2.086	.810		2.58*	0.48	3.70				
PPVT	-0.007	.008	-.11	-0.86	-0.02	0.01	.72	1.40		
Family Income	0.044	.273	.02	0.16	-0.50	0.59	.72	1.39		
Elaborations	-0.004	.014	-.04	-.30	-0.03	0.02	.67	1.50		
Maternal Chronology	0.190	.146	.16	1.30	-0.10	0.48	.80	1.26		

a. Dependent Variable: Chronological Coherence

Note. CI = Confidence Interval; *LL* = lower limit; *UL* = upper limit. Tol = Tolerance

**p* < .05.

Table 16

Hierarchical Regression Results for Child's Thematic Coherence of the Positive Event.

					95% CI for *B*					
	B	*SE B*	Beta (ß)	*t*	*LL*	*UL*	Tol	VIF	R^2	ΔR^2
Step 1									.09*	.09*
(Constant)	.926	.388		2.39*	.15	1.70				
PPVT	.004	.004	.12	0.98	-.00	0.01	.72	1.40		
Family Income	.219	.129	.21	1.70	-.04	0.48	.74	1.36		
Elaborations	-.014	.006	-.28*	-2.39	-.03	-0.00	.82	1.22		
Step 2									.12*	.03
(Constant)	.993	.386		2.57*	.22	1.76				
PPVT	.004	.004	.11	0.93	-.00	0.01	.72	1.40		
Family Income	.230	.127	.22	1.80	-.02	0.48	.73	1.37		
Elaborations	-.007	.007	-.13	-0.92	-.02	0.01	.52	1.92		
Maternal Theme	-.030	.018	-.23	-1.67	-.07	0.01	.58	1.71		

a. Dependent Variable: Thematic Coherence

Note. CI = Confidence Interval; *LL* = lower limit; *UL* = upper limit. Tol = Tolerance

*$p < .05$.

Table 17

Hierarchical Regression Results for Child's Thematic Coherence of the Negative Event.

					95% CI for *B*					
	B	*SE B*	Beta (ß)	*t*	*LL*	*UL*	Tol	VIF	R^2	ΔR^2
Step 1									.10*	.10*
(Constant)	.313	.453		0.69	-.59	1.22				
PPVT	.009	.005	.25	1.98	.00	0.02	.73	1.38		
Family Income	.079	.152	.06	0.52	-.22	0.38	.75	1.34		
Elaborations	.005	.007	.08	0.70	-.01	0.02	.84	1.19		
Step 2									.11	.00
(Constant)	.337	.458		0.73	-.58	1.25				
PPVT	.009	.005	.24	1.96	.00	0.02	.73	1.38		
Family Income	.082	.153	.07	0.53	-.22	0.39	.75	1.34		
Elaborations	.007	.009	.12	0.84	-.01	0.03	.52	1.91		
Maternal Theme	-.010	.022	-.07	-0.47	-.05	0.03	.58	1.72		

a. Dependent Variable: Thematic Coherence

Note. CI = Confidence Interval; *LL* = lower limit; *UL* = upper limit. Tol = Tolerance

**p* < .05, ** *p* < .01, ****p* < .001.

Table 18

Results of Paired Sample t Tests Examining the Valence to Coherence Score.

Coherence Dimension	Positive		Negative		*t*	*df*	*p*	Cohen's *d*
	M	*SD*	*M*	*SD*				
Context	1.27	0.96	0.91	0.75	3.58	111	.001	0.34
Chronology	1.24	1.04	1.07	1.17	1.24	102	.218	0.12
Theme	1.23	0.50	1.42	0.68	-2.60	105	.011	-0.25

Note. The *n*'s varied depending on the coherence dimension. Context *n* = 112, Chronology *n* = 103, Theme *n* = 106.

Table 19

Unadjusted Means, Standard Deviations, and Repeated Measures ANCOVA for Chronology by Valence with PPVT as a Covariate.

Measure	Positive		Negative		$F(1, 96)$	Partial η^2
	M	*SD*	*M*	*SD*		
Chronology	1.22	1.03	1.03	1.14	1.67	.02
Chronology × PPVT					1.22	.01

* $p < .05$.

Table 20

Unadjusted Means, Standard Deviations, and Repeated Measures ANCOVA for Context by Valence with PPVT as a Covariate.

Measure	Positive		Negative		$F(1, 104)$	Partial η^2
	M	*SD*	*M*	*SD*		
Context	1.29	0.96	0.92	0.76	0.04	.00
Context × PPVT					0.52	.01

* $p < .05$.

Table 21

Repeated Mixed Measures ANCOVA for Theme by Valence with PPVT as a Covariate.

Measure	*df*	*F*	*p*	Partial η^2
Between-subject effects				
PPVT (covariate)	1	2.98	.09	.03
Gender	1	3.64	.06	.04
Family Income	1	3.79	.05	.04
Gender × Income	1	0.07	.79	.00
Error	96			
Within-in subject effects				
Theme	1	3.41	.07	.03
Theme × PPVT (covariate)	1	4.61	.03	.05
Theme × Gender	1	1.87	.17	.02
Theme × Family Income	1	0.00	.99	.00
Theme × Gender × Family Income	1	0.95	.33	.01
Error (Theme)	96			

Note. Levene's test was significant for the between-subject effects, so results were interpreted with equal variances not assumed. Values reported here were not adjusted for the Levene's test results.

Table 22

Results of Independent Sample t Tests Examining the Maternal Coherence to Elaboration Score.

Coherence Dimension	Low Elaboration		High Elaboration		*t*	*df*	*p*	Cohen's *d*
	M	*SD*	*M*	*SD*				
Context	2.93	1.45	5.95	2.99	-6.04	61.57	<.001	-1.29
Chronology	0.51	0.61	1.16	0.96	-3.84	72.68	<.001	-0.82
Theme	4.05	2.78	8.36	3.67	-6.26	80.11	<.001	-1.33

Note. All 3 violated Levene's test so results were reported for equal variances not assumed. Both the elaboration and coherence scores here represent total scores and are linked to the number of maternal turns.

APPENDICES

Appendix A

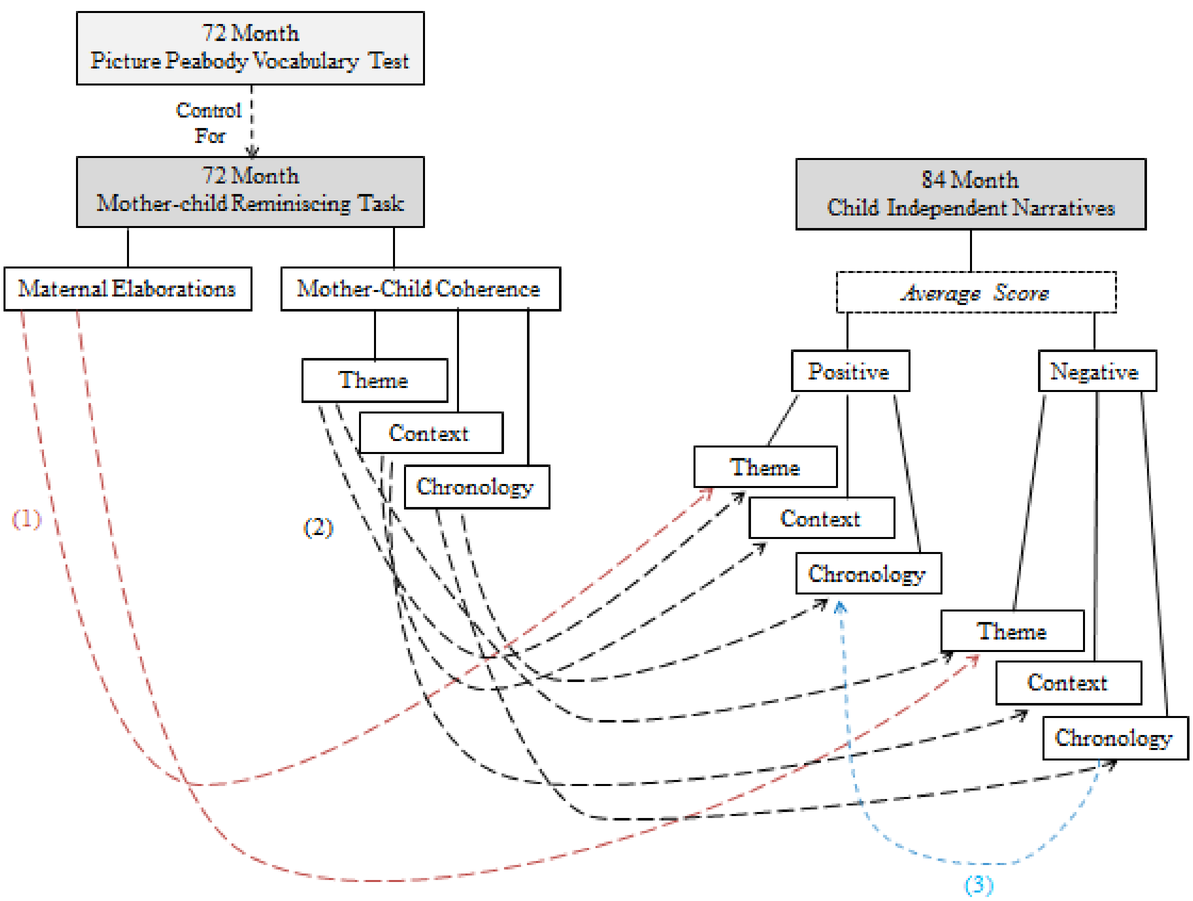
Conceptual Model of Hypotheses

Hypotheses:

1) Maternal elaborations at 72 months will predict the coherence of theme of the child's independent narrative at 84 months, over and above the effects of verbal ability. (Red lines)

2) Mother-child coherence on context, chronology, and theme at 72 months will predict the coherence of the corresponding dimension of the child's independent narrative at 84 months, over and above the effects of verbal ability and maternal elaborations. (Black lines)

3) The child's coherence score for chronology will be higher in the negative narrative report compared to the positive narrative report after controlling for verbal ability and maternal elaborations. (Blue line)



Appendix B

Category Coding Manual

Narrative researchers typically report the type of events their participants discussed. Accordingly, we will categorize the type of events the parents nominated for their children to discuss. To do so, we will rely on the initial prompt and will examine the cues as necessary to understand the event. The categories we will use to code the event types are based on categories included in previous research (Fivush et al., 2003; Haden et al., 2009), adjusted as needed to fit this dataset. Each category is mutually exclusive, meaning that the narrative can only be put into one category. We will code all event reports (child positive and negative narratives at this point and subsequently, mother-child interactions). Note that the coding is about the event type only, and the valence of the experience (positive or negative) is not considered in this coding. That is, an outing could be described as a lot of fun or an unpleasant experience, but is still coded as an outing.

Directions: For the child independent narratives, read the prompt and the cues for each narrative, and use the child's input when necessary. In other words, put more "weight" on the original prompt and cues, but the child's comments can be included if need be. Think about what is the majority of the prompts and cues of the narrative about.

For the mother-child conversations, read the entire narrative, but focus on the maternal prompts and not the child's response.

Assign the prompt to one of the categories provided in the table on the next page. Record your response on the coding sheet.

Category	Examples	Additional Description
Trips and vacations	Beach, visiting out-of-town family	Extended in <u>time</u> (i.e., at least overnight) and <u>involves travel</u>.
Holiday/religious observances, ceremonies, celebrations, and milestones/rituals	Birthdays, Christmas, weddings, graduation, party to commemorate the end of soccer season, losing tooth and tooth fairy	Celebrations should refer to fairly structured events. Can include developmental milestones with associated rituals.
Outings	Picnics, pony ride	If an outing is the basis for a birthday party, code as celebration.
Performance, sports, and competitions	Brother's soccer match, musical and/or dance recital	Target child could be a participant or an observer. If competitions are academic based, include in school activity instead.
Family transitions	Sibling births, moves, divorce, any major reorganization of the family, new family pet	Can occur during different parts of the transition, such as preparing for the move,

		the move itself, or adjusting right after the move.
Peer and/or sibling interactions	Sleepover with friend where the focus is on the interaction. Fight with sibling where the focus is on the interaction.	Could take place during an outing or involve an injury (for example), but the focus in on the interaction. Peers are approximately the same age as the child. *Interaction involves the other person, either verbal or behaviorally. Look for cues such as the use of "we" in the narrative.
Illness, death, injury, doctor visits, and accidents	Loss of a loved one or a pet's death/injury. Bike riding accident.	Injuries can be minor, requiring only first aid or more involvement. Accidents are when injury is likely, but not necessarily discussed in the narrative.
Mischief and punishment	Grounded, video games taken away, stole something, getting put on "red" at school	Can occur in different locations. Target child could be a participant or an observer.
Change in plans	The time you didn't get to go to the movies.	Narrative focuses on the child's disappointment that an eagerly anticipated event will not happen or that a desired possession or privilege won't be obtained.
School activities	Field trips, book fairs, art projects completed at home or at school, interactions with teacher, spelling bees	These activities must be related to <u>*academics*</u> or <u>*educational goals*</u>.
Home activities	Playing games around the house that are not necessarily competitive. Watching videos.	Can include activities in the neighborhood. Include other household activities IF narrative does not fit in another category even when the home is NOT specified.
Other / Incomplete	Use only when another code is not appropriate. Provide brief description of event on coding sheet. Narratives that do not include enough information to place into another category. Narratives that are extended and include two categories equally (e.g., narrative started at home [home activity] but then went to another location [outing]).	

**Note: This statement was included for coding of the child independent narratives but not for the mother-child conversation narratives.*

Appendix C

Mother-Child Reminiscing Task - Emotion Coding

This part of the coding manual focuses on coding the overall emotional tone of the mother-child conversations. Your task will be to determine the emotion of each narrative, and to do so objectively and systematically, so that your codes agree with the codes of a master coder.

Getting Started

A. You can work from the computer or from a hard copy of a transcript. If you print out the narratives in the lab, the hard copies cannot leave the lab. If you work from a computer, make sure you are using a trusted wifi connection to view the narratives through the Google Drive folder (e.g., at home or a NCSU network) and your computer screen cannot be easily viewed by other people. Remember, you are reading personal interviews so it is important to honor our participants' privacy! While recording notes and particular phrases from the narrative on the coding sheet is okay, never download or copy the entire narrative onto your computer.
B. Use the provided coding sheet to record your codes and email to Tiffany using your NCSU email address.

Coding the Narratives

A. Read the narrative and review when the narrative starts and stops. There "should" be 3 narratives per interview, however that is not always the case. If you are reviewing a PDF with lines drawn on it separating the narratives, follow those lines. Note, the mother or child may return to a previous narrative within a different part of the interview. Therefore it is very important to <u>read the entire narrative</u>! If you ever have questions on where to start and stop, contact Tiffany. This is not part of the reliability coding!
    a. Off task (often marked as "off" in the narrative) comments do not count towards the overall emotional tone. For instance, if a child is not listening and the mother states they are "disappointed in the child's behavior," that *negative* undertone would not change the emotional tone of the entire narrative.
B. Once you are clear on where to begin and stop, read through the narrative once to get a feel for the event (hint, reading out loud may help). Code the narrative based on all on-task comments from the mother and child (i.e., exclude off task), your personal knowledge of events, and inclusion of emotion terms. Basically, use all of the narrative relevant information that is provided to you. After reading, think about what is the overall emotional tone of the narrative? The coding options are <u>*neutral*</u>, <u>*positive*</u>, <u>*negative*</u>, and <u>*mixed*</u>.
    a. Start at "neutral" and change the code to positive, negative, mixed, or remain at neutral, accordingly.

i. To go from *neutral* to *negative*, look for emotional words and behavioral items (e.g., crying, didn't get to go, getting in trouble, getting punished). These narratives will have a clear negative overtone, which may be communicated by just one strong negative item or several.

ii. To go from *neutral* to *positive*, look for emotional words and behavioral items (e.g., "best time," "favorite," "you wanted," "best friend," "finally got to," laughter from the mother and child). These narratives will have a clear positive overtone, which may be communicated by just one strong positive item or several.

iii. To go from *neutral* to *mixed*, there are approximately equal (or close to equal) positive and negative pieces of the narrative. Keep in mind, in order for the narrative to be mixed, it has to first be considered positive if you remove the negative parts, and also be considered negative if you remove the positive parts. In other words, the narrative has to qualify as both positive and negative first to be considered mixed.

iv. To remain at *neutral*, the narrative does not contain negative or positive emotional words and behavioral items.

b. Keep in mind, negative, positive, and mixed narratives <u>do not have to contain emotion words</u> in order to be coded as such.

i. E.g., the narrative is about a child going to the museum and their experience. This is an everyday experience but the child and mother discuss their "favorite parts". This may be coded as a positive event.

c. Look for the overall tone of the narrative. Inclusion of one or a few emotion words that go against the overall emotional tone of the narrative do not change the overall emotion.

i. E.g., a memory that is mostly *positive* but includes one statement such as "I didn't like what I ate for dinner that night, but everything else was great" and focused on the "great night" would be considered a *positive* narrative.

ii. When deciding for the overall emotional tone to be a particular emotion (i.e., positive or negative) or mixed, think about whether both parties reinforce the negative or the positive? Give the greater priority to the emotion that both parties endorse.

d. We can assume that most of the narratives in this set will be classified as positive or neutral.

C. After you have coded the narratives, wait a little while (I like to wait a day or at least a few hours) and read through the codes again. Are you still comfortable with your code? I also recommend taking breaks and limiting how much coding you complete in one session.

Key Things To Keep In Mind While Coding:

A. The length of the narrative does not matter for the overall emotional tone. The narrative can be very short but also dense with emotion or behavioral items whereas a long narrative could have many actions without emotions or behavioral items.
B. When in doubt between codes, stay at *neutral*. For instance, if you are stuck between *neutral* and *positive*, code as *neutral*.

Example Narratives

These narratives are coded for training only. Note that these narratives are independent narratives rather than conversations. However, the coding rules still apply accordingly.

"I got a dress. Me and Shelley got a dress. And Jessie's gonna get on her computer and send it to us. We're gonna buy it. And buy the shoes with flowers on the side. I got the shoes with the flowers on the side" (Reese et al., 2011).

- Code = *Neutral*. No emotion words were used nor behavioral indications to bump this to positive.

M: Let's talk about your very first day of first grade. Tell me everything you can remember about that day.
C: I got a new lunchbox and a pencil case and a cool Spider Man mask, but I had to keep using my old backpack.
M: Well, your backpack was still good. What was it like to ride the school bus? You hadn't done that before this year.
C: At first I was a little scared and didn't want to leave you. The steps looked really steep and the bus driver seemed mean. But when I got on the bus I saw Jake and I got to sit with him. We talked about his new dog. It's a goldendoodle named Zac. Can I have a dog?
M: You can have a dog when you're old enough to take care of it. Tell me about your classroom.
C: The best thing is I got Ms. Gray for my teacher! She's a really nice teacher. And guess what? Jake is in my class!

- Code = *Mixed.* Several positive indicators (e.g., "cool Spider Man mask," "backpack still good," "nice teacher," Jake in class) and negative indicators (e.g., "old backpack," "little scared," "mean"). The positive and negative indicators are approximately equal.

"*I was kind of scared because they might have to put that trache in, and I didn't know what it would affect to my asthma, on my lungs. I just didn't know because I was kind of crying and I was kind of scared. And I just didn't like the sound of it. I thought it was going to do something to me like not let me breathe anymore or something. And I just didn't really like it, and it just hurt me really bad* (Reese et al., 2011)."

- Code = *Negative*. Several emotion words were used (e.g., "scared," "didn't like the sound," "didn't like it," "hurt me") and behavioral indications (e.g., "crying", "not let me breathe anymore").

"*I remember a vacation, and we went to this Flintstone World place in South Dakota, and I remember crawling through this crocodile, it was like a play area tunnel thing and I remember getting to the middle and getting scared. And I remember getting stuck in there, and I remember my brother sticking his face in at one side of the tunnel saying ''Come on its okay, come over here.'' And we had a foster brother also, who was at the other end trying to say ''Go ahead, it's alright, it's not scary.'' And that's the only thing I remember about that whole place is being, like getting freaked out as soon as I got in the tunnel. And by looking at family pictures and things, and which foster brother, and stuff, I was three*" (Bauer et al., 2014).

- Code = *Negative*. Several emotion words were used (e.g., "scared," "freaked out" and behavioral indications (e.g., "getting stuck").

"*I was a small child about age 5. I was held by my parents on a famous bridge. It was in winter and I was wearing a hat. Then I took off my hat, and threw it outside the bridge, mimicking some sound of the plane"* (Reese et al., 2011).

- Code = *Neutral*. No emotion words were used nor behavioral indications to bump this to positive.

"*Me and Julie were laughing. And then... then, um, Ariel and Jasmine, they pushed me. And they're like, "Sorry, I didn't mean to." But, it was on purpose 'cause I saw them do it. And I heard them say that . . . . And then, we were hiding so they don't hit us and hurt us, and then, um, then we got out 'cause we forgot*" (Pasupathi & Wainryb, 2010).

- Code = *Negative*. Several negative indications (e.g., "they pushed me," "on purpose cause I saw them do it") were used. Even though "me and Julie were laughing" was positive, the majority was still negative.

"Mother: Alright tell me about portfolio night at school.
Child: Umm I got to hold some chicks. And we had some slide shows.. . .and we got to look at all the books we made.
M: Yes.
C: And we got to bring home lots of pictures.
M: OK.
C: and then but not all of our things we did we made just the pictures we got to bring home, computer pictures.
M: OK.
C: Umm and after and after that we went out to eat at Snuffy's malt shop.
M: Yes.
C: We had malts to drink instead of milk.

M: Oh, fun. What else can you tell me about portfolio night?
C: My grandma went.
M: Your grandma went.
C: Yes. And my and my brother and sister, and my dad went and mom went.
M: OK.
C: Umm that's all I can remember about that" (Morris et al., 2010)

- Code = *Positive*. Mother provides "oh fun" which is positive. Overall tone of event is also positive, including statements such as "we got to."

"*I thought about my high school graduation exam. When recalling this event, I feel highly positive emotions. It was a great experience. Indeed, during the days preceding the exam I was anxious and scared. However, after the first two written examinations, I felt relaxed because I realized that I did all my best. Of course, the second examination, which concerned electronics, was the hardest one. My classmates gave me a precious support to pass it and I am really grateful to them. By contrast, the third written examination and the oral test were much easier. My final mark was 92 out of 100, which is a very good mark. In conclusion, I want to stress that working hard and being supported by others give you good results and satisfaction*" (Sotgiu, 2019).

- Code = *Positive*. Several positive behavioral indications (e.g., "I did my best," "struggle had paid off," "made it all worth it") and positive emotions (e.g., "great experience," "relaxed," "grateful") were used. Despite some negative emotions being included (e.g., "anxious and scared"), the overall emotional tone of this narrative is positive.

Appendix D

Mother-Child Reminiscing Task - Instructions for Preparing the Narratives

Marking the Narrative for Start, Stop, and Number of Conversational Turns

A. The narratives will be marked by Tiffany in the Google Doc, which is common practice to section off the unit of analysis before completing the coding (Syed & Nelson, 2015).

B. Read the narrative and mark when the narrative starts and stops. The narrative starts when the mother initiates the conversation about the event. In other words, ignore off task comments towards the beginning of the narrative. As a helpful hint, if the narrative is marked by handwritten codes, ignore turns with "off" written beside it. Instead, search for codes such as "OR verbal," "GMQ elab," etc as potential indicators of where the narrative starts.

    a. Each narrative should have 3 events, though this is not always the case. Always read the entire narrative and do not assume the event ends if it is marked. Sometimes the mother returns to a previous event towards the end of the narrative (e.g., mother discusses event 1, 2, 3, and then returns to event 2). All information about the event should be coded, even if it is interspersed with the discussion of another event.

    b. Typically the narratives will be marked with a line indicating when the first event ends and the second begins and where the second ends and third begins. If this is the case, use the line markings in the narrative, except for a few minor exceptions (ask Tiffany).

    c. Throughout the event, mark out all "off task" comments from the mother, consistent with previous work (e.g., Leyva et al., 2008). Hint, look for "off" if handwritten codes are on the narrative. It is okay if the child's response is off task, as long as the mother's turn is on task (see example below). Also, exclude any inaudible comments from the mother. Note that the mother must be on task for the child to respond (e.g., off task or future statements for the mother would not contribute to a turn, even if the child does respond).

    MOT: Remember what we did for your birthday party? Tell me about that. [Turn 1]
    CHI: Mom, look at this cool slinky they gave me. [Child is off task here]
    MOT: Yes I see dear.
    MOT: Okay, now tell me what you did for your birthday party. [Turn 2; Despite the child being off task and the mother having to redirect the child, the mother still provides "on task" information during this turn.]

    d. In order to verify the conversation can be coded there must be two on task turns for the mother <u>and</u> two on task turns for the child (e.g., yes, no, an action). If any narratives do not include at least these four turns, do not code it and notify Tiffany.

C. Finalize the number of maternal turns in the narrative. Maternal turns have been used in previous reminiscing research studies (e.g., Ensor & Hughes, 2008; Kelly, 2016; Leyva et al, 2008) and have shown to be a better predictor of brain development compared to other measures (Romeo et al., 2018). Maternal turns are coded as when the mother "holds the floor" followed by a child utterance or placeholder (e.g., nonverbal), as seen in previous research (e.g., Kelly, 2016; Leyva et al., 2008). We also included maternal wrap ups at the end of the event conversation as a separate turn, despite the absence of the child's response. Pauses and laughter do not count as a turn. Additionally future talk (i.e., something that has not happened yet) by the mother does not count as a turn. Alternatively, fantasy talk is okay and does count.

Start with the first time the mother speaks with memory relevant information. Count this as 1. After the child responds either verbally or nonverbally (Leyva et al., 2008) and the mother speaks again, count the mother's second speech as 2. See the example below:

> MOT: Remember when we went to the beach? Did you have fun? [Turn 1]
> CHI: Yes, I loved swimming the most!
> MOT: Really! I thought you liked playing in the sand more?
> MOT: But maybe I just assumed that. [Turn 2]
> CHI: Oh yeah, that was fun too.
> MOT: Mmmhhmmm. Yes. [Turn 3]
> CHI. 0.
> %com: Child nods head.
> MOT: Great! I'm glad you had a good time. [Turn 4; This is an example of a maternal wrap up.]

Appendix E

Mother-Child Reminiscing Task - Coherence Context Coding Manual

Directions for Coding: Please follow the steps below when you are coding.

1. Review this coding manual for the relevant dimension (i.e., if you are coding for context, review for context).
2. Code the narratives for the corresponding dimension (i.e., if reviewed manual for context, code for context). *If required*, email codes to Tiffany as a *draft*.
3. Repeat steps 1 and 2, depending on how many dimensions are being coded (i.e., review manual for chronology and then code for chronology).
4. After a delay of at least several hours (or a day is preferred), review the narratives for all coded dimensions. Email the final codes to Tiffany.

Remember to focus on the maternal turns only. It may be helpful to ignore the child's contribution all together, unless you need it to understand what is happening in the narrative.

This part of the coding manual focuses on coding context, chronology, and theme for the maternal turns in the mother-child reminiscing task.

The coding rules in the manual are adapted from the NaCCs (Narrative Coherence Coding Scheme) developed by Reese et al. (2011) to fit a conversation instead of an independent narrative. After applying the procedures described below, your task will be to determine the presence or absence of each dimension of coherence within each maternal conversational turn, and to do so objectively and systematically, so that your codes agree with the codes of a master coder.

Marking the Conversational Turns for Context

A narrative with *context* is a narrative in which the narrator provides information about when and/or where the event took place. In reference to the original coding method (e.g., Reese et al., 2011), we will focus on any level of specificity for context (i.e., either general or specific for location or time).

A. Review each maternal conversational turn to see if a *location* is included. Location must refer to semi-permanent places in which actions take place. If you are unsure whether or not it is a location, look for key phrases such as "at" or "in" to help you decide if the action is taking place *in* the location. **Also ask yourself, can you meet someone there? If you are having a typical conversation with someone, are you communicating their location or asking you for the location?** Does the narrator have "boots on the ground" in that location or can they visualize it (i.e., in their proximity and they can "see" the location).
    a. Examples of locations:
        i. "My school" and "at school"
        ii. Places with names, such as towns, counties, and countries
        iii. Home, house, grandma's house
        iv. Places with multiple locations that are specified or not can be included, such as McDonald's vs. the McDonald's near my house, the museum, library, beach, park

v. Permanent parts of buildings, such as stairs, basement, attic, living room, driveway

vi. Landmarks, monuments, and other semi-permanent locations (e.g., pop-up stores) can count IF they are helping you locate the person on a map in that specific moment.

vii. Locations mentioned in passing as long as some action took place (e.g., "see" it; driving past) can be counted. If the mother is bringing attention to the location and it is relevant to the narrative, it can count.
   1. E.g., "We drove past NC State" → NC State is a location
   2. E.g., "My brother had to stay home" → home is a location
   3. E.g., "And then we went home" → home is a location

viii. When the route or destination is *specified*, the means of locomotion do count as a location (but see below about not specified)
   1. E.g., "on a flight to NYC" does count → location specified
   2. Can also include walking

ix. If the location is provided, include general future references (e.g., there; went to Grandma's IF Grandma's *house* was already specified) or additional information as context (e.g., inside, outside).
   1. MOT: We went to the park. [Park → Location]
      CHI: Yes, that was fun.
      MOT: What did we do there? [There → Credit given since know location]
   2. MOT: You were playing at the house. [House → Location]
      CHI: Yes, with Sam.
      MOT: Then you went outside. What did you do then? [Outside → Credit given since know location of house]

x. Include prompting for a location. E.g., "Where did we go" would count towards a location because the mother is prompting the child for the location.

b. NOT considered a location (i.e., events, not at least semi-permanent, not specified, and/or no action/hypothetical):

i. Events, such as movies, parties, games, concerts

ii. Not at least semi stable locations. Ask yourself, can you meet someone here? Is it a semi-permanent or permanent location? Does it help you locate a person on a map?
   1. E.g., "my dad's recliner" → furniture can be moved
   2. E.g., "fell in the <u>mud</u>" → mud is not permanent
   3. E.g., "played in the sand" → sand is not permanent
   4. E.g., rides → can be moved

iii. Location must be specified, not inferred:
   1. "At the doctor's" → not a location vs. "at the doctor's office" or "at the clinic" are locations
   2. When on a vehicle when the route or destination is *not specified*, the vehicle does not count as locations (but see above about specific locations).
      a. E.g., "on the bus" with no destination does not count

iv. Do not include locations where the action did not take place. For example, do not include mentions of a city where the main action did not occur in the city or "we were going to the pool but it stormed." Also, hypothetical locations or thoughts do not count, such as "we thought we were going to the beach."

B. Review each maternal conversational turn to see if *time* is included. This information should help us put the event on a calendar. **Ask yourself, is the narrator communicating the time on a calendar or their lifespan (i.e., autobiographical) in which this occurred?**

a. Examples of time:

i. The event can be placed on a calendar, such as references to days, months and years, or holidays.

1. E.g., "last Saturday," "on my 7th birthday," and "the day after this Labor Day"

a. Only count if the "day" is mentioned, not the event. E.g., "my birthday" would count but not a "friend's birthday party" [event, not a time].

b. For holidays, you can assume any time it is mentioned, it is helping to narrow the reader down to the time of year. E.g., "shopping for a *Halloween* costume" can be marked for context.

ii. Time references that identify <u>a span of time</u> on the calendar–that is there is a reasonable beginning and end to a time period that most observers would understand.

1. E.g., last summer, last year, in the last school year, last weekend, on the first day

iii. Include times of day if the event happens at a time most people share.

1. E.g., "morning," "10 AM"
2. E.g., "after dinner," "before lunch," "right before bedtime"

iv. Include autobiographical time for either the child OR mother as long as it is contributing to the narrative. This requires a reference to a time or period of time for which there is a shared societal understanding of an age span during which the reference occurs. **Ask yourself, "could this happen at any age?"**

1. E.g., "when I was in first grade" "when I was little"
2. E.g., "when I first played Little League" provides temporal information because Little league baseball is limited to individuals within a particular age range.

v. Include events in individual histories that mark a transition for the mother or child.

1. E.g., "right before my sister was born," "after we moved to Raleigh"

vi. Include temporal adverbs or adverbial phrases that mark time.

1. E.g., "recently," "a long time ago" "a while ago"

vii. If the time is provided, include general future references (e.g., *that day* IF *my birthday* was already specified).

viii. Include prompting for a time. E.g., "When did we go" or "what day/time did that happen" would count towards a time because the mother is prompting the child for time.

b. NOT considered a time. **Ask yourself, does this isolate the event in time?**
   i. Do not include time that does not give us any additional context information. For instance, "we made popcorn that day" does not provide us with any information about when that day occurred and therefore does not isolate the event in time [see exception above if already know the day]
   ii. Durations of events are not "time."
      1. E.g., an hour, fourteen days; for a few minutes
   iii. Do not include memory failures or metamemory comments.
      1. E.g., "I can't remember because it was a long time ago," "I forgot about that because it was like weeks and weeks ago."
   iv. Do not include times of the day that are subjective or at a time that could vary drastically between people.
      1. E.g., "after my nap" or "after I woke up"
   v. Do not include event milestones that do not convey general time. These events could happen at any time.
      1. E.g., "when I was learning to ride my bike," "when I was taking piano lessons," "before we got our dog"
      2. E.g., "when I first played soccer" is not necessarily tied to a particular age, so this would not count.

General Things To Keep In Mind for All Dimensions of Coherence

C. Length of the maternal conversational turn does not matter for any of the dimensions. The turn can be very short but also dense with coherent information whereas a longer turn could have no coherent language.
D. Remember that maternal off task (e.g., behavioral corrections) and future talk do not count as turns. It is okay if there is off task or future talk *within* a turn, as long as there is also memory relevant information in the maternal turn.
E. A maternal turn may have none, context alone, context and chronology, context and theme, etc or any combination of the 3 dimensions of coherence. (See example narrative 1)
F. Count the coherence dimension only once, even if there are more than 1 instances in the same turn. (See example narrative 1)
G. When in doubt, do not count towards coherence. For instance, if you think a word/phrase *may* count towards context but you are really not sure, do not count that turn as having context. This is consistent with the "when in doubt, code down" rule that has been used throughout our coding.
H. Count repetitions in different maternal turns, including the mother repeating herself or the mother repeating something the child stated. We are interested in overall saturation of the narrative, so every coherence dimension in separate turns can count towards this. Keep in mind, the highest score within a maternal turn is 1.
I. Give credit if the mother prompts for a coherence dimension, even if that dimension was not specifically stated by the mother.
J. It may be helpful to read through the narrative first to get a feel for the event, then start coding. Reading out loud may help as well.

K. After you have coded the narratives, wait a little while (I like to wait a day) and read through the codes again. Are you still comfortable with your codes? I also recommend taking breaks and limiting how much coding you complete in one session.

Appendix F

Mother-Child Reminiscing Task - Coherence Chronology Coding Manual

<u>Directions for Coding:</u> Please follow the steps below when you are coding.

1. Review this coding manual for the relevant dimension (i.e., if you are coding for context, review for context).
2. Code the narratives for the corresponding dimension (i.e., if reviewed manual for context, code for context). *If required*, email codes to Tiffany as a *draft*.
3. Repeat steps 1 and 2, depending on how many dimensions are being coded (i.e., review manual for chronology and then code for chronology).
4. After a delay of at least several hours (or a day is preferred), review the narratives for all coded dimensions. Email the final codes to Tiffany.

Remember to focus on the maternal turns only. It may be helpful to ignore the child's contribution all together, unless you need it to understand what is happening in the narrative.

<u>This part of the coding manual focuses on coding context, chronology, and theme for the maternal turns in the mother-child reminiscing task.</u>

The coding rules in the manual are adapted from the NaCCs (Narrative Coherence Coding Scheme) developed by Reese et al. (2011) to fit a conversation instead of an independent narrative. After applying the procedures described below, your task will be to determine the presence or absence of each dimension of coherence within each maternal conversational turn, and to do so objectively and systematically, so that your codes agree with the codes of a master coder.

Marking the Conversational Turns for Chronology

A *chronological* narrative is one in which a naive listener can place some or all of the temporally relevant actions on a timeline. In reference to the original coding method (e.g., Reese et al., 2011), we will focus on instances where the mother provides some kind of temporal ordering for actions in the narrative. Coders will mark whether or not these components are present in each maternal turn.

A. In each turn, look for the action verbs. Think, would this action be visible on a video? Keep in mind we are ordering actions.
    a. If "said" can replace the word used, count as an action.
        i. "Mommy <u>was like</u> I don't want you to do this anymore."
    b. Include "had" if the word can be replaced by a typical action verb.
        i. "I had ice cream" can easily be replaced with "I ate ice cream."
    c. Actions that did not happen or will happen in the future and any narrative scripts (e.g., the plot of a movie/book, a speech) do not count.
        i. EX: "I did not go to the park, even though I wanted to."
        ii. EX: "Later today we will go to the park."

B. Determine whether or not your actions can be placed on the timeline in each conversational turn (example 1 below), between maternal turns (example 2 below), or the mother is prompting for the next action (example 3 below). Avoid relying on your assumptions or prior knowledge about the ordering of actions. Instead, look for explicit markers of temporal ordering. Although these markers are not necessary for an action to be placed on a timeline, they are sufficient for indicating temporal ordering. Examples include, but are not limited to: so, then, next, where, finally, after that, before. **Ask yourself, is the mother ordering at least 2 actions within the event.**

Example 1:
MOT: We went to the zoo last weekend and saw lions. *Then* we saw the bears.
CHI: Yes! The lions were my favorite!

Example 2:
MOT: We went to the zoo last weekend and saw lions.
CHI: Yes! The lions were my favorite!
MOT: *After that*, we had a yummy lunch at the zoo.

Example 3:
MOT: We went to the zoo last weekend. What did we do *first*?
CHI: We saw the bears first!

Also pay attention to other markers of chronology, including the content of the narrative:
E.g., "In the middle of the last quarter..."
E.g., "I took another shot."

General Things To Keep In Mind for All Dimensions of Coherence

C. Length of the maternal conversational turn does not matter for any of the dimensions. The turn can be very short but also dense with coherent information whereas a longer turn could have no coherent language.
D. Remember that maternal off task (e.g., behavioral corrections) and future talk do not count as turns. It is okay if there is off task or future talk *within* a turn, as long as there is also memory relevant information in the maternal turn.
E. A maternal turn may have none, context alone, context and chronology, context and theme, etc or any combination of the 3 dimensions of coherence. (See example narrative 1)
F. Count the coherence dimension only once, even if there are more than 1 instances in the same turn. (See example narrative 1)
G. When in doubt, do not count towards coherence. For instance, if you think a word/phrase *may* count towards context but you are really not sure, do not count that turn as having context. This is consistent with the "when in doubt, code down" rule that has been used throughout our coding.
H. Count repetitions in different maternal turns, including the mother repeating herself or the mother repeating something the child stated. We are interested in overall saturation of the narrative, so every coherence dimension in separate turns can count towards this. Keep in mind, the highest score within a maternal turn is 1.
I. Give credit if the mother prompts for a coherence dimension, even if that dimension was not specifically stated by the mother.

J. It may be helpful to read through the narrative first to get a feel for the event, then start coding. Reading out loud may help as well.
K. After you have coded the narratives, wait a little while (I like to wait a day) and read through the codes again. Are you still comfortable with your codes? I also recommend taking breaks and limiting how much coding you complete in one session.

Appendix G

Mother-Child Reminiscing Task - Coherence Theme Coding Manual

Directions for Coding: Please follow the steps below when you are coding.

1. Review this coding manual for the relevant dimension (i.e., if you are coding for context, review for context).
2. Code the narratives for the corresponding dimension (i.e., if reviewed manual for context, code for context). *If required*, email codes to Tiffany as a *draft*.
3. Repeat steps 1 and 2, depending on how many dimensions are being coded (i.e., review manual for chronology and then code for chronology).
4. After a delay of at least several hours (or a day is preferred), review the narratives for all coded dimensions. Email the final codes to Tiffany.

Remember to focus on the maternal turns only. It may be helpful to ignore the child's contribution all together, unless you need it to understand what is happening in the narrative.

This part of the coding manual focuses on coding context, chronology, and theme for the maternal turns in the mother-child reminiscing task.

The coding rules in the manual are adapted from the NaCCS (Narrative Coherence Coding Scheme) developed by Reese et al. (2011) to fit a conversation instead of an independent narrative. After applying the procedures described below, your task will be to determine the presence or absence of each dimension of coherence within each maternal conversational turn, and to do so objectively and systematically, so that your codes agree with the codes of a master coder.

Marking the Conversational Turns for Theme

A *thematic* narrative is one that is on topic, includes development through causal linkages, personal evaluations and reactions, or elaborations of actions, and includes a resolution to the action described in the event, or links to other autobiographical experiences, or implications for self-concept or identity. In reference to the original coding method (e.g. Reese et al., 2011), we will focus on thematic components that would place the theme score at 2 or 3. Coders will mark whether or not these components are present in each maternal turn. Think about whether or not the mother is prompting the child to tell *their version* of the story. Is it personal? Could someone else tell it the same way?

A. Components to look for. For each of the following items, the mother could mention it or prompt the child for the information:
    a. **Causal linkages** provide explanations for the actions, similar to a cause and effect relationship. In order for these linkages to count towards theme, they have to tell you something about the action. E.g., "We did that because," "since we had to go to school." Look for words such as "because," "since," "effect," "think," "know," or "but, except, sometimes, usually, or though" (Baker-Ward et al, 2005). Also can include "if" statements, such as "I can only go to my friend's house *if* I finish my homework in time." In other words, these linkages can be conditional in either direction. Keep in mind that each causal phrase has to have its own stated

(or inferred) verb. The mother can also ask for linkages, such as "*why* did you do that" or "you did that *because* what?" Explanations for the absence of an action do not count (e.g., why did you not go to the park?). The linkage has to be right after the action (or before) without any additional relevant information in between (child can repeat already said information or agree, but cannot provide additional information).

b. **Elaborations**:
   i. of actions: Additional clauses, phrases, or sentences after an action that provide more information. "We went to the park downtown, *the one with the big climbing wall"* or "My sister and I went to the pool, *not my big sister but my little sister*" are examples of actions with elaborations (elaboration in italics). In other words, the action is stated and then an additional phrase (e.g., qualification or interpretation) is provided which connects the action to more information. Think of it as any deeper advancement of the story or something that expands on the simpler original action. It also cannot be just another action. Adjectives and repetitions are not considered elaborations of actions. Therefore, "I bought a new *pink* dress" would not count. The elaboration has to be right after the action (or before) without any additional relevant information in between.
   ii. intensification of actions: Additional information that subjectively intensifies the action, such as "they were moving *really really* fast" compared to "they were moving fast" contributes to theme. The "really really" intensifies and elaborates on the action because you can assume that this is the child's perspective on the action.
   iii. of patterned speech: Patterned speech (e.g., speeches, story scripts) as a whole count as an elaboration. Demos are not considered patterned speech and do not count towards theme. Prompting for patterned speech does count.
   iv. of emotions: Can add to the original emotion. For instance, the phrase in italics could count as an elaboration of emotion: "I was scared. *I was really really scared.*" In that example, you are intensifying the original emotion and you would credit theme twice (i.e., one for the emotion of *scared* and then one for the elaboration of emotion).

c. **Emotion** must convey the narrator's personal experience or their *interpretation* of someone else's experience. Include statements that add to the emotional experience of the person (i.e., "funniest", "I was hurt," and "boring") or their interpretation of someone else's experience (e.g., "you were very upset" or "how did you feel"). Also, do not code behaviors indicative of emotion (e.g., crying, shouting, being mean/bad, got in trouble) towards theme. Instead, think of whether or not this could be seen on a video. If yes, do not include towards thematic language. If not, do include as thematic language. Wrap up statements (i.e., at the end of the narrative) or placeholders such as "that's good" or "that's nice" that do not include any additional qualifiers do not count towards theme. If you can substitute with "okay" and it wouldn't change anything, do not count.

d. Include **personal reflections** that convey the person's mental/physical state, another person's/animal's mental/physical state that is unseen (i.e., internal), or something they are thinking at the time or in reflection of the narrative. E.g., "I believed," "I thought I was wrong," "I felt," "I didn't understand," and "I didn't know," or "I felt sick," "I was tired," and "I was hungry," "you should…" Additionally, subjective reflections of ability (e.g., he was the "best" player on the team") or traits (e.g., "he's really funny," "she's really nice") will count towards personal reflections. Make sure these are personal reflections and not metamemory comments, e.g., "I don't remember" or "I think we walked around," (i.e., can replace with there's a chance or not sure) which do not contribute to theme. Also, make sure these are something more than descriptions about an object or a person in the moment (e.g., "*cool* things," "*special* job," "pretty bride.") which would not count towards theme. Ask if it is an enriched comment (count towards theme) or just a description (do not count towards theme). Common descriptors or widely shared characterizations do not count towards theme (e.g., "the cute kitten" would not count but "the lazy puppy" would).

e. **Dialogue or quotes** that elaborate on what is happening may be considered as thematic language. For example, "She said, 'You won the spelling bee'" does count for theme. Dialogue that represents behavior (e.g., "The teacher told you not to do that but you did") or behavioral corrections (e.g., "stop being annoying") do not count towards theme. The dialogue has to be the mother's interpretation of what occurred. Demonstrations do not count as dialogue/quotes or towards theme. Asking for dialogue counts towards theme.

f. Link to **self-concept or identity**, or a **resolution** to the event?

  i. Links to self-concept or identity should be a stable view and formative (i.e., something beyond physical traits such as I have brown hair). E.g., "and that's when you really learned to paint"; "After that you decided to be a baseball player instead of soccer player" "That made you realize you're not as helpful a person as you want you to be."

  ii. A resolution is when there is drama or some action that builds in the narrative and then is somehow resolved. **A resolution must involve an initial situation, an action taken, and a resulting change in the situation**, but does not necessarily have to be at the end of the narrative**.**

    1. A behavioral change that moves forward in time may be included. The change in the behavior links the action in the narrative with the future, e.g., "Ever since then, you've- taken your inhaler to sleep overs." "Ever since, -you've worn your helmet when you ride your bike" (following description of an injury while bike riding).

    2. Resolution of action: the mother describes an initial situation (e.g., the child is hesitant about going to a sleep over), discusses actions that were inconsistent with the initial concerns ("but you made friends"; and describes having solved a pattern, changed their mind, etc.). Typically, a problem is solved during the course of the event.

    3. Reconceptualization is a type of resolution (e.g., You and your friend teased your little brother and thought it was funny. But your

Dad and I explained that it really made him sad and it helped you understand not to do that again).

4. Links to other autobiographical experiences must be specific. Including a comment like “You still have that souvenir,” or “You all are still friends,” or “You still don’t like broccoli” doesn’t count. Similarly, characterizations of events as “the worst punishment you ever got” or “the most fun you ever had” do not count.
5. Wrap ups (“then we went home,” “that’s all I remember,” “It was fun”) do not count as a resolution.

General Things To Keep In Mind for All Dimensions of Coherence

B. Length of the maternal conversational turn does not matter for any of the dimensions. The turn can be very short but also dense with coherent information whereas a longer turn could have no coherent language.
C. Remember that maternal off task (e.g., behavioral corrections) and future talk do not count as turns. It is okay if there is off task or future talk *within* a turn, as long as there is also memory relevant information in the maternal turn.
D. A maternal turn may have none, context alone, context and chronology, context and theme, etc or any combination of the 3 dimensions of coherence. (See example narrative 1)
E. Count the coherence dimension only once, even if there are more than 1 instances in the same turn. (See example narrative 1)
F. When in doubt, do not count towards coherence. For instance, if you think a word/phrase *may* count towards context but you are really not sure, do not count that turn as having context. This is consistent with the “when in doubt, code down” rule that has been used throughout our coding.
G. Count repetitions in different maternal turns, including the mother repeating herself or the mother repeating something the child stated. We are interested in overall saturation of the narrative, so every coherence dimension in separate turns can count towards this. Keep in mind, the highest score within a maternal turn is 1.
H. Give credit if the mother prompts for a coherence dimension, even if that dimension was not specifically stated by the mother.
I. It may be helpful to read through the narrative first to get a feel for the event, then start coding. Reading out loud may help as well.
J. After you have coded the narratives, wait a little while (I like to wait a day) and read through the codes again. Are you still comfortable with your codes? I also recommend taking breaks and limiting how much coding you complete in one session.

Appendix H

Child Independent Narrative - Task Instructions

For each of the mother-nominated events, the experimenter instructed the child as follows:

> I have a couple of questions about some things that you have been doing recently. I heard that you _____ (name of event). Can you tell me all about the time that you _____ (name of the event). I wasn't there, so I don't know what happened. Tell me everything you can remember about _____.

The experimenter allowed the child to discuss the event as long as they wanted. Once the child stopped responding to the initial instructions, the experimenter then provided general content-empty prompts as follows:

> What else can you tell me about _____? I want to hear all about it. What else can you tell me?

The experimenter continued to provide open-ended prompts ("i.e., "What else?") until the child failed to respond. Then, the experimenter gave the child two specific mother-nominated cues that were presented one at a time with additional general prompts:

> Specific Cue 1: You know your mom told me about _____ (cue) at _____ (event). Tell me all you can remember about _____ (cue).
>
> General Cue 1: What else can you remember about _____ (cue).
>
> (Repeat for Cue 2).

Last, the interviewer provided one additional open-ended prompt as follows:

> Wow! You're doing a good job remembering. What else can you tell me about _____ (event)? I want to know everything about _____ (event). What else do you remember?

The experimenter continued prompting the child until the child's response to the probe was non-productive. The experimenter then used the same prompting for event 2 (i.e., negative event) and similar prompting for the child nominated school event.

Appendix I

Child Independent Narrative - Coherence Context Coding Manual

What is Narrative Coherence?

Personal narratives are the stories we tell about our significant experiences. They include information to help the listener understand the event, and terms that indicate the meaning of the experience to the narrator. One important measure of the quality of a narrative is its coherence. As defined by Reese and colleagues (Reese et al., 2011, p. 425), "a coherent narrative makes sense to a naïve listener." More coherent narratives are associated with a number of positive outcomes, including better autobiographical memory (e.g., Peterson et al., 2014) and enhanced psychological well-being (Frattaroli, 2006).

Based on a review of existing coding schemes, Reese et al. (2011) developed a coherence coding scheme that examines three dimensions of coherence. They argue (p. 432) that these dimensions are "essential and independent." They are:

- Context, which addresses when and where the narrated event took place;
- Chronology, the sequencing of the actions within the narrative on the basis of temporal and causal linguistic markers; and
- Theme, the point of the story, referencing the inclusion of affective and evaluative information, a high point and a resolution.

Our initial focus is on coding context. The table below defines the three levels of contextual coherence as coded in the NaCCS (Narrative Coherence Coding Scheme) developed by Reese et al. (2011). We'll use the more complete scoring rubric at the end of this document in determining the code. After applying the procedures described below, your task will be to determine the level of each narrative, and to do so objectively and systematically, so that your codes agree with the codes of a master coder.

Level	**Description**
0	The narrator provides no information about when or where the event took place.
1	The narrator provides partial information about context; either time or place is included at any level of specificity.
2	The narrator includes both time and place but no more than one dimension is specific (i.e., two general or one general and one specific).
3	Both time and place are mentioned and both are specific.

Marking Context

A. At least until reliability is established, work from a hard copy of a transcript of a personal narrative. You may print out the narrative from the lab. Hard copies cannot leave the lab, so plan on a coding session in the lab. (We'll discuss in lab how to access the narratives.)
B. Identify any passages in which the child goes off task and discusses another event not relevant to the event under discussion. Think about whether or not the child is responding to the interviewer's prompt. The interview's comments will be helpful. Does the

interviewer try to redirect the child? Mark out off-task reports; code only the narrative regarding the event prompted by the experimenter.

C. Take two highlighters of different colors. Use one highlighter to mark every term the interviewer generates that refers to location or time and the other to mark all of the child's references to location and time. Consider the entire narrative, including the child's responses to the two specific cues provided by the experimenter.

D. Next, take a close look at the contextual information (i. e., content that refers to time or location) the interviewer provides in the prompt. The child is credited only for information that extends, not repeats, what the interviewer provides, either initially or later in the narrative. Mark out information in the child's narrative that isn't counted because the interviewer provided it in a prompt.

For example:
EXP: I want you to tell me about the time you went to Raleigh. → *Specific location from experimenter in the prompt [not coded].*
CHI: I went to Raleigh to visit my grandmother and go to the museum. → *"Raleigh" isn't coded but "museum" is since the child provides additional information about location*).

Coding Location

A. Review each term you previously highlighted to confirm whether or not it meets the definition of a location.
   1. Location must refer to the places in which actions take place. Mark out any terms that describe events rather than locations. Movies, parties, games, concerts, and other events are omitted.
   2. Mark out any terms that do not refer to stable locations. As examples, "My dad's recliner" is not a location, because it can be moved. "Fell in the mud" is not a location, because mud is not permanent.
   3. Note that the child must specify the location, even if it would appear to be implied. "At the doctor's" is not a location; "At the doctor's office" or "At the clinic" are general locations.
   4. Ask yourself if any action took place in the location referenced in the term you highlighted. If no actions described in the narrative took place in the location, mark out the term. For example, do not code: "We drove past NC State," "My brother had to stay home," "We were going to the pool but it stormed," "And then we went home" if no further action took place at home. Also, hypothetical locations or thoughts do not count, such as "We thought we were going to the beach."
   5. A car, plane, or other mode of transportation is a location only if the destination is specified. For example, "We were driving to be beach when . . ."

B. Decide if each reference to location is specific or general. Specific locations are precise, unique places. Ask yourself if it would be possible to drop a pin on a map on the basis of the information conveyed in the narrative. If the term corresponds to one location, it is a specific reference; if it does not pinpoint one location, it is a general reference.
   1. A particular location must be marked. "My school" is a specific reference. "It happened when I was at school" is a general reference. It doesn't matter if you as the reader can assume the location; the particular place must be referenced by the

child. An exception: "home" is a specific location if some of the action takes place there; it isn't necessary for the child to specify "my home."

2. By definition, places with names—towns, counties, countries—are specific locations.
3. In the event the experimenter provides a *general location* and the child provides additional location information, code the additional information as either general or specific depending on our typical rules for coding location. For example:

   EXP: I heard that you went to the beach [*general location*]. Can you tell me all about that?
   CHI: Yes! We went to the beach and also played in the pool [*general location*].
   Versus, see a different possible response from the child.
   CHI: Yes! We went to the North Carolina beach [*specific location*] and played in the sand.

   In the event the experimenter provides a *specific location* and the child provides additional location information, decide whether or not the child is providing more information that is directly related to the location provided by the experimenter. If so, code as *specific*. If not, code as *general*. See example:

   EXP: So I heard you went to Raleigh [*specific location*] to visit your friend.
   CHI: Yes, we went to the park [*general location*] to play. [*Reasoning is because the child is not referring directly to the specific location provided by the experimenter*.]

   EXP: So I heard that you visited your Grandma's house [*specific location*].
   CHI: When I first got there, we drew with chalk on the driveway. [S*pecific location. Reasoning is because here the child is referring directly to something at Grandma's house. Therefore it would be redundant for the child to repeat Grandma's house, and we do not want to punish the child for this.*]
4. See the table below for more examples.

Example of General Locations	*Examples of Specific Locations*
Places with multiple locations (e.g., McDonald's, the museum, library, the beach)	Places with one location (e.g., McDonald's near my house, Highland Mall)
At school, at work, the house. Permanent parts of buildings (e.g., stairs, basement, attics, living rooms, but not furniture). Outside or inside also indicate a general location.	At *my* school, *our* school, *my* work, home (even without my), *my* house, *my* room, *my* neighborhood.
	Descriptions that identify a unique location, even though the proper noun that names the location is not provided. EX: "That park in

	Cary with special swings where kids with disabilities can play”
	On a vehicle when the route or destination is specified. “On the bus” doesn’t count; “On a flight to NYC” does count
	City, County, State, or Country

C. Finalize the overall coding for location, determining if the child’s report of place in the total narrative should be characterized as general or specific.
   1. Use the highest established code. If you have two general locations but one specific location, classify the location as specific.
   2. If in doubt about whether a location is general or specific, review the rules above. If you can’t decide, call it general.

Marking Time

A. Following the procedure you followed in coding location, take a close look at the interviewer’s references to time. Mark out any highlighted temporal terms the child used that were initially expressed by the interviewer. Remember that the child is credited only for temporal information that adds to any references to time in the interviewer’s prompt.
B. Remember that, consistent with the approach used in coding location, time must be marked by the speaker, not just discernible from the content. If you highlighted a term that implies but doesn’t directly refer to time, mark it out.
C. Mark out any highlighted terms that refer to time, but do not provide us with any additional context information. For instance, “We made popcorn that day” does not provide us with any information about when that day occurred.
D. Mark out any highlighted terms that refer to the duration of the event (e.g., an hour; fourteen days; for a few minutes). The duration of the event does not help us put the time on a calendar.
E. Mark out any mention of time that is a memory failure. Examples include, “I can’t remember because it was a long time ago,” “I forgot about that because it was like weeks and weeks ago.”
F. Check to make sure that you have captured all the temporal terms as introduced in the list below. After you are sure that your highlighting is complete, apply the rules below to determine if the child’s references to time are general or specific.

Coding Time

A. Time may be expressed in several ways.
   1. The child may make a reference to calendar time. That is, the event could be placed on a calendar. Calendar time includes references to days, months, and years. Examples include, “Last Saturday,” “On my 7th birthday,” and “The day

after this Labor Day." Calendar references are always specific because a particular time can be pinpointed.

2. Time references that identify a span of time on the calendar—that is, there is a reasonable beginning and end to a time period that most observers would understand--are specific. For example, "last summer," "last year," "in the last school year," are specific time references.
3. If a child specifies a date but not a year, the reference is specific only if the interviewer or the child has previously established a time frame for the event.

   For example:
   EXP: I heard you had went camping recently.
   CHI: It was right after my birthday.

   However, if the child referred to a time (e.g., October 1st, my birthday), without a prior reference by the child or the examiner to a time frame, code general time. The rationale is that the specific date could occur in more than one year unless the time frame is narrowed down.
4. Similarly, if a general time frame for an event has been established, typically because the interview referred to a recent event, then the child's provision of information about a day should be counted as specific time. For example:

   EXP: Your mom told me you went to the beach last weekend.
   CHI: On the first day, we swam all day.

   If you're undecided, ask yourself if the time or clear span of time can be marked on a calendar.
5. With regard to times of day (morning, 10 AM), code specific time only if a point in time can be identified. For example, to code "morning" as specific, the child or the interviewer would have made a prior reference to a specific day, e.g., to the child's 7th birthday. If the prior reference has been to a general time frame (e.g., recently), the child's provision of only time of day information is coded as general. Additionally, if the event happens at a time most people share (e.g., after dinner, before lunch, right before bedtime), code as specific if the child or interviewer made a prior reference to a specific day, or as general if there is a general time frame (e.g., recently) or no time frame mentioned. Do not count "after my nap" or "after I woke up" for time.
6. In addition to calendar time, autobiographical time can be considered. The same principles regarding specifying a particular time or span of time apply. "When I was in first grade," is specific time because it has a beginning and an end; "When I was little," is general time.
7. Reports of events in individual histories convey general time if the events mark a transition for the individual. For example, "Right before my sister was born," and "After we moved to Raleigh," refer to significant personal milestones. Events that do not refer to milestones for the child and family do not convey general time; for

example, "When I was learning to ride my bike," "When I was taking piano lessons," "Before we got our dog."

8. Autobiographical time requires that there is a reference to a time or period of time for which there is a shared societal understanding of an age span during which the reference occurs. For example, "When I first played Little League," provides temporal information because Little League baseball is limited to individuals within a particular age range, but a precise calendar point is not discernable. Ask yourself: "Could this happen at any age?". By this reasoning, "When I first played soccer," is not a reference to time because beginning to play soccer could occur at any age.
9. Autobiographical time is general if it refers to an indefinite time or period of time, as in the examples above in 7 and 8. Autobiographical time is specific if a precise point in autobiographical time is referenced. Code "The day we moved to Raleigh," "The day after my sister was born" as specific.
10. Temporal adverbs or adverbial phrases mark general time. Code "recently," "a long time ago," and similar phrases as indicating general time.
11. Determine if time is general or specific. Using the same procedure applied to coding location, code time as specific if there is any code of specific time, regardless of the number of references to general time.

Select an Overall Code for Contextual Coherence

A. Verify the level of location and time in the narrative.
B. Apply the decision rules below to determine the level of contextual coherence. Record the code on the prepared coding sheet (available on moodle).
C. Also indicate on the coding sheet whether the interviewer provided location and time information, and if so, at a general or specific level.

Directions: Circle the appropriate code to represent the child's use of coherence and write the corresponding word(s) in the box. Then, indicate the level of prompting the interviewer used by checking the appropriate box and writing in the corresponding word(s).

ID # ______________ Memory 1 ☐ or 2 ☐ Overall Coherence Code __________

	Report of Location		
Report of Time	Absent	General	Specific
Absent	0	1	1
General	1	2	2
Specific	1	2	3

Interviewer's Prompt for Time:
☐ None
☐ General __________________________
☐ Specific __________________________

Interviewer's Prompt for Location:
☐ None
☐ General __________________________
☐ Specific __________________________

How to Assess Reliability

A. Work independently, even in training. But after you have turned in your work during training, bring questions about specific codes to lab meetings.
B. For a description of the procedures involved in assessing reliability, see Haden & Hoffman (2013) on moodle. Consistent with the approach they describe, we will establish reliability on the basis of the independent coding of 25% of the sample of narratives, selected at random.
C. Each rater's level of agreement to the master coder's designations will be determined and assessed by calculating inter-class correlations. (See Haden & Hoffman, 2013), for a description.)

Some General Comments

A. Remember that coding is vital to research. You're learning how to transform a stream of behavior—a child's spoken report of an experience in this case—to a data set that can be statistically analyzed, enabling conclusions to be reached. Coding can be tedious at times, but it's an important skill for any researcher to acquire.
B. A careful, detail-oriented approach is necessary. In general, code only a few narratives in one setting, and always check your work before submitting your codes.
C. There will be some situations for which no rule is applicable and skilled coders may disagree. Infrequent rates of such disagreements are rare. Reliability is almost never at 100%; our target is 90% or better, and 85% is acceptable when some types of coding are involved.
D. It takes time and effort to become a reliable coder. Haden and Hoffman (2013) argue that 20-40 hours of training and practice are necessary.

E. Your contributions to this research are truly valued! If you find yourself becoming frustrated or burned out, talk with Dr. Baker-Ward.

Appendix J

Child Independent Narrative - Coherence Chronology Coding Manual

The table below defines the four levels of chronological coherence (i.e., temporal ordering) as coded in the NaCCS (Narrative Coherence Coding Scheme) developed by Reese et al. (2011). After applying the procedures described below, your task will be to determine the level of each narrative, and to do so objectively and systematically, so that your codes agree with the codes of a master coder.

Level	**Description**
0	Narrative consists of a list of actions with no information about temporal order.
1	Naïve listener can place some but not most of the events on a timeline. Fewer than half of the temporally relevant actions can be ordered on a timeline with confidence.
2	Can place between 50-75% of the relevant actions on a timeline but cannot reliably order the entire story from start to finish with confidence.
3	Naïve listener can order almost all (> 75%) of the temporally relevant actions. This includes cases in which the speaker marks deviations from temporal order or repairs a violated timeline.

Guidelines

Work from a hard copy of a transcript of a personal narrative. You may print out the narrative from the lab. Hard copies cannot leave the lab, so plan on a coding session in the lab. (We'll discuss in lab how to access the narratives.)

Steps in Coding

1. Mark where the narrative begins and ends. For the child narratives, the narrative starts when the child begins to tell their narrative. The narrative ends with the first time the interviewer interrupts the child and asks for more information. Therefore, keep coding when the interviewer says "um," "huh," or repeats what the child says, but stop coding when the interviewer says "What else can you remember about it" or something to that extent.

2. Underline all of the action verbs in the narrative and their corresponding utterances. Mark everything else out in the narrative.

   Action verbs: Is this action visible on a video or no?
   EX: "We went to Florida" contains one action. You can see this action on a video.

   If "said" can replace the word used, count as an action.
   EX: "Mommy was like I don't want you to do this anymore." Can replace "was like" with "said" and therefore "was like" is coded as an action.

   Include "had" as an action if the word can be replaced by a typical action verb.
   EX: "I had ice cream" can easily be replaced with "I ate ice cream."

Not an action verb, so do not include. Instead ~~mark out of narrative:~~

Mark out elaborations of actions (i.e., an additional clause or phrase after an action that provides more information about that action). A good marker of determining whether a phrase is an action or an elaboration of an action is whether or not the tense of the verb changes. If the tense remains the same, they are likely multiple actions. If the tense changes, it is likely an elaboration of a previously mentioned action and should not be ordered.

EX: "We went to Florida and stopped ~~to say hello to Mickey Mouse.~~" "To say hello" is an elaboration on "we stopped." Compare to "We went to Florida and stopped and said hello," which contains 3 actions.

Mark out actions that did not happen or will happen in the future and any narrative scripts (e.g., the plot of a movie/book, a speech).

EX: "I *did not* go to the park, even though I wanted to."
EX: "Later today we will go to the park."

Mark out repetitions, clarifications of actions, or off task comments.

EX: "~~We went to the park. I mean,~~ Mom and I went to the park."

Mark out states of being or thoughts and feelings, such as "I wanted," "I felt," "I thought," "I was excited."

Mark out background information, descriptions, and co-occurring events.

EX: ~~"There was one time when I went to the store. Dad had the same shirt on, like this other guy, so~~ I grabbed on to this other guy's shirt."

3. Determine whether or not your actions can be placed on the timeline. Avoid relying on your assumptions or prior knowledge about the ordering of actions within events. Instead, look for explicit markers of temporal ordering. Although these markers are not necessary for an action to be placed on a timeline, they are sufficient for indicating temporal ordering. Examples include, but are not limited to: so, then next, where, finally, after that, before.

   EX: "I went to the zoo and saw lions." No actions on timeline.
   EX: "I went to the zoo and then saw lions." Both actions on the timeline.

   Also pay attention to other markers of chronology, including the content of the narrative:

   EX: "In the middle of the last quarter..."
   EX: "I took another shot."

4. Count the *number of total actions* in the narrative and the *number of actions on the timeline*. Divide the number of actions on the timeline by the number of total actions in the narrative, to get your percentage for the final code.

Appendix K

Child Independent Narrative - Coherence Theme Coding Manual

The table below defines the three levels of theme as coded in the NaCCS (Narrative Coherence Coding Scheme) developed by Reese et al. (2011). After applying the procedures described below, your task will be to determine the level of each narrative, and to do so objectively and systematically, so that your codes agree with the codes of a master coder.

Level	**Description**
0	The narrative is substantially off topic and/or characterized by multiple digressions that make the theme difficult to identify. There is no attempt to repair digressions. In other words, the narrative is shifting back and forth and constantly introducing new content with no clear connection to the previous content (e.g., topics, scenes). It would be impossible to assign a meaningful title to the narrative because it isn't clear what the narrative is about.
1	Narrative is on topic. A theme is identifiable and most of the statements relate to the topic. The narrative may include minimal development of a theme through a very limited number of causal linkages, or personal evaluations and reactions, or elaborations of actions. Basically, the narrative is a list of actions.
2	The narrative substantially develops the theme by **conveying a personal story**. **Someone else could not tell the story in the same way due to the development of the narrator's personal reactions to the story**. Several instances of causal linkages, and/or interpretations (e.g., personal reflections, emotions, dialogue), and/or elaborations or previously reported actions are included.
3	All of the above are present. In addition, the narrative includes a resolution to the action described in the event, or links to other autobiographical experiences, or implications for self-concept or identity.

Marking Theme

A. You can work from the computer or from a hard copy of a transcript. If you print out the narratives in the lab, the hard copies cannot leave the lab. Use the provided coding sheet to record your codes (either electronically or hand written).
B. Read the narrative and mark when the narrative starts and stops. The narrative "stops" for theme coding when the experimenter provides the first cue and/or any specific information. For instance, comments such as "wow," "okay," "uh-huh," or when the experimenter repeats the initial prompt are okay to continue coding afterwards. However, information provided by the interviewer such as "Well your Mom told me that…," is considered leading information for theme. If you ever have questions on where to start and stop, contact Tiffany. This is not part of the reliability coding!
C. The child needs to state at least two actions (i.e., 2 verbs) before cue 1, in order for us to include the narrative. If any narratives do not include at least two actions, do not code it and notify the primary coder. (Verbs indicating state can be included; e. g. "I was really upset and I lost my temper." This statement provides two actions and qualifies as a narrative.) Additionally, if the entire narrative is a script (e.g., told in the second person and present tense verbs), this narrative should not be coded. These narratives should already be excluded, but let Tiffany know if you run across a narrative in question.

D. Theme may be expressed in several ways.

1. Is the narrative on topic or is the child jumping around between topics that you cannot connect? It is okay if the child goes into a digression, as long as the reader/listener is clearly taken there. If the child does not direct the reader/listener, then the narrative does not have a clear topic. Additionally, can a totally naïve observer make sense of the narrative and what is going on? Can you provide a title for *most* of the narrative without relying too much on the prompt provided by the interviewer? Do not discredit the child for not repeating the interviewers prompt, but the prompt should not be the only way to give the narrative a title. Look for ambiguous terms and pronouns (e.g., "it" could stand for multiple things) that are clear versus not clear to help you decide if you can provide a clear title.
2. Is there much development of the story? Is the story more black and white and close to the facts or is the person sharing their personal experiences and going beyond different actions?
3. Instances of thematic language:
    a) **Causal linkages** provide <u>explanations for the actions</u>, <u>similar to a cause and effect relationship</u>. In order for these linkages to count towards theme, they have to tell you something about the action. E.g., "We did that because," "since we had to go to school." Look for words such as "because," "since," "effect," "think," "know," or "but, except, sometimes, usually, or though" (Baker-Ward et al., 2005). Also can include "if" statements, such as "I can only go to my friend's house *if* I finish my homework in time." In other words, these linkages can be conditional in either direction. Keep in mind that each causal phrase has to have its own stated (or inferred) verb.
    b) **Elaborations**:
        1. of actions: Additional clauses, phrases, or sentences after an action that provide more information. "We went to the park downtown, *the one with the big climbing wall"* <u>or "My sister and I went to the pool, *not my big sister but my little sister*" are examples of actions with elaborations</u> (elaboration in italics). In other words, the action is stated and then an additional phrase (e.g., qualification or interpretation) is provided which connects the action to more information. Think of it as any deeper advancement of the story or something that expands on the simpler original action. Adjectives and repetitions are not considered elaborations of actions. Therefore, "I bought a new *pink* dress" would not count.
        2. intensification of actions: Additional information that subjectively intensifies the action, such as "they were moving *really really* fast" compared to "they were moving fast" contributes to theme. The "really really" intensifies and elaborates on the action because you can assume that this is the child's perspective on the action.
        3. of patterned speech: Patterned speech (e.g., speeches, story scripts) as a whole count as an elaboration. However, specific instances of

thematic language within the patterned speech (e.g., within the speech is an emotion or causal linkage) do not count towards theme. In other words, when it is one long reiteration, treat it like one complete song.

4. of emotions: Can add to the original emotion. For instance, the phrase in italics could count as an elaboration of emotion: "I was scared. *I was really really scared.*" In that example, you are intensifying the original emotion and you would credit theme twice (i.e., one for the emotion of *scared* and then one for the elaboration of emotion).

c) **Emotion** must convey the narrator's personal experience or their *interpretation* of someone else's experience. Include statements that add to the emotional experience of the person (i.e., "funniest", "I was hurt," and "boring") or their interpretation of someone else's experience (e.g., "My Dad was very upset"). Do not code instances of emotion when there is no narrator interpretation (e.g., "My Dad told me he was upset.") Also, do not code behaviors indicative of emotion (e.g., crying, shouting, being mean/bad, got in trouble) towards theme. Instead, think of whether or not this could be seen on a video. If yes, do not include towards thematic language. If not, do include as thematic language.

d) Include **personal reflections** that convey the person's mental/physical state, another person's mental/physical state, or something they are thinking at the time. E.g., "I believed," "I thought," "I felt," "I didn't understand," and "I didn't know" only when referring to something they did not understand at the time. Additionally, subjective reflections of ability (e.g., he was the "best" player on the team") will count towards personal reflections. Make sure these are personal reflections and not metamemory comments, e.g., "I don't remember," which do not contribute to theme.

e) **Dialogue or quotes** that elaborate on what is happening may be considered as thematic language. For example, "He was like, 'I'm special because I scored a goal'" do count for theme. Dialogue that represents behavior (e.g., "My Dad told me to sit down"), behavioral corrections (e.g., "stop being annoying"), or repetitions of what the child already said, do not count towards theme. The dialogue has to be the child's interpretation of what occurred.

4. Is there a link to self-concept or identity, or a resolution to the event?

a) Links to self-concept or identity should be a stable view and formative (i.e., something beyond physical traits such as I have brown hair). E.g., "and that's when I got really interested in art"; "After that I gave up on playing soccer because I knew that I would never be good at it." "That made me realize I'm not as nice a person as I wanted to be."

b) A resolution is when there is drama or some action that builds in the narrative and then is somehow resolved. **A resolution must involve an initial situation, an action taken, and a resulting change in the situation (including a change in a strong emotion)**, but does not necessarily have to be at the end of the narrative**.** E.g., a narrator describes concern about a classmate who is being harassed by other students decides to speak up, and succeeds in ending the victimization.

1. If you are wondering whether or not there is a resolution, think back to the title you gave the narrative. Is there a resolution to that title of the event or something else? If it is something else, that does not count as a resolution towards this event.
2. A behavioral change that moves forward in time may be included. The change in the behavior links the action in the narrative with the future, e.g., "Ever since then, I've taken my inhaler to sleep overs." "Ever since, I've worn my helmet when I ride my bike" (following description of an injury while bike riding).
3. Resolution of action: the narrator describes an initial situation (e.g., the child is hesitant about going to a sleep over), discusses actions that were inconsistent with the initial concerns ("but I made friends"; and describes having solved a pattern, changed their mind, etc.). Typically, a problem is solved during the course of the event.
4. Reconceptualization is a type of resolution (e.g., narrator laughed at a boy throwing rocks at sick bunny when the event occurred but later he thought that was cruel). A reinterpretation of a past important experience that results in a new understanding could also count.
5. Links to other autobiographical experiences must be specific. Including a comment like "I still have that souvenir," or "We're still friends," or "I still don't like broccoli" doesn't count. Similarly, characterizations of events as "the worst punishment I ever got" or "the most fun I ever had" do not count.
6. Wrap ups ("then we went home," "that's all I remember," "It was fun") do not count as a resolution.

Coding Theme

A. Key things to keep in mind while coding:

1. The length of the narrative does not matter for theme. The narrative can be very short but also dense with thematically-relevant information whereas a long narrative could have many actions without many personal reflections or emotions.
2. More than one instance of thematic language can be included in the same line or phrase. Think, if you exclude one instance, can you still count the second? If so, meaning the two instances are unique and not intertwined, you can consider both towards instances of thematic language.
3. Codes of 3 will be rare for narratives given by children and adolescents, and most likely will consist of resolutions not links to self-concepts or identity.
4. When in doubt between codes, code down. For instance, if you are stuck between a score of 1 and 2, code a 1.
5. If the interviewer provides thematic language in a prompt or in response to the child, do not count the child's response unless they add additional information that is beyond just a synonym. For instance, the experimenter saying "that's sad"

and the child responding with "yes I was really upset" would <u>not</u> count towards theme.

6. Refer to the flow chart at the end of this document as a quick guide when coding.

B. Steps for Coding. Think at a qualitative level:

1. Read through the narrative once to get a feel for the event (Hint, reading out loud may help). After reading think, could I give a title to this narrative? Is there a clear topic and it is generally maintained throughout the narrative while not completely relying on the interviewer prompt (i.e., code is at least a 1) or does the narrative shift back and forth between new scenes without clear connections (i.e., code is a zero).
   a) Do not penalize the child for behavioral off task information, or off task in the narrative if they come back to the story at hand, so long as the digression is clearly marked as such (e.g., "but that was another time"). In this case, code is at least a 1.
   b) Do not penalize the child for being "off topic" after the experimenter interrupts or asks the child for more information. If the rest of the narrative was on topic before the interruption, a code of at least 1 may still be appropriate.
   c) If you can link at least the majority of the actions to a topic, then you can provide a title, which means the code is at least a 1.
2. Is the narrator telling their own story? **<u>Would the story be different if someone else told it because of their personal experiences shared?</u>** **<u>Is the narrator providing information to help *you*, as the listener, to understand the story?</u>** In other words, is the narrative primarily black and white actions that could be seen on a video (code = 1) or is there some personal reflection (code = 2).
   a) To verify if the code is a 1 or 2:
      - Consider whether or not there are emotions, personal reflections, dialogue, causal linkages, and/or elaborations in at least 2/3 of the narrative versus just at the beginning/end. In other words, if you divide the narrative into different parts, does 2/3 of the narrative contain emotions, personal reflections, causal linkages, elaborations and/or dialogue or do only certain parts contain this information? If only certain parts contain this information, a code of 1 is appropriate. If the thematic language is spread in 2/3 of the narrative, code of 2 is appropriate.
         - When deciding if the thematic language takes places in approximately 2/3 of the narrative, do not penalize the child for the experimenter prompting them to add more and no thematic language is included in that additional information.
3. If there a resolution or link to self-concept or identity? Did the narrative qualify for at least a code of 2? If yes, code = 3. If there is a link to self-concept/identity or a resolution, but not enough information to consider the narrative a 2, the final code is 1.
4. After you have coded the narratives, wait a little while (I like to wait a day) and read through the codes again. Are you still comfortable with your code? I also

recommend taking breaks and limiting how much coding you complete in one session.

Example Narratives:

A. Theme Coding Score = 0
    a. "I got a dress. Me and Shelley got a dress. And Jessie's gonna get on her computer and send it to us. We're gonna buy it. And buy the shoes with flowers on the side. I got the shoes with the flowers on the side" (Reese et al., 2011).
    b. "It took a long time to get there. My brother was at a friend's house. It was raining. The animals were inside. I didn't see them. We ate lunch. We had to leave" (hypothetical narrative).

B. Theme Coding Score = 1
    a. "I was a small child about age 5. I was held by my parents on a famous bridge. It was in winter and I was wearing a hat. Then I took off my hat, and threw it outside the bridge, mimicking some sound of the plane" (Reese et al., 2011).
    b. "I remember going in the basement of my, which was the playroom, of my parents house and we had the Fisher Price garage, the old one and I remember playing with that and what I was playing was Partridge Family and I had my Fisher Price little people that were each of the people in the Partridge family and I remember setting their beds, the garage was their house, setting their beds up different places and I remember playing it all day. And I remember that when my dad got home that night, when we were having dinner, my mom told my dad that I'd been a little angel that day I remember the line. And then I remember the next day trying to play it again, and we had a house where you cleaned up everything every night before you went to bed and I couldn't get things set up quite the same way ever again and I remember being frustrated by that" (Bauer et al., 2014).

C. Theme Coding Score = 2
    a. "I was kind of scared because they might have to put that trache in, and I didn't know what it would affect to my asthma, on my lungs. I just didn't know because I was kind of crying and I was kind of scared. And I just didn't like the sound of it. I thought it was going to do something to me like not let me breathe anymore or something. And I just didn't really like it, and it just hurt me really bad (Reese et al., 2011)."
    b. "I remember a vacation, and we went to this Flintstone World place in South Dakota, and I remember crawling through this crocodile, it was like a play area tunnel thing and I remember getting to the middle and getting scared. And I remember getting stuck in there, and I remember my brother sticking his face in at one side of the tunnel saying ''Come on its okay, come over here.'' And we had a foster brother also, who was at the other end trying to say ''Go ahead, it's alright, it's not scary.'' And that's the only thing I remember about that whole place is being, like getting freaked out as soon as I got in the tunnel. And by looking at

family pictures and things, and which foster brother, and stuff, I was three" (Bauer et al., 2014).

c. "Me and Julie were laughing. And then... then, um, Ariel and Jasmine, they pushed me. And they're like, "Sorry, I didn't mean to." But, it was on purpose 'cause I saw them do it. And I heard them say that . . . . And then, we were hiding so they don't hit us and hurt us, and then, um, then we got out 'cause we forgot" (Pasupathi & Wainryb, 2010).

d. "Experimenter: Alright tell me about portfolio night at school.

   Child: Umm I got to hold some chicks. And we had some slide shows.. . .and we got to look at all the books we made.

   E: Yes.

   C: And we got to bring home lots of pictures.

   E: OK.

   C: and then but not all of our things we did we made just the pictures we got to bring home, computer pictures.

   E: OK.

   C: Umm and after and after that we went out to eat at Snuffy's malt shop.

   E: Yes.

   C: We had malts to drink instead of milk.

   E: Oh, fun. What else can you tell me about portfolio night?

   C: My grandma went.

   E: Your grandma went.

   C: Yes. And my and my brother and sister, and my dad went and mom went.

   E: OK.

   C: Umm that's all I can remember about that" (Morris et al., 2010)

D. Theme Coding Score = 3

a. "It wasn't really the fact of getting into medical school that was thrilling, even though it was a good thing, but just what I had gone through to get there and all the hard work and the struggle had paid off. And that's because I basically had, for the last 4 years, I saw myself through school [link to other autobiographical experiences]. I've had to like work between two to four jobs, and at the same time, I'm getting four degrees and two minors, and I remember times I'd work like third shift from 11pm to 7 am and then have to go to chemistry class at 8 am and go through rush hour traffic in the morning and all that, so it just made it all worth it like, when I saw the first letter I just felt good that all the hard work was not in vain[link to self-concept]. It paid off, and it just shows that if you are willing to work hard, you can succeed (Reese et al., 2011)."

b. "I thought about my high school graduation exam. When recalling this event, I feel highly positive emotions. It was a great experience. Indeed, during the days preceding the exam I was anxious and scared. However, after the first two written examinations, I felt relaxed because I realized that I did all my best. Of course, the second examination, which concerned electronics, was the hardest one. My classmates gave me a precious support to pass it and I am really grateful to them. By contrast, the third written examination and the oral test were much easier. My final mark was 92 out of 100, which is a very good mark. In conclusion, I want to stress that working hard and being supported by others give you good results and satisfaction" (Sotgiu, 2019).
c. "One day Aidan got hurt . . . . He had a hole in his cheek and I wiped the blood off with water on a towel. And he liked the water cause it was cold . . . . Then he felt better cause his cheek was, his hole was going away, it was getting fixed" (Pasupathi & Wainryb, 2010).