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A Micro-Analytic Approach to Parent-Child Reminiscing

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Abstract

The reminiscing literature has for decades highlighted the positive effect of the high elaborative reminiscing style on children's autobiographical memory. However, very little is known about the direct, reciprocal influences of parents' and children's utterances on each other. Using a micro-analytic approach, the current study aimed to investigate a) how likely children were to provide memory information *directly* following parental elaborative, repetitive, and confirming utterance types, and b) how likely parents were to respond to children's memory information and verbal placeholders with elaborations, repetitions, and confirmations. Eighty-eight ($N = 88$) mothers and fathers participated in the study with their 4-year-old children. The micro-analyses revealed that children were most likely to provide memory information directly following parental open-ended elaborative and repetitive questions, and positive confirmations. Thus, through their open-ended questions and confirmations parents promoted the reciprocal, joint process of remembering which appeared highly facilitative of children's autobiographical remembering.

Keywords: Parent-child reminiscing, high elaborative reminiscing style, elaboration, repetition, confirmation, contingency analyses

A Micro-Analytic Approach on Parent-Child Reminiscing

1. Introduction

Autobiographical memories are conscious recollections of personal past events, which essentially help us to create a sense of self in time (Fivush, 2019a; Reese, 2002, 2009). According to the socio-cultural developmental theory, parent-child reminiscing provides a unique social context for the development of the skills necessary for the autobiographical memory during the preschool years (Fivush, 2019a; Nelson & Fivush, 2004; Reese, 2009). Through adult-scaffolded reminiscing, children learn how their personal past experiences can be narrated about, which facilitates children's memory of their personal past (Fivush, 2019a; Reese, 2009).

A substantial body of literature on maternal reminiscing style has found consistent individual differences in the way mothers engage their children in the act of reminiscing (see review in Fivush, Haden, & Reese, 2006). Mothers with the "high elaborative" reminiscing style typically provide many open-ended questions, continuously add new information into the conversation, and positively confirm their child's own contributions during reminiscing (Fivush & Fromhoff, 1988; Reese & Fivush, 1993). Mothers with the "low elaborative" reminiscing style, on the other hand, ask many closed questions, or repeat their own questions in order to get the child to follow the parent's own agenda for the conversation (Farrant & Reese, 2000; Fivush et al., 2006). Studies on maternal reminiscing have consistently shown that children of high elaborative mothers provide more unique autobiographical memory information compared to children of low elaborative mothers, both concurrently and longitudinally (Farrant & Reese, 2000; Fivush et al., 2006; Haden, Haine, & Fivush, 1997; Haden, Ornstein, Rudek, & Cameron, 2009; Reese & Fivush, 1993; Reese, Haden, & Fivush, 1993). The longitudinal studies by Jack, MacDonald, Reese, and Hayne (2009) and Reese and Robertson (2019) demonstrated that mothers' elaborative reminiscing style in early childhood was the best predictor of the age of adolescents' earliest memories (with adolescents of

high elaborative mothers having earlier first memories) even when controlling for other factors (e.g., language skills). The experimental research has additionally demonstrated that children of mothers trained in elaborative reminiscing provided more elaborative memory information over time compared to children of mothers in the control group (Reese & Newcombe, 2007; Valentino, Comas, Nuttall, & Thomas, 2013; Van Bergen, Salmon, Dadds, & Allen, 2009). Importantly, the positive effects of elaborative training have appeared to hold even when children have reached adolescence, as adolescents of mothers trained in elaborative reminiscing have been shown to provide more elaborative and coherent memory narratives compared to adolescents of mothers in the control group (Reese, Macfarlane, McAnally, Robertson, & Taumoepeau, 2020). Hence, parent-child reminiscing is a special communicative context, where parents' individual style of reminiscing uniquely contributes to the development of children's autobiographical memory (Fivush, 2019a; Fivush et al., 2006; Reese, 2009).

1.1. The Construct of the High Elaborative Reminiscing Style

Whereas an impressive bulk of evidence supporting the positive effect of the high elaborative reminiscing style on children's autobiographical memory has accumulated over the years, surprisingly little attention has been devoted to specify the meaning, function, and mechanisms of the construct of the high elaborative style (however see Fivush et al., 2006, for a theoretical discussion; and Leyva et al., 2020, for an investigation of coding and analyses of elaborations). Overall, the high elaborative reminiscing style refers to parents' use of elaborative open-ended questions (e.g., "*What happened at grandpa's?*"), closed elaborative questions (e.g., "*Did you get mad?*"), elaborative statements (e.g., "*Last week we visited a fun park*"), and positive confirmations (e.g., "*Yes, that's right*"), while reminiscing about the past with their children (e.g., Farrant & Reese, 2000; Fivush & Fromhoff, 1988). In particular, the open-ended elaborative questions (i.e., questions including *wh*-questions) have been argued to be facilitative of children's autobiographical

memory in the reminiscing literature (Fivush et al., 2006; Fivush & Nelson, 2004; Nelson & Fivush, 2004; Reese, 2009; Wareham & Salmon, 2006). Open-ended elaborative questions encourage children to put their memories into words, and thus, language acts as an organizational tool in creating coherent representations of past experiences (Fivush & Nelson, 2004; Reese, 2009, 2018). Words that have been used to elaborate on a past event can later function as memory cues for retrieval (Reese, 2009). In fact, the experimental research has demonstrated that mother-child *joint* elaboration on shared experiences as the events unfolded increased children's memory of the specific event over time, while events which were only elaborated on by the mother were less likely to be remembered after delay (Boland, Haden, & Ornstein, 2003; Haden, Ornstein, Eckerman, & Didow, 2001). Thus, *joint* parent-child talk appears to be crucial for children's autobiographical remembering as parents' open-ended elaborative questions may direct the children's attention to important aspects of a past event, which consequently leads to a stronger memory representation (Ornstein, Haden, & Hedrick, 2004; Reese, 2009, 2018).

The closed elaborative questions and statements, on the other hand, have been argued to be less facilitative of children's memory compared to the open-ended questions (Haden et al., 2009; Nelson & Fivush, 2004). The closed questions (e.g., "*Did you have fun?*") simply ask the child to confirm or negate the information provided by the parent, and the statements only include the parents' own memory information to the conversations (e.g., "*It was a red car*"), which do not solicit the child's own participation in the memory conversation (Haden et al., 2009). In fact, a recent meta-analysis of $k = 31$ reminiscing studies by Wu and Jobson (2019) concluded that open-ended elaborative questions and confirmations were reliably associated with children's memory information, while elaborative closed questions and statements were not.

Parents' confirmations of children's contributions to the conversations (e.g., Child: "*We stayed at a hotel.*" Parent: "*Yes, we stayed at a hotel.*") are generally considered to be an inherent

part of the high elaborative reminiscing style as parents who provide many elaborative questions and statements typically provide many confirmations as well (e.g., Reese & Fivush, 1993; Schröder, Keller, Kärtner, et al., 2013). Parental confirmations have been shown to correlate highly with children's memory provisions, and in some recent studies this association was even stronger than the association between parental elaborations and children's memory provisions (Van der Kaap-Deeder et al., 2020). Thus, parents' elaborative questions and statements *alone* do not appear to be responsible when eliciting memory responses from the child during the reminiscing conversation. In fact, confirmations appear to be crucial for keeping the child in the task and for increasing the engagement of the child to participate in the reminiscing conversation in the first place (Cleveland, Reese, & Grolnick, 2007; Lewis, 1999; Van der Kaap-Deeder et al., 2020).

Hence, the high elaborative reminiscing style is a multidimensional construct referring to the verbal and cognitive strategies (i.e., elaborative questions and statements) which essentially help the child to remember specific aspects of a past event, and to the motivational aspects (i.e., confirmations) which increase the child's engagement in the act of reminiscing (Cleveland et al., 2007; Fivush, 2014). Notably, although parental affective strategies have been relatively less researched, there is literature suggesting that parental emotional and supportive engagement in the context of reminiscing may be an important, yet distinct and independent aspect of the high elaborative style (Cleveland & Reese, 2005; Larkina & Bauer, 2010; Valentino et al., 2014; Wu, He, & Jobson, 2020). Consequently, parental verbal and cognitive strategies may be more closely linked to children's memory outcomes, whereas the affective strategies may be more likely to be related to children's socio-emotional outcomes (Leyva et al., 2020).

1.2. Inconsistencies in the Operationalization of the High Elaborative Reminiscing Style

Despite the fact that the function of the different elaborative utterance types (open-ended questions, closed questions, statements, and confirmations) have been shown to vary, the way the

high elaborative reminiscing style has been *operationalized* has differed across studies. Thus, although the term *elaboration* typically refers to the open-ended elaborative questions, to the closed (yes/no) elaborative questions, and to the elaborative statements, the elaborative utterance types have typically been collapsed into a composite score of elaborations in the reminiscing literature (e.g., Farrant & Reese, 2000; Reese & Cleveland, 2006; Reese & Fivush, 1993; van der Kaap-Deeder et al., 2020). Furthermore, some studies include parental confirmations as a part of the composite score of elaborations (e.g., McDonnell, Valentino, Comas, & Nuttall, 2016; Reese, 2008; Schröder, Keller, & Kleis, 2013). However, the use of the composite score of elaborations may blur the understanding of which specific aspects of the high elaborative style are driving the positive (or negative) effects on children's autobiographical memory information.

Similarly, as parental open-ended repetitive questions, closed repetitive questions, and repetitive statements are typically collapsed into a composite score of repetitions, the disparate effects of the repetitive utterance types on children's memory information remain unknown. Thus, although repetitions have generally been negatively related to children's memory information (Farrant & Reese, 2000; Reese & Fivush, 1993), it is theoretically plausible that some components of the repetitive style may have a positive effect on children's memory information (e.g., open-ended repetitive questions), while others do not. In fact, a recent study by Neha, Reese, Schaugency, and Taumoepeau (2020) indicated that parental repetitions in the context of reminiscing were positively related to children's learning outcomes in Maōri families in New Zealand, which suggests that parental repetitions may, at least in some instances, facilitate children's developmental outcomes.

Furthermore, the coding and analysis methods of elaborations has differed across studies. Elaborations can be analyzed using either the mean frequencies, ratio scores, or global scores depending on whether the coding procedure is based on an utterance-by-utterance (e.g., Farrant &

Reese, 2000; Reese & Fivush, 1993), or a global scale-based coding system (e.g., Laible, 2004; Zaman & Fivush, 2013). The studies using the ratio-scores can be divided into studies using either an elaboration-repetition difference score (e.g., Schröder, Keller, Kärtner, et al., 2013), a ratio number of elaborations to repetitions (e.g., Wang, 2007), or a ratio score of elaborations over the total number of utterance codes (e.g., Pavlova et al., 2019; Sales, Fivush, & Peterson, 2003). The study by Leyva et al. (2020) revealed that although the frequency and scaled-based scoring measures were moderately correlated, the frequency based coding was related to the number of children's autobiographical memory information, whereas the scale-based coding better predicted children's socio-emotional outcomes (i.e., emotion regulation skills, Leyva et al., 2020). Nevertheless, common to the different coding and analysis methods is that the main focus is almost exclusively on parental elaborations, rather than on repetitions (Leyva et al., 2020).

Thus, the *number* of parental elaborative and repetitive questions and statements have been related to the *number* of memory information provided by children during the memory conversations. Therefore, the frequency based analysis method of parental reminiscing style bears resemblance with the language research which has demonstrated a positive relationship between the quantity of parental child-directed speech and the size of children's vocabularies (Hart & Risley, 1995; Hoff, 2006). However, as the focus of the analyses within the reminiscing literature is typically on the mean frequencies, ratio scores, or global scores of parental variables, and their correlations with children's memory provisions, the *mechanisms* of how the specific parental utterance types *directly* affect children's memory information within the conversation, and how children's utterances are directly responded to by the parents, remain unexplored. Thus, the sheer frequency of parental elaborations—or repetitions and confirmations—within the conversation may not be crucial for children's remembering, but rather, how parents' and children's utterance types reciprocally influence one another during the conversation (see also Ornstein et al., 2004).

1.2. Benefits of a Micro-Analytic Approach to Parent-Child Reminiscing

The interactive nature of parent and child utterances *within* reminiscing conversations has received relatively little attention in the reminiscing literature (however see Farrant & Reese, 2000; Reese et al., 1993; Reese, Haden, & Fivush, 1996, for longitudinal regression analyses). This is surprising considering the fact that parent-child reminiscing is essentially a dynamic and interactive process (Fivush et al., 2006; Ornstein, San, & Haden, 2008). During the first two to three years of the children's life, reminiscing conversations are heavily adult-scaffolded (Farrant & Reese, 2000), but by the time the children reach the age of four or five, they are actively taking part in the reminiscing conversation (Nelson & Fivush, 2004; Reese, 2009). Therefore, with the increasing participation of the children in the reminiscing conversations, parents and children inevitably influence and accommodate each other while reminiscing (Fivush et al., 2006).

Consequently, three crucial questions rise: (a) How likely are children to provide memory information *directly* following the different parental elaborative, repetitive, or evaluative utterance types? (b) Which parental utterance types are less likely directly to be followed by memory responses by the children? And (c) how likely are parents *directly* to respond to child utterances with elaborations, repetitions, or confirmations? These questions are practically impossible to answer with any analyses relying solely on the mean frequencies, ratio scores, or scale-based scores of parental utterances and their correlations with children's memory information as these focus exclusively on the overall patterns. Nevertheless, knowledge of the direct effects of the different parent and child utterance types on each other is of theoretical and empirical importance when attempting to specify how parents most effectively facilitate children's autobiographical remembering in the context of reminiscing.

To the best of our knowledge, only three studies so far, published over two decades ago (Reese et al., 1993, 1996; Wang, Leichtman, & Davies, 2000) have investigated the interactive

nature of parent and child utterances within the reminiscing conversation using a micro-analytic approach. Reese and colleagues conducted a detailed micro-analysis of children's contingent responses to parent utterances, and parent contingent responses to child utterances in reminiscing conversations when children were 3 and 5 years old. The micro-analyses revealed that children were approximately equally likely to provide memory information following parental elaborations and confirmations. However, directly following parental repetitions, children were most likely to provide verbal placeholders indicating lack of memory (e.g., "*I don't remember*"). Further, parents were most inclined to respond to children's memory information with elaborations. Parents were more likely to provide elaborations than repetitions or confirmations following children's verbal placeholders.

However, the first two studies using the micro-analytic approach did not analyze the different parental elaborative and repetitive utterance types (i.e., open-ended questions, closed questions, statements) separately, and the third study by Wang et al. (2000) only included parents' and children's total elaborations and repetitions in the analyses. As the function of the different elaborative and repetitive utterance types may vary (as reviewed above), it is important to investigate which specific aspects of parental elaborations and repetitions are most effective in prompting memory responses from the children during the reminiscing conversations.

1.4. Gender differences in parent-child reminiscing

Despite the large bulk of literature on maternal reminiscing style, studies including fathers are sparse, and the findings on gender differences in parental reminiscing style have been mixed (Noel et al., 2019; Reese & Fivush, 1993; Schröder, Keller, & Kleis, 2013; Van der Kaap-Deeder et al., 2020). While mothers and fathers have not been shown to differ with respect to how many elaborations they provide while reminiscing with their preschoolers (Reese & Fivush, 1993; Van der Kaap-Deeder et al., 2020), fathers have sometimes been shown to provide more repetitions

(Reese et al., 1996), and fewer confirmations (Van der Kaap-Deeder et al., 2020) compared to mothers. However, when parents have specifically been asked to reminisce about emotional past events, mothers have sometimes demonstrated a more elaborative style of reminiscing (Fivush, Marin, McWilliams, & Bohanek, 2009; Zaman & Fivush, 2013). Common to the sparse literature on gender differences in parental reminiscing style is that the analyses have relied on the mean frequencies or mean proportions of mothers' and fathers' elaborations, repetitions, and confirmations, which however do not allow the examination of the reciprocal influences of parents' and children's utterance types on each other.

Notably, one of the first studies using the micro-analytic approach by Reese et al. (1996) *did* in fact include both mothers and fathers. However, the sample size was somewhat limited ($N = 17$), and the study has not been replicated. Moreover, gender differences in parental reminiscing style have not been explored in a Scandinavian cultural context before (however see Svane, Kingo, & Krøjgaard, 2020, using the same dataset as in the present study). The more equal division of childcare between the parents in Scandinavia (Bonke, 2009; Nordenmark, 2016) may contribute to disparate findings on gender differences in parental reminiscing style than previously found in the US context. It is therefore possible that the more egalitarian gender roles may contribute to less prominent gender differences in the context of reminiscing.

1.4. The Present Study

The aim of the current study was to investigate the reciprocal influences of parent and child utterances on each other using a micro-analytic approach on the contingent probabilities of child responses to parental utterance types, and on the contingent probabilities of parent responses to child utterances. Thus, we aimed to replicate the micro-analytic studies on parent-child reminiscing by Reese et al. (1993) and Reese et al. (1996), and to extend the micro-analytic investigation in three ways. First, we aimed to investigate the direct effects of the different elaborative and

repetitive utterance types (e.g., open-ended questions, closed questions, and statements) on children's memory responses, rather than collapsing the elaborative and repetitive utterances types as in the original studies. We were also interested in which parent utterance types were likely to be followed by verbal placeholders indicating lack of memory (e.g., "*I don't know*") by the children. In addition, we aimed to investigate how likely parents were to provide elaborative, repetitive, and confirming utterances as a response to children's memory provisions and verbal placeholders, respectively. Second, we aimed to extend the micro-analyses to a substantially larger sample ($N = 88$) including both mothers and fathers, as the literature on gender differences in reminiscing has been somewhat limited yielding mixed results of potential gender differences in the context of reminiscing. Third, the present study was conducted in a Scandinavian sample where parent-child reminiscing studies are limited (see Tõugu, Tulviste, Schröder, Keller, & De Geer, 2011, for an investigation in Sweden, Germany, and Estonia). An inclusion of a novel cultural context in the parent-child reminiscing literature is of theoretical importance, as the cultural context has been shown to affect the way parents reminisce with their children (e.g., Schröder, Keller, Kärtner, et al., 2013; Wang, 2013). Consequently, it is plausible that the different components of parental elaborations, repetitions, or confirmations may facilitate children's memory information differently depending on the cultural context (as was the case for repetitions in the Maōri culture, Neha et al., 2020).

Essentially, the complex micro-analytic approach deployed in the current study may contribute to a more comprehensive theoretical understanding of the construct of the high elaborative reminiscing style, on the one hand, and potentially extend and advance the empirical tool kit in the investigation of parent-child influences on each other within reminiscing, on the other hand.

In the current study, 4-year-old children from 88 two-parent families were asked to reminisce about three specific one-time events together with their mother and their father, respectively, in a counterbalanced order. This age group was selected as by this age, children are actively and independently taking part in the memory conversation (Fivush & Nelson, 2004). As the micro-analytic approach is a rarity in the reminiscing literature, our hypotheses were tentative.

Hypothesis 1: We expected that children would be most likely to provide memory information directly following parental elaborations—open-ended questions in particular—and confirmations as was the case in the study by Reese et al., (1996). **Hypothesis 2:** We expected that children would be most likely to provide verbal placeholders as a response to parental repetitions. **Hypothesis 3:** We expected that parents would be most likely to provide confirmations directly following children's autobiographical memory provisions. **Hypothesis 4:** We did not expect to find gender differences between mothers and fathers, as parents have not been shown to differ substantially in the way they structure the reminiscing conversations (Reese & Fivush, 1993; Reese et al., 1996), and as the more gender egalitarian values may contribute to less prominent gender differences in the context of reminiscing.

2. Method

The current study was a part of a larger investigation of parent-child joint communication, interaction and reminiscing. Only parts relevant for the present study are presented. Note that the dataset is the same as used in Svane et al., 2020. However, the micro-analytic approach taken in the current study is novel and was not deployed in the study, which is why the present study contributes with unique aspects to parent-child reminiscing.

2.1. Participants

A priori power analysis indicated that the required number of subjects with obtained power of 80% for detecting small to medium sized effects ($d = 0.45$) with the alpha level of $p = .05$ was $N =$

79 in each group (mothers and fathers). A total of 106 families from and around the city of Aarhus in Denmark were recruited for the present study. However, two families were excluded due to divorce, 13 withdrew from the study due to scheduling difficulties; two families failed to return for the second visit; and one family were excluded due to a technical failure (missing recording). The final sample of participants consisted of $N = 88$ families with children with a mean age of 4;6 (43 girls, $M = 55.17$ months, $SD = 2.43$, range 51-60 months).

All the children were healthy and full-term, primarily Scandinavian Caucasian living in families with the majority having either an undergraduate, a graduate or a post-graduate degree (see Table 1). Only 12.5% of the mothers and 23% of the fathers reported a high school diploma or a vocational degree as their highest level of education. Thus, based on the education level, the sample came from middle-high SES background.

Table 1. *Demographic Characteristics of the Sample.*

	<i>N</i>	Frequency	Valid percent	Mean	Standard deviation	Range
Girl	43	43	48.9 %	-	-	-
Boy	45	45	51.1 %	-	-	-
Child age	88	88		55.17 months	2.43	51-60 months
Mother education						
Basic schooling	2	2	2.3 %	-	-	-
Vocational education	3	3	3.4 %	-	-	-
High school education	6	6	6.8 %	-	-	-
Higher education and profession bachelor	32	32	36.4 %	-	-	-
Masters' degree or Ph.D.-degree	45	45	51.1 %	-	-	-
Father education						
Basic schooling	3	3	3.4 %	-	-	-
Vocational education	17	17	19.3 %	-	-	-
High school education	10	10	11.4 %	-	-	-
Higher education and profession bachelor	16	16	18.2 %	-	-	-
Masters' degree or Ph.D.-degree	42	42	47.7 %	-	-	-

2.2. Procedure

The study consisted of two test sessions in which the child participated once with the mother and once with the father in a counterbalanced order with approximately one week apart ($M = 3.55$ days in between sessions, $SD = 4.85$, *range* 1–9). The study took place in a reminiscing laboratory at the University of Aarhus. The study was approved by the local board of ethics.

Upon arrival at the reminiscing lab, parents were asked to select three specific one-time events they had experienced together with their child during the past six months. Parents were instructed not to select recurring events such as birthdays. Parents selected the events in the lab waiting room while the children played. Following the selection of events, parents were instructed to initiate conversations about the events with the child, as they normally would do at home, and they were asked to talk about each event as long as the child felt motivated. Conversations took place in a cozy room furnished specifically for the purpose of the study. No time limit was given for the parents, and the researcher left the room after giving instructions. All conversations were video recorded for offline coding.

2.3. Coding of Parent and Child Utterances

Parent-child conversations were transcribed in full based on the video recordings, and all subsequent coding was based on the transcriptions as this procedure allowed for making the coders blind to both the gender of the parent and the gender of the child. All parent and child utterances were divided into coding units using a mutually exclusive and exhaustive utterance-by-utterance coding system (Reese & Fivush, 1993; Reese & Neha, 2015). Coding units consisted of independent clauses with a unique or implied verb. Parents' and children's confirmations could also consist of a single word only (e.g., "yes", "no", "that's right"). Parents' utterances were coded into categories depicted in Table 2 and children's utterances were coded into categories depicted in Table 3.

Two independent coders coded 20% of the total material (18 families). Average agreement across all the codes was 84.1% with a Cohen's kappa of $k = .83$, which indicated a strong level of agreement (Cohen, 1960). Disagreements were solved by discussion, and thereafter, the remaining conversations were divided evenly between the two coders.

Table 2. *Coding of Parents' Utterances.*

Conversational codes	Description	Examples
Parent codes		
Elaborations	Parents requested or provided a new piece of information about the event.	
	Open-ended elaborative questions (wh-questions)	<i>"What did you play with?"</i> <i>"Who was with us?"</i> <i>"Where did we fly to?"</i>
	Closed elaborative questions	<i>"Did you have fun?"</i> <i>"Did we get Ice-Cream or Candy?"</i>
	Elaborative statements	<i>"You watched a movie in the plane."</i> <i>"You ran away with her."</i> <i>"It was a red car."</i>
Repetitions	Parents repeated their own previously stated questions or statements.	
	Open-ended repetitive questions (wh-questions)	<i>"Don't you remember what happened at grandpa's?"</i>
	Closed repetitive questions	<i>"Did you have fun?"</i>
	Repetitive statements	<i>"You did ran away with her!"</i>
Confirmations	Parents confirmed positively and/or repeated the information provided by children. Parents could receive a total of two confirming codes per conversational turn:	
	<ul style="list-style-type: none"> one code for the positive confirmation, 	<i>"Yes, that's right!"</i>
	<ul style="list-style-type: none"> one code for the repetition of the child's previous statement. 	<i>"Yes, we visited grandpa."</i>
Other parent codes	Negations	<i>"No, there weren't any apes."</i>
	Remember prompts	<i>"Remember?"</i>
	Verbal placeholders	<i>"Huh"</i>
	Fill-in-elaborations and repetitions	<i>"And the winner was..."</i>
	Meta-memory comments	<i>"Very well remembered!"</i>
	Unclassifiable	<i>"Pardon?"</i>
	Off-topic	<i>"Come and sit down!"</i>

Table 3. *Coding of Children's Utterances.*

Conversational codes	Description	Examples
Child codes		
Memory information	Children provided a unique piece of information that had not been mentioned previously by neither the parent nor the child.	<i>"We had sushi at the restaurant."</i> <i>"We went to the forest"</i> <i>"I cuddled with the bunny"</i>
	Children would get one credit for each unique verb.	<i>"I threw it into the water and then I picked it up again."</i>
Verbal placeholders	Children provided a conversational turn without adding new information to the narrative.	<i>"I don't know"</i> , <i>"Uuhhmm"</i> , <i>"No"</i> (to the question, <i>"Can you remember?"</i>)
Other child codes	Memory questions	<i>"Was it just two of us?"</i>
	Memory repetitions	<i>"We had sushi."</i>
	Meta-memory comments	<i>"I remember that"</i>
	Confirmations	<i>"Yes."</i>
	Negations	<i>"No, I didn't!"</i>
	Unclassifiable	<i>"xxx"</i>
	Off-topic	<i>"Why is that camera filming us?"</i>

3. Results

3.1. Preliminary Analyses

Preliminary analyses were conducted on the mean frequencies of parental elaborative, repetitive, and confirming utterance types and children's memory information as a function of parent and child gender. The mean frequencies of parents' and children's utterance types are presented in Table 4. Note that the mean frequencies presented in Table 4 are sum scores of parents' and children's conversational codes from all three event conversations (happy, sad, and trip events), as the subsequent contingency analyses are based on parents' and children's utterance types in all three event conversations as well.

First, parental talkativeness was examined with a 2 (mothers vs. fathers) x 2 (girls vs. boys) ANOVA with gender of parent as the within-subjects measure, and gender of child as the between-subjects measure, and parental total number of conversational codes as the outcome measure. Mothers and fathers did not differ significantly from each other with respect to how many conversational codes they provided overall, $F(1, 86) = .362, p = .549, \eta_p^2 = .004$, see Table 4. Parents did not differ in how much they talked overall with respect to gender of child either, $F(1, 86) = .339, p = .562, \eta_p^2 = .004$, see Table 4.

Second, a 2 (mothers vs. fathers) x 2 (girls vs. boys) x 3 (conversational code: total elaborations, total repetitions, total confirmations) ANOVA with gender of parent and conversational codes as within-subjects measures, and gender of child as a between-subjects measure, and parental total elaborations, repetitions, and confirmation as the outcome measures was conducted. There were no interaction effects between gender of parent, gender of child, and parental conversational codes ($ps > .05$). There was no main effect of gender of parent, $F(1, 86) = .049, p = .826, \eta_p^2 = .001$, and there was no between-subjects effect of gender of child, $F(1, 86) = .052, p = .820, \eta_p^2 = .001$. However, there was a main effect of conversational code, $F(1, 86) =$

410.71, $p < .001$, $\eta_p^2 = .827$. Pairwise comparisons with the Bonferroni correction indicated that parents provided significantly ($p < .001$) more elaborations ($M = 55.69$, $SD = 18.58$) compared to confirmations ($M = 41.93$, $SD = 16.93$) or repetitions ($M = 12.41$, $SD = 6.27$), and they also provided significantly ($p < .001$) more confirmations compared to repetitions (see Table 4).

Third, parents' elaborative utterance types were investigated in a 2 (mothers vs. fathers) x 2 (girls vs. boys) x 3 (elaborations: open-ended elaborative questions, closed elaborative questions, and elaborative statements) ANOVA with gender of parent and elaborations as within-subjects measures, and gender of child as a between-subjects measure, and parental elaborations as the outcome measure. There were no interaction effects between gender of parent, gender of child, and parental elaborations ($ps > .05$). There was no main effect of gender of parent, $F(1, 86) = .177$, $p = .675$, $\eta_p^2 = .002$, and there was no between-subjects effect of gender of child, $F(1, 86) = .094$, $p = .760$, $\eta_p^2 = .001$. However, there was a main effect of elaborations, $F(1, 86) = 28.48$, $p < .001$, $\eta_p^2 = .249$. Pairwise comparisons with the Bonferroni correction indicated parents provided significantly ($p < .001$) more elaborative statements ($M = 28.79$, $SD = 13.75$) compared to open-ended elaborative questions ($M = 23.28$, $SD = 10.63$) or closed elaborative questions ($M = 18.48$, $SD = 8.88$). Moreover, open-ended elaborative questions were significantly ($p < .001$) more frequent compared to closed elaborative questions.

Fourth, parents' repetitive utterance types were investigated in a 2 (mothers vs. fathers) x 2 (girls vs. boys) x 3 (repetitions: open-ended repetitive questions, closed repetitive questions, and repetitive statements) ANOVA with gender of parent and repetitions as within-subjects measures, and gender of child as a between-subjects measure, and parental repetitions as the outcome measure. There were no interaction effects between gender of parent, gender of child, and parental repetitions ($ps > .05$). There was no main effect of gender of parent, $F(1, 86) = .067$, $p = .797$, $\eta_p^2 = .001$, and there was no between-subjects effect of gender of child, $F(1, 86) = .040$, $p = .842$, $\eta_p^2 =$

.000. However, there was a main effect of repetitions, $F(1, 86) = 4.75, p = .010, \eta_p^2 = .052$. Pairwise comparisons with the Bonferroni correction indicated parents' closed repetitive questions ($M = 4.49, SD = 2.86$) and repetitive statements ($M = 4.42, SD = 2.69$) were significantly ($ps = .012; .047$) more frequent than open-ended repetitive questions ($M = 3.49, SD = 3.02$). The difference between closed repetitive questions and repetitive statements was not significant ($p = 1.00$).

Finally, a 2 (mothers vs. fathers) x 2 (girls vs. boys) ANOVA with children's memory information provided to mothers and fathers as the outcome measure was conducted. There was no main effect of gender of parent, $F(1, 86) = .159, p = .691, \eta_p^2 = .002$, and no between-subjects effect of gender of child, $F(1, 86) = 2.38, p = .126, \eta_p^2 = .027$, and no interaction effects between them ($p > .05$). Thus, children's memory information provided to mothers ($M = 42.26, SD = 22.15$) and fathers ($M = 41.20, SD = 25.73$) did not differ significantly from each other ($p > .05$).

In sum, the preliminary analyses did not reveal any gender differences in the way mothers and fathers reminisced with their girls and boys measured by the mean frequencies of parents' elaborations, repetitions, or confirmations. Nor did children differ in their number of memory information as a function of child or parent gender.

Table 4. Mean Frequencies (and Standard Deviations) of Parents' Utterance Types and Children's Memory Information by Gender of Parent and Gender of Child.

Parents	Mothers		Fathers	
	With Girls	With Boys	With Girls	With Boys
Total				
conversational codes	158.70 (60.06)	151.22 (63.12)	150.77 (77.14)	171.49 (83.87)
Elaborations				
Open-ended	24.98 (11.76)	22.04 (13.32)	22.26 (16.45)	23.89 (15.25)
Closed	19.09 (11.05)	15.96 (8.70)	19.47 (13.67)	19.47 (11.94)
Statements	28.49 (15.18)	28.40 (16.07)	25.12 (13.08)	32.98 (27.11)
Total elaborations	72.56 (25.66)	66.40 (26.45)	66.84 (34.93)	76.33 (47.11)
Repetitions				
Open-ended	3.95 (4.45)	3.36 (4.33)	3.16 (3.37)	3.51 (2.89)
Closed	4.84 (3.87)	3.60 (3.36)	4.74 (4.22)	4.82 (3.35)
Statements	4.81 (3.33)	4.53 (3.49)	3.58 (3.53)	4.73 (4.36)
Total repetitions	13.60 (8.13)	11.49 (8.97)	11.49 (8.13)	13.07 (6.51)
Total confirmations	43.95 (19.26)	39.91 (19.56)	39.19 (24.10)	44.64 (25.10)
Children	With Mothers		With Fathers	
	Girls	Boys	Girls	Boys
Child memory information	44.14 (20.08)	40.47 (24.06)	38.49 (24.65)	43.80 (26.74)

3.2. Preparing the Data for Contingency Analyses

Next, a series of formulas were created in Excel in order to be able to count all the instances where a specific parental utterance (e.g., OPEN-EL) was immediately followed by a specific child utterance (e.g., CHILD-MEM), and where a certain child utterance (e.g., CHILD-MEM) was immediately followed by a specific parent utterance (e.g., CLOSE-REP) (see Appendix 1). In this way, we were able to investigate how likely children were to respond to parent utterances with a specific utterance, and vice versa, how likely parents were to respond to child utterances with a specific utterance.

Note that the instances in which the last code in the conversational turn was immediately followed by the first code in the following conversational turn were counted using the Excel formulas. This procedure differs slightly from the studies by (Reese et al., 1993, 1996) in which parental elaborations as responses to child utterances were counted over confirmations if these occurred in the same conversational turn. Thus, if a parent replied to a child memory information with a confirmation followed by an elaboration, only the elaboration was counted in the contingency analysis. However, in the present study, the last code in the initiating conversational turn and the first code in the immediate reply were included in the contingency analyses. The differences in the decision rules will be taken into account when interpreting the results.

3.3. Child Memory Responses and Verbal Placeholders to Parent Utterance Types

First, we were interested in how likely children were to respond to the various parent utterance types with a memory response, or with a verbal placeholder indicating lack of memory (e.g., *"I don't know"*). As children's utterances could be coded into one of the nine mutually exclusive codes (a memory response, a memory question, a memory repetition, a placeholder, a meta-utterance, a confirmation, a negation, an off-topic utterance, or an unidentifiable utterance), children had nine potential ways of responding to each parental utterance types (see coding of child

utterances in Table 3). Consequently, a specific parent utterance type (e.g., OPEN-EL), could potentially be followed by one of the nine different utterance types by the child. We were particularly interested in the contingent probabilities of *child memory responses* to parental elaborative, repetitive, and evaluative utterance types, respectively. In addition, we were interested in the contingent probabilities of child verbal placeholders to parental elaborations, repetitions, and confirmations, respectively. For the calculation of the contingent probabilities of children's memory responses and verbal placeholders to the parent utterance types, we used the procedure described in the original study by Reese et al., 1996. For the sake of clarity, the formula used in the present study is included here:

$$\frac{\Delta y = \text{child utterance (CHILD - MEM or CHILD - PLH) to a specific parent utterance (e.g., OPEN - EL)}}{\Delta x = \text{child utterance (CHILD - MEM or CHILD - PLH) to a specific parent utterance (e.g., OPEN - EL)} + \text{all other possible child responses to the same specific parent utterance (e.g., OPEN - EL)}}$$

Notably, the same formula was used in the calculation of the contingent probabilities of child memory responses for the three parental elaborative utterance types (OPEN-EL, CLOSE-EL, STATE-EL), for the three repetitive utterance types (OPEN-REP, CLOSE-REP, STATE-REP), and for the positive confirmations (CONF), respectively.

The contingent probabilities of child memory and verbal placeholder responses to the different parent utterance types were subsequently used as the dependent measures in separate repeated measures ANOVAs. Note that the preliminary analyses did not reveal any significant effects of child gender ($p > .05$), which is why the data were collapsed over the child gender in all of the subsequent analyses. Significant main effects were followed up by omnibus tests (ANOVAs) with the Bonferroni correction of the significance level $p < .05$.

3.3.1. Child memory responses to parental elaborative utterances. First, we were interested in the contingent probabilities of child memory responses to the three different parental *elaboration* utterance types (i.e., OPEN-EL, CLOSE-EL, STATE-EL), that is, which elaboration utterance type was most likely to be directly followed by a memory response by the child.

A 3 x 2 repeated measures ANOVA with the elaboration utterance type (OPEN-EL, CLOSE-EL, STATE-EL) and gender of parent (mother vs. father) as within-subjects factors, and with the contingent probabilities of child memory responses to the elaborative utterance types as the dependent variable was conducted. No main effect of gender of parent was detected ($p > .05$). There was a large main effect of elaboration utterance type, $F(2, 174) = 410.25, p < .001, \eta_p^2 = .825$. Pairwise comparisons with the Bonferroni correction revealed that children were significantly ($p < .001$) more likely to provide memory responses following parental open-ended questions ($M = .70, SD = .13$) compared to closed elaborative questions ($M = .22, SD = .14$), or elaborative statements ($M = .29, SD = .15$) (see Table 5). Children were also significantly ($p = .035$) more likely to provide memory responses following parental elaborative statements compared to closed elaborative questions (see Table 5). Thus, parental open-ended elaborative questions most effectively facilitated memory responses from the children.

Table 5. Means (Standard Deviations) of the Contingent Probabilities of Children's Memory Responses and Verbal Placeholders to Parent Utterance Types.

Parents' utterances	Child Memory Responses to Elaborative Utterances	Child Verbal Placeholders to Elaborative Utterances
Open-ended elaborative question	.70 (.13)	.16 (.11)
Closed elaborative question	.21 (.14)	.05 (.07)
Elaborative statement	.29 (.15)	.04 (.07)
Total Elaborations	.44 (.12)	.09 (.06)
	Child Memory Responses to Repetitive Utterances	Child Verbal Placeholders to Repetitive Utterances
Open-ended repetitive question	.38 (.29)	.19 (.17)
Closed repetitive question	.14 (.17)	.21 (.25)
Repetitive statement	.16 (.19)	.20 (.21)
Total Repetitions	.28 (.17)	.19 (.17)
	Child Memory Responses to Confirmations	Child Verbal Placeholders to Confirmations
Confirmations	.41 (.16)	.04 (.09)

3.3.2. Child memory responses to parental repetitive utterances. Second, we were interested in the contingent probabilities of child memory responses to the three different parental *repetition* utterance types (i.e., OPEN-REP, CLOSE-REP, STATE-REP), that is, which repetition utterance was most likely to be followed by a memory response by the child.

A 3 x 2 repeated measures ANOVA with repetition utterance types (OPEN-REP, CLOSE-REP, STATE-REP) and gender of parent (mother vs. father) as within-subjects measures, and the contingent probabilities of child memory responses to the repetitive utterance types as the dependent variable was conducted. No main effect of gender of parent was detected ($p > .05$). There was a large main effect of repetition utterance type, $F(1.775, 154.433) = 30.903, p < .001, \eta_p^2 = .262$. Pairwise comparisons with the Bonferroni correction revealed that children were significantly ($p < .01$) more likely to provide memory information following parental open-ended repetitive questions ($M = .38, SD = .29$) compared to repetitive closed questions ($M = .14, SD = .17$) or repetitive statements ($M = .16, SD = .19$) (see Table 5). However, the difference between repetitive closed questions and statements was not significant ($p > .05$). Thus, of the repetitive utterance types, the open-ended repetitive questions were most effective in facilitating children's memory responses.

3.3.3. Child memory responses to parental total elaborations, repetitions, and confirmations. Next, composite scores of child contingent memory responses to parents' total elaborations (OPEN-EL, CLOSE-EL, STATE-EL = ELAB) and total repetitions (OPEN-REP, CLOSE-REP, STATE-REP = REP) were created. These scores were compared together with children's contingent memory responses to parental confirmations (CONF).

A 3 x 2 repeated measures ANOVA with utterance types (ELAB, REP, CONF) and gender of parent (mother vs. father) as within-subjects measures, and the contingent probabilities of child memory responses to the three parent utterance types as the dependent variable was conducted in order to investigate which reminiscing utterance type was most effective in facilitating children's

memory responses. There was no main effect of parent gender ($p > .05$). There was a large main effect of utterance type, $F(2, 174) = 31.025, p < .001, \eta_p^2 = .263$. Pairwise comparisons with the Bonferroni correction revealed that children were significantly ($p < .001$) more likely to provide memory information following parental elaborations ($M = .44, SD = .12$) and confirmations ($M = .41, SD = .16$) compared to parental repetitions ($M = .28, SD = .17$). However, the difference between parental elaborations and confirmations was not significant ($p > .05$) (see Table 5). Thus, in the current sample, children were equally likely to provide memory responses following parental elaborations as following parental confirmations.

3.3.4. Child memory responses to parental closed elaborative questions, elaborative statements, and open-ended repetitive questions.

Additional analyses were conducted in order to detect whether the open-ended repetitive questions, closed elaborative questions, and elaborative statements were equally likely to be followed by memory response by the child, as the means in the analyses conducted above were similar in these three utterance types (see Table 2). A repeated measures ANOVA with parental utterance type (CLOSE-EL, STATE-EL, OPEN-REP) as within-subjects measure, and the contingent probabilities of child memory responses to the three utterance types as the dependent variable was conducted. There was no main effect of gender of parent ($p > .05$). There was a main effect of utterance type, $F(1.40, 122.07) = 14.45, p < .001, \eta_p^2 = .142$. Thus, children were significantly ($p < .001$) more likely to provide memory responses following parental open-ended repetitions ($M = .38, SD = .29$) compared to closed elaborative questions ($M = .22, SD = .14$) and elaborative statements ($M = .29, SD = .15$). Although children were generally less likely to provide memory responses following parental repetitive utterances, the open-ended repetitive questions were more likely to be followed by child memory responses than the closed elaborative questions or elaborative statements.

3.3.5. Child verbal placeholders to parental utterances. Next, we were interested in the contingent probabilities of child verbal placeholders to parents' total elaborations (OPEN-EL, CLOSE-EL, STATE-EL = ELAB), total repetitions (OPEN-REP, CLOSE-REP, STATE-REP = REP), and confirmations (CONF). Note, that children's verbal placeholders were indicators of lack of memory.

A 3 x 2 repeated measures ANOVA with utterance types (ELAB, REP, CONF) and gender of parent (mother vs. father) as within-subjects measures, and the contingent probabilities of child verbal placeholders to the parent utterance types as the dependent variable was conducted in order to investigate which reminiscing utterance type was most likely to be followed by verbal placeholders by the children. There was no main effect of parent gender ($p > .05$). There was a large effect of utterance type, $F(1.38, 119.81) = 47.70, p < .001, \eta_p^2 = .239$. Pairwise comparisons with the Bonferroni correction revealed that children were significantly ($p < .001$) more likely to provide verbal placeholders following parental repetitions ($M = .19, SD = .17$) compared to parental elaborations ($M = .09, SD = .06$), which again was significantly ($p < .001$) more likely to be followed by verbal placeholders compared to parental confirmations ($M = .04, SD = .09$) (see Table 5).

3.3.6. Summary. In sum, parental open-ended elaborative questions and confirmations were most likely to be directly followed by child memory information. Parental repetitions, on the other hand, were significantly less likely to evoke memory responses from the children, compared to parental elaborations and confirmations. In fact, parental repetitions were most likely to be followed by verbal placeholders indicating lack of memory by the children. However, within the different repetitive utterance types, open-ended repetitive questions were most likely to be followed by memory responses from the children, and they were even more effective compared to the closed elaborative questions and elaborative statements. Notably, mothers and fathers did not differ in the

mean frequencies of their elaborative, repetitive, or confirming utterances. Children were also equally likely to provide memory responses to mothers' and fathers' utterances in the contingency analyses thus indicating that parental gender did not affect the way parents and children reminisced with one another.

3.4. Parent Responses to Child Utterances

The next set of analyses focused on parents' replies to children's utterances. We were specifically interested in how likely parents were to provide elaborations, repetitions, and confirmations, respectively, immediately following children's memory responses. Thus, when the child provided a memory response, the parent could reply to the memory response with fifteen different mutually exclusive utterance types (an open-ended elaborative question, a closed elaborative question, an elaborative statement, an open-ended repetitive question, a closed repetitive question, a repetitive statement, a remember prompt, a place-holder, an elaborative fill-in-blank, a repetitive fill-in-blank, a meta-comment, a confirmation, a negation, an unclassifiable utterance or an off-topic utterance; see coding of parent utterances Table 2). Composite scores of parents' total elaborative responses (a sum score of OPEN-EL, CLOSE-EL, STATE-EL) and parents' repetitive responses (a sum score of OPEN-REP, CLOSE-REP, STATE-REP) were created. Contingent probabilities of parent's elaborative, repetitive and confirming responses to child memory responses were counted using the following formula:

$$\frac{\Delta y = \text{parent reply (e.g., ELAB, REP, CONF) to child utterance (CHILD - MEM or CHILD - PLH)}}{\Delta x = \text{parent reply (e.g., ELAB, REP, CONF) to child utterance (CHILD - MEM or CHILD - PLH)} + \text{all other possible parent replies to the same child utterance}}$$

The contingent probabilities of parent's elaborative, repetitive, and confirming replies to children's memory responses and verbal placeholders were used as the dependent measure in repeated measures ANOVAs. Note that the preliminary analyses did not reveal a significant effect of child gender ($p > .05$), which is why the data were collapsed over child gender in all of the subsequent analyses. Significant main effects were followed up by omnibus tests (ANOVAs) with the Bonferroni correction of the significance level $p < .05$.

3.4.1. Parent replies to child memory responses. First, we were interested in the contingent probabilities of parents' elaborative, repetitive and confirming replies to child memory responses. A 3 x 2 repeated measures ANOVA with utterance types (ELAB, REP, CONF) and gender of parent (mother vs. father) as within-subjects measures, and the contingent probabilities of the parent response types as the dependent variable was conducted. There was no main effect of gender of parent ($p > .05$). There was a large main effect of parent utterance type, $F(1.239, 107.826) = 2514.56, p < .001, \eta_p^2 = .967$. Pairwise comparisons with the Bonferroni correction revealed that parents were significantly ($p < .001$) more likely to provide confirmations ($M = .74, SD = .08$) as an immediate response to children's memory information compared to elaborations ($M = .16, SD = .06$) or repetitions ($M = .02, SD = .02$) (see Table 6). Parents were also significantly ($p < .001$) more likely to provide elaborations following children's memory responses compared to repetitions.

3.4.2. Parent replies to child placeholders. Second, we were interested in parents' replies to child verbal placeholders. We were interested in the contingent probabilities of parents' elaborative, repetitive, and confirming responses to child placeholders.

A 3 x 2 repeated measures ANOVA with utterance types (ELAB, REP, CONF) and gender of parent (mother vs. father) as within-subjects measures, and the contingent probabilities of parent's replies to child placeholders as the dependent variable was conducted. There was no main effect of parent gender ($p > .05$). There was a large main effect of utterance type, $F(1.707, 148.476) =$

96.738, $p < .001$, $\eta_p^2 = .526$. Pairwise comparisons with the Bonferroni correction revealed that parents were significantly ($p < .001$) more likely to provide elaborations ($M = .49$, $SD = .23$) following child placeholders compared to repetitions ($M = .11$, $SD = .12$) or confirmations ($M = .19$, $SD = .16$) (see Table 6). Also, parents were significantly ($p = .003$) more likely to provide confirmations as a response to child placeholders compared to repetitions.

3.4.3. Summary. In sum, when children provided memory responses in the parent-child conversations, parents were most likely to respond to them with positive confirmations. When children provided placeholders as an indication of lack of memory, parents were most likely to respond to them with elaborations. Notably, no main effect of gender of parent or gender of child was detected, indicating that mothers and fathers responded to their daughters' and sons' memory responses and placeholders in similar ways.

Table 6. Means (Standard Deviations) of the Contingent Probabilities of Parents' Replies to Children's Memory Responses and Place Holders.

Parents' Replies	Replies to Children's	Replies to Children's
	Memory Responses	Verbal Placeholders
Elaborations	.16 (.06)	.49 (.23)
Repetitions	.02 (.02)	.11 (.12)
Confirmations	.74 (.08)	.19 (.16)

4. Discussion

The present study investigated the direct, reciprocal influences of parent and child utterance types on each other within the reminiscing conversation. Using a micro-analytic approach, we were able to illuminate the unique and direct effects of parental elaborative, repetitive, and confirming utterance types on children's autobiographical memory information. Therefore, the present study adds to the reminiscing literature by means of reviving the overlooked micro-analytic approach, which allowed the examination of the mechanisms of the high elaborative reminiscing style on children's autobiographical remembering.

4.1. Reconsidering the Elaboration-Repetition Dichotomy

Despite the fact that the high elaborative reminiscing style has consistently been linked to positive child memory outcomes in the reminiscing literature (Fivush et al., 2006; Waters, Camia, Facompré, & Fivush, 2019), surprisingly little attention has been devoted to investigating which elaborative utterance types are driving the positive effects on children's memory responding. Moreover, although parental repetitions have generally been less likely to be related to children's autobiographical memory information (e.g., Reese & Fivush, 1993), previous studies have paid less attention to the different repetitive utterance types (i.e., open-ended repetitive questions, closed repetitive questions, and repetitive statements) in their analyses, which has left the question open whether some of the repetitive utterance types may be more likely to facilitate children's memory information than others.

The findings of the present study *did* indeed confirm the importance of parental elaborations, but also highlighted the fact that not *all* elaborative utterance types were equally effective in facilitating memory responses from the children. Thus, when the elaborative and repetitive utterances were analyzed as composite scores of open-ended questions, closed questions, and statements, elaborations were more likely than repetitions to be followed by memory responses by

the children. However, when taking a more thorough look into the different types of elaboration and repetition utterances (i.e., the open-ended questions, closed questions, and statements), a more nuanced picture emerged. Children were more likely to provide memory information directly following parental *open-ended* elaborative *and* repetitive questions compared to elaborative and repetitive closed questions and statements. The open-ended repetitive questions were in fact more likely to be followed by memory responses by the children than the elaborative closed questions and statements. These findings thus echo the results found in the recent meta-analysis by Wu and Jobson (2019), in which parental open-ended elaborative questions, but not elaborative closed questions or statements, were reliably associated with children's memory provisions.

However, the analyses of the contingent probabilities of children's verbal placeholders to parental elaborations, repetitions, and confirmations revealed that parental repetitions were most likely to be followed by verbal placeholders by the children. Thus, children were most likely to respond to repetitive prompting with an utterance indicating lack of memory. When inspecting the repetitions as a whole, repetitive utterances were overall less likely to encourage the child's participation in the memory conversation.

Notably, these results would have been beyond scientific scrutiny, if we had chosen the traditional path in the reminiscing literature in which the analyses are exclusively based on the means of both potentially affecting measures (e.g., frequencies, ratio scores, or global scale-scores of elaborations) as well as outcome measures (i.e., child memory information). These findings highlight the importance of investigating the construct of elaboration—but certainly also the construct of repetition—in a more nuanced and detailed manner as the function of the different elaborative and repetitive questions and statements appears to differ substantially (cf. Fivush, 2019b; Fivush et al., 2006; Haden et al., 2009; Wu & Jobson, 2019).

Hence, when directing the focus on the mechanisms of the parent utterance types, which most effectively facilitated memory responses from the children, the findings of the present study indicated that the *open-ended questions*—elaborative or repetitive—to a high degree invited and encouraged the child to provide his or her contribution to the conversation. The closed questions and statements, on the other hand, rather provided aspects of the parent's own version of the past event to the shared narrative (Haden et al., 2009). It may not be surprising that the closed questions and statements were less likely to be followed by memory information by the children in the present study as previous studies have indicated that children are less likely to remember information elaborated on only by the mother (Ornstein et al., 2004). Thus, by inviting the children to provide their own pieces of memory information by means of open-ended questions, the parents allowed their children to translate their previous experiences into words (Reese, 2018). Consequently, the *joint* elaboration of past experiences appears to be highly facilitative of children's autobiographical remembering as parents and children are jointly making sense of the past experience which consequently leads to more coherent representations of that particular event (Ornstein et al., 2004; Reese, 2018). Moreover, the use of words in forming the mental representations of the autobiographical memories allows the child to use words as memory cues for later retrieval (cf. Fivush, 2019a; Fivush, 2019b; Leyva et al., 2020).

The finding that the open-ended repetitive questions were facilitative of children's memory information in the present study is novel in light of the fact that parental repetitions have generally been negatively related to children's autobiographical memory information (e.g., Reese & Fivush, 1993). However, some of the previous studies may have failed to find positive relations between parental repetitions and children's memory information due to the traditional analysis method where all parental repetitive utterances are collapsed into a composite score. Intriguingly, in the intervention study by Reese and Newcombe (2007), mothers trained in elaborative reminiscing

increased their provision of open-ended repetitive questions along with their open-ended elaborative questions although the training had only focused on the latter. Subsequently, children of mothers trained in the elaborative style provided more memory information compared to children of mothers in the control group. Since the elaborative training by Reese and Newcombe (2007) has now shown long-term positive effects on adolescents' autobiographical memories (Reese et al., 2020), it is plausible that some of the positive effects of elaborative training may be accounted for the increase in the repetitive open-ended questions by the mothers as well.

Moreover, repetitions may function differently depending on the cultural context where the reminiscing studies are conducted. For instance, in the study by Neha et al. (2020), parental repetitions were related to children's early academic skills (i.e., literacy, numeracy, narrative, and self-regulation skills) in Maōri families, which could suggest that parental repetitions functioned as a tool for highlighting and summarizing information, which consequently led to better learning outcomes. In collectivistic cultures, where parents have been shown to use more repetitions overall (Sahin-Acar & Leichtman, 2015; Schröder, Keller, Kärtner, et al., 2013; Wang et al., 2000), the function of repetitions may be to teach children moral lessons of how their past behavior affected others (Wang, 2013), whereas parents' extensive use of repetitions in individualistic Western cultures may have an interrogative character (Neha et al., 2020). Certainly, more research is needed in order to be able to investigate whether the open-ended repetitive questions have a positive effect on children's autobiographical remembering in other cultural contexts as well.

Hence, in light of the present findings, it may be less important for children's autobiographical remembering whether the parent's open-ended questions are elaborative or repetitive as such. What may be more important is whether the parents solicit the children's *own* responding to the memory conversation. The positive effect of parental open-ended questions on children's memory responding thus echoes the findings from literature on children's language

development. Overall, parents' responsive communication style which encourages, elicits, and expands the children's own vocalizations in parent-child conversations has been shown to be highly effective for children's language development (Girolametto & Weitzman, 2002; Hoff, 2006; Justice, Jiang, & Strasser, 2018; Tamis-LeMonda, Bornstein, & Baumwell, 2001). Parents' and teachers' communication-facilitating behavior—for instance by means of open-ended questions—has been strongly related to children's language development (Justice et al., 2018). Thus, when children are encouraged to actively take part in a conversation—whether it is an everyday conversation, a reminiscing conversation, or a book-reading context—children are given the opportunity to vocalize their thoughts (Deshmukh et al., 2019; Reese, 2018; Tamis-LeMonda et al., 2001; Whitehurst et al., 1988). When parents or teachers further expand their children's contributions with elaborations and verbal labels, children's memory and language skills are additionally facilitated (Justice et al., 2018; Reese, 2018). In this way, children's language and autobiographical memory development go hand-in-hand (Reese, 2009, 2018).

4.2. The Importance of Confirmations

Children were equally likely to provide memory information following parental confirmations as following parental elaborations, as was in fact also the case in the original study by Reese et al. (1996). This finding is not surprising given the existing evidence on the positive associations between the parental confirmations and elaborations, on the one hand, (Farrant & Reese, 2000; Reese & Fivush, 1993), and between the parental confirmations and children's memory information, on the other hand, (e.g., Schröder, Keller, Kärtner, et al., 2013). Due to their conceptual overlap, some studies include parental positive confirmations as a part of the composite score of elaborations (e.g., Cleveland et al., 2007; McDonnell, Valentino, Comas, & Nuttall, 2016; Schröder, Keller, & Kleis, 2013). Notably, parental confirmations have been shown to be particularly important in the Northern European (i.e., Germany and Belgium; Töugu et al., 2011;

Van der Kaap-Deeder et al., 2020) and in Scandinavian samples (i.e., Denmark and Sweden; Svane, Kingo, & Krøjgaard, in press; Tõugu et al., 2011). In these samples, parental confirmations were related to children's memory information, while parental elaborations peculiarly were not (Schröder, Keller, Kärtner, et al., 2013; Tõugu et al., 2011; Van der Kaap-Deeder et al., 2020). However, a more detailed examination of the moderating factors is needed before being able to draw conclusions on why parental confirmations may be linked to children's memory information in these cultures, while elaborations are not. As already pointed out throughout the current paper, the differences in the analyses methods (e.g., use of frequencies vs. ratio scores) may contribute to the disparate findings of the magnitude of relationships between parental variables and child outcomes across studies.

Nevertheless, the present findings suggest that parental elaborations alone do not appear to be sufficient in eliciting children's memory provisions during reminiscing. While it is important beyond any doubt to provide elaborative (or repetitive) open-ended questions, which essentially invite the child to provide information of his or her version of the event, it may be equally important to confirm this information. By positively acknowledging the child's own memory provisions, parents increase the engagement of the child to participate in the memory conversation (Cleveland & Reese, 2005), and highlight the importance of the child's own memory information to the shared narrative (cf. Fivush et al., 2006).

When directing the focus on parents' replies to children's memory provisions, we found parents to be more likely to respond to children's memory provisions with confirmations than with elaborations or repetitions. Notably, in the original study by Reese et al. (1996), parents were more likely to provide elaborations directly following children's memory responses. However, it is highly likely that the slightly different procedure of counting the immediate responses by the parents in the current study contributed to the present findings (see chapter 3.2. Preparing the Data for

Contingency Analyses). Additional analyses are needed in order to examine whether parental confirmation were immediately followed by elaborations. Future studies could, for instance, investigate parents' utterance combinations within the same conversational turn (e.g., confirmation-elaboration combinations). When children indicated a lack of memory with a verbal placeholder (e.g., "*I can't remember*"), parents were more likely to provide elaborations than repetitions or confirmations, as was the case in the study by Reese et al. (1996) as well. Thus, parents were most effectively able to maintain the interactive nature of reminiscing and to motivate the children to participate in the conversation by providing confirmations of children's own memory provisions, and by elaborating on the event in topic when children were not able to provide memory information. Future longitudinal studies should more carefully investigate the long-term effects of parental confirmations vs. elaborations on children's autobiographical memory performance. It is possible that the confirmations increase the engagement of the child to partake in the reminiscing conversation here and now, while the parental elaborations may have a more long-lasting effect on children's autobiographical memory (see similar arguments in Fivush et al., 2006).

4.3. Gender Differences in Reminiscing?

The present study was able to contribute to the limited research on gender differences within parent-child reminiscing by including fathers from $N = 88$ families. The present findings suggest that mothers and fathers—at least in individualistic Western cultures—may be more similar than different when reminiscing with their preschoolers about the shared past (see also Grysman & Hudson, 2013; Noel et al., 2019; Reese & Fivush, 1993; Svane, Kingo, & Krøjgaard, in press, and Svane, Zaman, Merrill, Krøjgaard, & Fivush, in preparation, Van der Kaap-Deeder et al., 2020; Waters et al., 2019). In fact, mothers and fathers, on the one hand, and girls and boys, on the other hand, did not differ from each other with respect to the mean frequencies of parental reminiscing variables, or with respect to children's memory information. Moreover, the contingency analyses of

parents' and children's utterance types on each other did not reveal any gender differences.

However, provided that the *function* of parental reminiscing utterances is the same, then the effect of these utterances should be the same irrespective of the provider of these utterances. The results of the present study supported this claim, as girls and boys were equally likely to provide memory information following parental utterances (elaborations, repetitions, confirmations) irrespective of the gender of the parent (mother and father). It is possible that the more gender egalitarian cultural values in Denmark, where the present study was conducted, may have contributed to the lack of gender differences in the context of reminiscing. However, as previous studies have found mothers and fathers to differ when they have specifically been asked to reminisce about emotional past events (Fivush et al., 2009; Zaman & Fivush, 2013), it is possible that gender differences may be more prominent when the emotional content is the focus of the analysis, rather than the structural aspects of reminiscing. Future studies should preferably include fathers in order to understand the unique or complementary role fathers play in the development of children's autobiographical memory alongside with mothers.

4.4. Limitations

The present study had some limitations. The sample consisted of homogenous highly educated middle-class families, which is why the results of this study may not be applicable to samples with a lower SES. Similarly, as already indicated in the discussion, there is variation in the way parents reminisce with their children across cultures, and therefore, the function of, for instance, open-ended elaborative or repetitive questions may differ with respect to the cultural context. Finally, the micro-analytic approach deployed in the present study may be optimal when the primary outcome is children's autobiographical memory provisions, while it is less optimal when investigating children's socio-emotional outcomes (i.e., emotion knowledge or regulation skills). Therefore, the global scale-based scores of elaborations, that is, the *relative* use of

elaborations accompanied with other positive behaviors (i.e., warm and affectionate tone) may be a preferable tool for investigation of the socio-emotional outcomes in children, as argued by Leyva et al. (2020). Therefore, future studies should more carefully investigate the unique as well as the shared effects of the verbal and affective strategies on children's autobiographical memory development.

4.5. In a Broader Perspective

In conclusion, the present study has made a theoretical and empirical contribution to the reminiscing literature by examining the reciprocal, direct influences of parent and child utterance types on each other with the aim of the micro-analytic approach, which has been overlooked in the reminiscing literature during the past two decades. The present study has highlighted the importance of investigating the different elaborative and repetitive utterance types (i.e., open-ended, and closed questions, and statements) separately, as these appear to serve disparate functions in the context of reminiscing. In particular, the open-ended elaborative and repetitive questions, as well as confirmations, were most effective in facilitating memory responses from the children. Therefore, the present findings highly concur with the characterization of parent-child reminiscing as a *collaborative* process of remembering (Reese, 2009, 2018). Through the reciprocal verbal interplay, the parent and the child jointly create a shared narrative of a past event, which shapes and enhances children's mental representation of the given event (Fivush, 2019b; Reese, 2018). The collaborative process of verbally organizing past experiences into coherent memory representations essentially make up the children's developing autobiographical memory system (Nelson & Fivush, 2004; Reese, 2009).

Despite the fact that the micro-analytic contingency analyses are time-consuming and comprehensive, future reminiscing studies should nevertheless considerer incorporating them more frequently as they can illuminate aspects of parent-child reminiscing, which would otherwise not be

possible using the traditional analysis strategies. Future studies could, for instance, re-analyze already existing datasets using the micro-analytic approach described in the present study in order to acquire a broader understanding of the direct effects of parents' elaborative, repetitive, and confirming utterance types on children's autobiographical memory information across a broader range of cultural contexts. Depending on the findings of future studies using the same methodology as in the present study, the term "high elaborative" reminiscing style may need revising so it more optimally embraces the positive role of parental open-ended elaborative *and* repetitive questions, as well as positive confirmations, on children's autobiographical memory.

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Appendix 1. An example of a reminiscing conversation with utterance codes and four examples of Excel formulas used in detecting instances where children reply to specific parent utterances (OPEN-EL, CONF) with a child memory reply (CHILD-MEM), and parents reply to child memory responses (CHILD-MEM) with a specific utterance (CONF).

Parent/Child	Transcription	Elaboration Code	OPEN-EL > CHILD-MEM	CONF > CHILD-MEM	CHILD-MEM > CONF
			=IF(AND(G2="OPEN-EL";G3="CHILD-MEM");1;0)	=IF(AND(G2="CONF";G3="CHILD-MEM");1;0)	=IF(AND(G2="CHILD-MEM";G3="CONF");1;0)
P	Can you remember when we visited grandpa?	CLOSE-EL	0	0	0
C	Mmh.	C- CONF	0	0	0
P	And Simon and you were playing at the race track?	STATE-EL	0	0	0
C	Yes.	C- CONF	0	0	0
P	What happened then?	OPEN-EL	1	0	0
C	We got mad.	CHILD-MEM	0	0	1
P	Did you get mad?	CONF	0	0	0
C	Yes.	C- CONF	0	0	0
P	Why did you get mad?	OPEN-EL	1	0	0
C	Because Simon said he always wanted be in the lead.	CHILD-MEM	0	0	1
P	Did he say he always wanted to be in the lead?	CONF	0	0	0
C	Yes.	C- CONF	0	0	0
C	He can't do that every time.	CHILD-MEM	0	0	1
P	He can't do that every time?	CONF	0	0	0
C	No.	C- CONF	0	0	0
C	Because he always says that.	MR	0	0	0

P	Does he say he always wants to be in the lead?	CONF	0	0	0
C	Yes.	C- CONF	0	0	0
P	And what happened at grandpas'?	OPEN-EL	1	0	0
C	Then you got mad.	CHILD-MEM	0	0	1
P	Yes.	CONF	0	0	0
P	We got mad at you.	CONF	0	0	0
C	Yes.	C- CONF	0	0	0
P	Yes.	CONF	0	0	0
P	How did you feel?	OPEN-EL	1	0	0
C	Not well.	CHILD-MEM	0	0	1
P	Not so well.	CONF	0	0	0
P	Because Simon always wanted to be in the lead?	CLOSE-REP	0	0	0
C	Yes.	C- CONF	0	0	0
C	And because you got mad at us.	MR	0	0	0
P	Did you get upset?	CLOSE-EL	0	0	0
C	Yes.	C- CONF	0	0	0
P	How do you feel when you get upset?	OPEN-EL	1	0	0
C	I feel bad.	CHILD-MEM	0	0	1
P	Is it bad?	CONF	0	0	0
C	Yes.	C- CONF	0	0	0
P	Can you remember anything else from the race track?	CLOSE-EL	0	0	0
C	We drove fast.	CHILD-MEM	0	0	0