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The Role of Maternal Verbal, Affective, and Behavioral Support in Preschool Children's Independent and Collaborative Autobiographical Memory Reports

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Abstract

The authors investigated the individual and relative contributions of different aspects of maternal support (i.e., verbal, affective, and behavioral) in relation to children's collaborative and independent reminiscing. Four-year-old children discussed personal past experiences with their mothers and with a researcher. In collaborative recall with their mothers, children's narrative behavior was regulated best by maternal use of specific elaborative components, such as affirmations. In contrast, in children's independent recall, affective and behavioral qualities of maternal support were related to children's memory performance. Specifically, during free-recall, the dimensions of quality of instruction and respect for autonomy were significant predictors of children's narratives. In the context of prompted recall (supported by *wh*-questions), respect for autonomy was the only significant predictor of children's involvement in the conversations and of the amount of unique content they provided. The findings suggest that different aspects of maternal behavior facilitate different components of children's reminiscing skills, which children might apply depending on demands of the autobiographical memory conversation.

At a general level, autobiographical memories are memories of personally experienced events that happened at a specific time and place. Children as young as 3 to 4 years of age show marked individual differences as they report their autobiographical memories. One of the important factors that contributes to the variability is the quality of support children receive from their conversational partners, especially their mothers (Nelson & Fivush, 2004). Socialization practices, specifically mother-child interactions during reminiscing, provide the foundation for the development of skills necessary for children to create their own narrative life story (Fivush, Haden, & Reese, 2006). To date, research has focused on the verbal support that mothers provide in these past-event conversations. In the present study, in addition to maternal verbal support, we assessed the affective and behavioral qualities of maternal support during reminiscing interactions. We explored the separate and joint contributions of maternal verbal elaboration and of affective and behavioral support in relation to children's independent (with an experimenter) and collaborative (with their mothers) reminiscing.

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The perspective guiding this research is derived from a social-cultural developmental theory (Nelson & Fivush, 2004). It maintains that it is in the context of interpersonal interactions that children acquire the skills necessary to create and share autobiographical memories. Through collaborative reminiscing, children learn to be competent conversational partners, defined as being able to retrieve relevant information about specific past episodes, present the information in understandable manner, and give personal, autobiographical accounts of their experiences. Moreover, through collaborative reminiscing, children learn the value of sharing their memories with others as well as an appreciation of telling their own stories and of listening to the memories of others.

There is substantial variability in the quality and quantity of reminiscing experiences in which children participate from an early age. Differences in the reminiscing environment affect the way children remember and talk about their personal past experiences (McCabe & Peterson, 1991; Reese, Haden, & Fivush, 1993). For example, across many studies, verbal elaboration has emerged as a critical dimension of maternal reminiscing style. Children whose mothers incorporate more elaborative details in their talk develop more advanced narrative skills relative to children of mothers who are less elaborative (Bauer & Burch, 2004; Fivush & Fromhoff, 1988; Hudson, 1990; Reese & Fivush, 1993). Moreover, mothers who use a high-eliciting reminiscing style that is characterized by many open-ended *wh*-questions help their young children learn the skills essential for joint reminiscing and also encourage them to practice these skills (Farrant & Reese, 2000; Haden, Ornstein, Rudek, & Cameron, 2009). The special importance of open-ended elaborative questions for children's autobiographical memory emphasizes its social nature and functions: Mothers are actively inviting their children to co-construct the personal past, and to work together on creating a shared history. By reminiscing with their mothers in a supportive context of co-construction, children gradually prepare themselves to create and report their own narratives in the context of conversations with unfamiliar adults (Fivush et al., 2006).

Mother-child early reminiscing conversations vary not only in the richness and completeness of narratives created but in the level of positive validation that mothers show for their children's contributions. This aspect of maternal reminiscing has been assessed in two different ways: in terms of the frequencies of utterances that affirm children's responses and in terms of the degree to which mothers follow in on children's responses. When mothers affirm children's previous responses by repeating and positively evaluating them, they support children's interest in ongoing conversations and thus facilitate their concurrent recall and involvement in the talk. The positive effect of maternal affirmations has been found to be stronger for younger children, for whom the task of reminiscing is especially challenging (Haden et al., 2009; Reese et al., 1993).

The extent to which mothers follow children's leads in conversations and otherwise signal their interest in their children's perspectives also has been found to relate to autobiographical memory performance. Cleveland and Reese (2005) conceptualized variability along this dimension in terms of autonomy support. They rated each maternal verbal contribution within a mother-child conversation from “controlling” to “autonomy supportive,” depending on whether it negated or changed the child's previous contribution, or validated or continued it. For 40-month-old children, a maternal style high on use of open-ended elaborative questions and following the child's lead was most beneficial in supporting children's contributions to the conversations. Importantly, the dimension of autonomy support was predictive of children's unique memory contributions only during mother-child conversations. In the context of memory conversations with an experimenter, maternal autonomy support predicted children's engagement in the conversations but was not systematically related to the quality or quantity of their independent narratives (Cleveland, Reese, & Grolnick, 2007). For older children (65-month-olds), none of these relations was

observed. In sum, some components of maternal reminiscing style relate to children's enthusiasm in sharing their memories whereas others more strongly support the development of skills specific to remembering personal past events. In addition, the patterns of relations between maternal reminiscing style and children's performance vary as a function of children's proficiency in reminiscing and the level of demand imposed by the reminiscing context.

One notable feature of the majority of research on the social context in which autobiographical memory develops is the reliance on quantitative measures obtained from transcripts of mother-child conversations. Quantification of utterance types in a conversation provides rich information concerning the content and organization of mother-child co-constructed narratives. However, many characteristics of mother-child reminiscing interactions are difficult if not impossible to capture in written transcripts. Limited research within the maternal reminiscing literature (Fivush & Vasudeva, 2002; Laible & Thompson, 2000) and a great deal of research within the mother-child interaction literature (De Wolff & van Ijzendoorn, 1997; Maccoby, 1999) point to specific aspects of reminiscing interactions that may be especially difficult to assess from transcripts alone, but which may be critical, including emotional attunement between conversational partners, enthusiasm for sharing memories with each other, and the timing of maternal responsiveness to the child's needs during the conversation. The effectiveness of an observational approach to assessing these and other qualities of maternal behavior in relation to children's competence has been consistently demonstrated in the developmental literature, especially in the context of studies of maternal sensitivity in early childhood (Ainsworth, Blehar, Waters, & Wall, 1978; Sroufe, 1985; Sroufe, 1995). Using observational ratings of mothers' quality of assistance, Sroufe and colleagues found that mothers who were warm and supportive, respectful of children's autonomy, structured the task carefully, provided helpful cues, and set consistent limits, had children who were persistent, enthusiastic, flexible, and resourceful in working on a challenging problem-solving task. The relations between maternal affective and behavioral support and children's competence were evident concurrently and over time (Arend, Gove, & Sroufe, 1979; Erickson, Sroufe, & Egeland, 1985; Matas, Arend, & Sroufe, 1978; Weinfield, Ogawa, & Egeland, 2002).

In the present study we extended previous research on the social context of reminiscing by assessing not only quantitative variability in mothers' verbal behaviors (Reese et al., 1993), but also variability in observed qualities such as emotional attunement between conversational partners, enthusiasm for sharing memories with each other, and the timing of maternal responsiveness to the child's needs during the conversation. We selected an observational method that has been reliably used to assess the quality of parent-child interactions during early childhood in the context of problem-solving and structured teaching tasks (Egeland, Weinfield, Hiester, Lawrence, Pierce, Chippendale, & Powell, 1995). We selected four rating scales from Egeland et. al. (1995) on the basis of their conceptual similarity to existing components of maternal reminiscing style assessed verbally (Fivush, et. al., 2006). *Respect for autonomy* captured the extent to which mothers signal their interest in their children's perspectives and is conceptually similar to the autonomy support dimension, defined by Cleveland and Reese (2005). *Quality of instruction* and structure and consistency of *limit setting* captured maternal abilities to structure the task of reminiscing in a manner that was effective and helpful for children's remembering. These two observational dimensions are related to the construct of elaborative structure in the form of elaborative statement and questions. Finally, the dimension of *supportive presence* captured mothers' emotional support to children during reminiscing.

It is important to note that although the observational scales are conceptually similar to the elements of maternal elaborative reminiscing, they capture features of the conversations not

conveyed in narrative alone. The most salient difference between the different types of measures is that the observational scores take into account maternal responsiveness to the needs of the child as the conversation unfolds. For example, a narrative-based assessment of the support that mothers provide will consider the number of elaborative questions and statements she makes over the course of the conversation. Observational measures of the analogous constructs of quality of instruction and limit setting will consider the timing and pacing of the cues as a function of the child's abilities and needs. Similarly, a high score on the observational scale of respect for autonomy might be earned by a mother who simply grants enough time for her child to respond to prompting. The critical difference is that in narrative-based quantitative measures, the same behavior produced by two different mothers would be scored in precisely the same manner regardless of how well it satisfied the needs of the child. In contrast, the observational measures take into account the needs of the child and whether the maternal behavior was responsive and supportive of them. A major purpose of the present research was to test the individual and relative contributions of these different aspects of maternal support (i.e., verbal and affective and behavioral) in relation to children's collaborative and independent reminiscing.

We assessed maternal verbal and affective and behavioral qualities in mothers and their 4-year-old children. We focused on 4-year-olds because although children of this age are able to provide relatively coherent accounts of their past experiences, the task of reminiscing remains challenging for them, rendering them dependent on external support. We examined how maternal support relates to children's narratives during collaborative memory conversations with their mothers and during independent conversations with experimenters. Moreover, the experimenter-child interview was divided into two periods: a relatively unsupported free recall period during which only general encouragement was provided (e.g., "*Tell me more"*) and a highly structured, prompted recall period during which we posed specific *wh*-questions. Although the task of reporting personal memories is similar across collaborative and independent contexts, each of these contexts places different demands on children's emerging abilities to report about their past experiences. For example, collaborative recall might be less demanding because children can rely on their mothers for structural and motivational support. In contrast, independent free recall with an experimenter is a demanding, test-like condition, requiring children to search and organized their memories with little external support. We hypothesized that the pattern of relations between the different measures of maternal support and children's narratives would vary as a function of the demands imposed by the context of recall and the different component abilities required to meet each demand.

In sum, we coded mothers' behavior during the past-event conversations independently for the affective and behavioral qualities of support, and for the frequencies of elaborative contributions. We predicted that both type of measures of maternal behavior would relate to children's collaborative recall. Based on past research with children of similar ages (Cleveland & Reese, 2005; Reese, et al., 1993), we did not expect maternal verbal behavior to be associated with children's independent narratives. However, we expected that maternal observational ratings of support would relate to children's independent recall, and that the pattern of relations would vary as a function of the demands of the context (i.e., free recall vs. prompted recall).

Method

Participants

Participants were 30 children (16 female) approximately 4 years of age (*M* = 4.12 years, *SD* = 30 days, range = 3.98–4.23 years). Initially, 35 children were drawn from a pool of families who had expressed interest in participating in research at the time of their children's

births. Five children were excluded from the analyses because they (a) did not complete all of the tasks of interest (n = 3), (b) participated with their father (n = 1), and (c) had speech problems that made their verbal responses unintelligible (n = 1). The participants were non-Hispanic and all but one was Caucasian. They came from families of middle- and upper-middle class socioeconomic status. Seventy-two percent of the participants' mothers had a college or graduate degree. Informed consent to participate was obtained at the beginning of Session 1. At the end of Session 2, children received a small toy and parents were given a gift certificate.

Materials and Procedure

Two approximately 1-hour testing sessions were spaced one week apart (M = 7 days; range = 6-7 days). All sessions were videotaped. Participants completed several tasks at each session. For present purposes, we focused on (a) the mother-child conversations that occurred at the beginning of Session 1, and (b) the autobiographical memory interviews between children and experimenters that were distributed across the sessions, in order to avoid fatiguing the children. Children discussed two events with an experimenter after the mother-child conversations at Session 1, and another two events at the beginning of Session 2. A language assessment was administered during Session 1. Four female experimenters administered all tasks; children were tested by the same experimenter at both sessions. Task procedures were outlined in a written protocol, and the experimenters regularly reviewed and discussed videotaped sessions to ensure protocol fidelity.

Children's language—Children's language was measured using four subscales of the Test of Verbal Comprehension taken from Woodcock-Johnson Test of Cognitive Abilities (Woodcock, McGrew, & Mather, 2001): picture vocabulary, synonyms, antonyms, and verbal analogy. The four subscales were combined into a single measure of children's language ability.

Autobiographical memory interviews—Approximately four months prior to Session 1, parents received a calendar and instructions to record at least one semi-unique event per week in which parents and children participated together. At the beginning of Session 1, the experimenter randomly selected eight events from the calendar to be discussed with the children. Four of the events were randomly assigned to be discussed with mothers and four with the experimenter. Most of the events discussed with each partner were positive or neutral. Examples of the events included family outings (e.g., visiting relatives, having a birthday party, staying in a cabin, and buying a new car), and school-related events (e.g., going to a field trip, having a picture day, and participating in a school concert).

The mother-child interview was designed to be an unstructured memory conversation permitting us to examine maternal variability in approaching the task. The experimenter introduced the task to the dyads by saying “We'd like you to talk about four of the events you wrote down before you came. Try to talk as normally as possible…as if you were at the dinner table or in the car.” The experimenter left the testing room during these mother-child memory conversations.

During the experimenter-child interviews, the experimenter introduced the task to the child by saying “Your mother wrote down some things that you did recently and it is my turn to talk with you about them. Since I wasn't there, it's up to you to tell me everything you can about each one. When you are finished, I will ask you a few questions.” During the interviews, mothers remained in the room but they were instructed not to help their children. Each event was introduced by saying, for example “Your mother told me that you went camping up North. Tell me everything you remember about the time when you went

camping." During the open-ended free-recall period, the experimenter used general prompts to elicit further recall (e.g., "What else happened?" or "Do you remember anything else about the camping?"). After the child stopped providing new information, the experimenter gave one additional piece of descriptive information (i.e., a cue provided by the mother before the start of the interview), saying for example, "Your mother also told me that you roasted some marshmallows there." After this cued-recall period, the experimenter asked 7 follow-up questions regarding specific aspects of the event. The scripted *wh*-questions queried each of the pieces of information at the level of the event (the "how" question was the only exception, querying at the level of an event detail) and were asked even if the child reported that type of information during free or cued recall. Example questions are: 1) "*Who* was with you when you went camping?" 2) "*What* did you do there?" 3) "*When* did it happen?" 4) "*Where* did you go camping?" 5) "*Why* did you go camping?" 6) "*How* did you set fire there?" and 7) "*How* did you feel?"

Narrative Coding and Data Reduction

The interviews were transcribed verbatim from videotapes by trained transcribers and then were checked for accuracy. The transcripts were coded separately for children's and mothers' verbal contributions.

Children's contributions—We used a coding scheme adapted from the literature (Reese et al., 1993; Van Abbema & Bauer, 2005) to code children's utterances for the overall extent of their involvement in the conversations and for the amount of specific information they provided. One individual first divided the narratives into propositional units, defined as a unit of meaning, typically centered on a single verb or verb phrase. Reliability of parsing estimated on 25% of the sample coded by another individual was 96% (range = 94-99%). The total number of propositions averaged across events provided the measure of *narrative length* and indicated children's overall talkativeness and involvement in the conversation.

Each proposition was assigned one or more content codes (novel information that had not previously been mentioned by the mother, experimenter, or the child), a participation code (a conversational placeholder that provided no specific new information or associative information), or no codes (repeated information). Content codes were derived as by Bauer, Burch, Scholin, and Güler (2007), and captured specific unique details about an event with references to the following types of information: *who* was involved in the event, *what* happened (activities, objects, and scenery), *where* and *when* the event occurred, *why* the event unfolded the way it did, *how-descriptions* of objectively available features of objects or events, and *how-evaluations* including subjective modifiers, references to feeling and thoughts, and intensifiers. A single proposition could receive multiple content codes. For example, the statement "Wyatt played trains in the basement" was considered as a single proposition with four content codes (who, what-action, what-object, and where). The total number of content codes, *total content*, averaged across events, provided the measure of the extent of the narratives. One individual coded all of the narratives. Reliability estimated on 25% of the sample coded by another individual was 91% (range = 89-93%).

Narrative length and total content were obtained for both the mother-child and experimenter-child interviews. For the experimenter-child interviews, children's memory reports were analyzed separately for *free recall* and *total recall* (responses produced during free recall plus responses after presentation of the additional cue and specific follow-up questions).

Mothers' verbal contributions—We used a coding scheme adapted from Reese et al. (1993) and Burch, Austin, and Bauer (2004) to code maternal utterances during the mother-

child autobiographical memory conversations. The scheme characterizes the degree to which the mothers elaborate and repeat aspects of the discussion, including evaluating and guiding their children's contributions. *Elaborations* were coded when mothers made a statement or posed a question that introduced an event for discussion, provided new information, or made a new request for information from the children. *Repetitions* were coded when mothers repeated the exact content or the gist of the information they provided previously or repeated a request for information. *Affirmations* were coded when mothers confirmed their children's contributions either explicitly (e.g., “you're right”) or by repeating their children's exact utterances. Additional categories were *deflections*, *associations*, *negations* of child's responses, *metamemory* comments, requests for *clarification*, *regulations* of the child's behavior, and *unclear* utterances. Only statement elaborations, question elaborations, repetitions, and affirmations were used in the present analyses. These conversation codes were selected because they were consistently identified as the most important elements of maternal reminiscing style in relation to children's autobiographical reports (Haden et al., 2009). Finally, *total talk* was the total number of all on-task maternal utterances, which provides a measure of maternal talkativeness.

A primary coder coded all 30 transcripts. Reliability estimated on 25% of the sample coded by another individual was 90% (range = 86-94%). The primary coder's judgments were used in all analyses.

Coding for Affective and Behavioral Qualities of Maternal Support

Maternal behavior during the mother-child interviews was coded from the videotapes. The coding scheme was adapted from Egeland et al. (1995) and Rahe (1984). The four rating scales used were: 1) *supportive presence* (including warmth and encouragement of the child's efforts); 2) *respect for the child's autonomy*; 3) ability to *structure* expectations for the child and set firm, consistent *limits*; and 4) *quality of instruction* (e.g., clarity of directions, timing of cues). Table 1 provides the description of the original scheme by Egeland et al. (1995) with adaptation to memory conversations, indicated in parentheses. The scale scores range from 1 to 6, with higher numbers indicating a greater presence of the construct. One individual coded all dyads.

Another individual independently coded 25% of the videotapes. Reliability between the coders was assessed through intraclass correlations for each scale: supportive presence = .92, respect for autonomy = .94, structure and limit setting = .90, and quality of instruction = .79. The primary coder's judgments were used in all analyses.

Results

Preliminary Analyses

Event selection—Following Fivush, Haden, and Reese (1995), for an event to be included in analysis, the child was required to provide at least two unique pieces of information about it (i.e., at least 2 content codes). All 30 children met the criterion for all four events talked about with their mothers. Twenty-nine children met the criterion for all four events talked about with the experimenter, and one child met the criterion for three of the four events. The conversational codes were averaged across all available events.

Children's language and gender—We evaluated the possibility that children's general language skills might relate to their autobiographical memory reports or to maternal behavior. None of the child or maternal narrative measures was correlated significantly with the language score. However, in the context of mother-child memory interviews, language scores significantly correlated with the measures of affective and behavioral qualities of

maternal support, except supportive presence; correlations ranged from .40-.48, $p < .05$. Accordingly, children's language was statistically controlled for in all analyses involving measures of affective and behavioral qualities of maternal support. We also examined possible relations with children's gender. Gender was not systematically related to any measures of children's narratives or to the affective and behavioral qualities of maternal support. The maternal verbal behavior of repetition was used significantly more often with girls than boys (*Ms* = 5.76 and 3.96, respectively): $F(1, 28) = 4.85$, $p < .05$, $\eta 2 = .15$. For further analyses, girls and boys were analyzed together.

Children's and Mothers' Contributions to Memory Conversations

Children's contributions—Descriptive statistics on children's narrative measures are provided in Table 2, Panel a. Both in terms of overall participation and provision of unique content, children's narrative scores during collaborative conversations with their mothers were significantly higher than their scores during the free-recall phase of the experimenter-child interviews, yet significantly lower than their total independent recall scores: *t*s(29) ranged between 2.57-6.57, *p*s < .001. Assessing children's individual consistency in their memory presentations across conversational contexts, we found that only total content scores during collaborative recall were related to the content scores during the free phase of the experimenter-child interviews, $r(30) = .35$, $p = .05$.

Mothers' conversation codes and affective and behavioral qualities of support —Descriptive statistics on maternal conversation codes and the affective and behavioral qualities of their support are provided in Table 2, Panel b. Raw and partial correlations among all maternal variables are shown in Table 3. Some maternal conversation codes were highly intercorrelated; the primary source of the intercorrelations was relations with total maternal talkativeness. With maternal talkativeness controlled, the pattern of relations changed: elaborative statements remained positively associated with affirmations but became negatively associated with elaborative questions and repetitions. The measures of the affective and behavioral qualities of maternal support also were intercorrelated. Spearman correlation coefficients between conversation codes and the measures of affective and behavioral qualities of support revealed that the use of elaborative statements and questions significantly related to the observational dimension of quality of instruction. However, these relations became non-significant with total talkativeness controlled. The number of affirmations was associated with all behavioral dimensions. Affirmations remained significantly associated with the dimensions of supportive presence and quality of instruction with the effect of total talk held constant.

Main Analyses

The main analyses focused on the pattern of relations between different types of maternal support and children's recall in each conversational context. First, we explored the relative contributions of maternal narrative categories and affective and behavioral measures on children's unique memory content and their overall involvement during the collaborative memory conversations. Second, we examined the pattern of relations between maternal support and children's independent narratives produced in the free-recall phase of the experimenter-child interviews. Third, we examined the relations between maternal support and children's total independent narrative contributions (free recall plus the prompted phase of the interviews). Correlation analyses were used to identify the measures of maternal support that were significantly associated with children's conversational contributions. Next, when applicable, we conducted multiple regression analyses examining the unique contributions of selected maternal variables on children's recall.

Collaborative recall—Table 4 presents the Pearson product-moment correlations (Panel a) and Spearman's rho correlations (Panel b) between the measures of children's recall and maternal conversation codes and the dimensions of affective and behavioral support. All measures of maternal behavior were positively associated with children's unique memory contributions (i.e., total content), except the use of repetitions. Children's overall participation (i.e., total propositions) was associated significantly with most maternal variables. Because the measures of children's performance and all maternal verbal conversation codes were highly related to total maternal talk, we reexamined the relations with the level of maternal talkativeness controlled. This allowed us to examine relations between mothers' *relative* use of individual categories of utterances and children's measures within the same mother-child dyads (for a similar approach, see Burch et al., 2004).

With maternal talkativeness controlled, among maternal conversational codes, only affirmations remained significantly associated with the children's collaborative recall measures. To assess further the ways in which different types of maternal support related to children's collaborative narratives, we tested a series of hierarchical linear regression models. Specifically, based on the correlational analyses just presented, we investigated: (1) the extent to which maternal affective and behavioral support variables added to the prediction of children's content and total propositions after taking into account maternal conversational codes, and (2) the predictive values of the individual maternal variables. Table 5 displays the results of the hierarchical linear regression analyses. Mothers' total talk and affirmations were entered at Step 1. Other conversational codes were not selected because they were not uniquely related to children's measures with maternal talkativeness controlled. Maternal conversational codes explained 72% of the variance in children's production of total content, and 64% of the variance in total propositions. Maternal affirmations made significant independent contributions in predicting children's total content and total propositions; total talk was a non-significant predictor in these models.

To determine whether the affective and behavioral qualities of maternal support predicted additional unique variance, we next added the four observational dimensions into the regression models (Step 2). The measure of children's language skills also was included at this step because it was associated with maternal behavioral variables (see *Preliminary Analyses*). The final models for total content and total number of propositions remained significant, yet the additional 8% and 10% of variance explained did not represent significant increases. In both final models, affirmations remained a significant predictor. In addition, structure and limit setting was a significant predictor of total content, and respect for autonomy was a unique independent predictor of total propositions. The language measure was not a significant predictor for either children's narrative measure. Although all predictors in the final models were intercorrelated, which could lead to an issue of multicollinearity, examination of the Variance Inflation Factor (VIF) for each predictor revealed that none of the variables had values of VIF that exceed 10, which is recommended as a cut off value for multicollinearity (Kutner, Nachtsheim, & Neter, 2004).

To further assess the relative contribution of mothers' conversational codes and behavioral measures of their support, we constructed additional regression models, changing the order of entering the predictors. When four dimensions of maternal affective and behavioral support were entered alone on Step 1, they explained 30% of the variance for children's production of content and 19% of the variance for total propositions. Two conversational codes, affirmations and total talk, entered next on Step 2, significantly contributed to the models, explaining an additional 40% of the variance in content, and 45% of the variance in total propositions.

Independent recall—Maternal conversational categories were not significantly associated with children's narrative measures either in the free-recall phase or for total independent recall (see Table 4, Panel a). In contrast, the dimensions of maternal behavioral support were significantly related to the children's independent narratives (see Table 4, Panel b). The pattern of relations was different for free and total recall. Specifically, respect for autonomy and quality of instruction were significantly associated with children's content and total propositions in the free-recall phase of the experimenter-child interview. We conducted multiple regression analyses to examine the extent in which the individual behavioral dimensions contribute to children's narratives during free recall. The best predictive models (i.e., statistically significant models that accounted for the most variance) for children's narrative measures at free recall were the models that included three dimensions of maternal behavioral support: respect for autonomy, structure and limits setting, and quality of instruction (see Table 6). The measure of children's language skills was included in the models as a control variable. These predictors explained 35% of the variance in total content, and 31% of the variance in total propositions.

The dimensions of respect for autonomy and quality of instruction made significant unique contributions to the models. Each point increase in maternal ratings for the dimensions of respect for autonomy and quality of instructions was associated with increases of 3.02 and 3.52 content codes in children's narratives, respectively. Similar results were observed for children's total propositions. Although the dimension of structure and limit setting did not correlate with children's conversation codes (see Table 4), we included it to the regression models because it was related to another predictor, quality of instruction, and thus might suppress some unaccounted error variance in that predictor (see Cohen & Cohen, 1983 for discussion of suppression in regression analyses). The effect of suppression was suggested by the significant increase in the standardized coefficient for quality of instruction after adding structure and limit setting in the models (from $\beta = .36$ to $\beta = .60$) as well as by an increase of the adjusted R^2 (from Adj. $R^2 = .25$ Adj. $R^2 = .35$).

To examine why the relations between quality of instruction and children's free recall became stronger when the dimension of structure and limit setting was included in the regression model, we divided our sample into two groups: a high-score group of mothers with the score of 6 on structure and limit setting ($N = 12$), and a low-score group of mothers with scores of 3, 4, and 5 on the dimension ($N = 18$). We then calculated correlations between quality of instruction and children's content and total propositions in the high-score and low-score groups. The correlation analysis showed that for mothers with high scores on structure and limit setting, ratings on quality of instruction were strongly related to children's content, $r(12) = .58$, and total propositions, $r(12) = .61$, $ps < .05$. In contrast, for mothers with lower scores on structure and limit setting, ratings on quality of instruction had weaker relations with their children's content, $r(18) = .41$, and total propositions, $r(18) = .25$, $ps > .05$. Thus, for mothers who were skillful in establishing high expectations for the compliance of their children, the quality of instruction they provided during the collaborative conversations was strongly associated with their children's independent narratives. The pattern was especially apparent in children's overall involvement during the experimenter-child interviews. Interestingly, all six mothers who had the highest scores for quality of instruction had the highest scores on the dimension of structure and limit setting.

The narrative measures of children's total recall were associated with only one dimension of maternal support, namely, respect for autonomy. This dimension was significantly correlated with the amount of unique content children produced during the entire experimenter-child interviews and was moderately related to children's overall involvement during the interviews, as measured by the total number of propositions (see Table 4, Panel b). The results of regression analysis with respect for autonomy and child language as predictors

showed that respect for autonomy was a significant predictor of children's content, $\beta = .46$, $t(27) = 2.41$, $p < .05$, and total propositions, $\beta = .39$, $t(27) = 2.00$, $p = .05$. Each point increase in maternal rating for the dimension of respect for autonomy was associated with an increase of 5.83 content codes and 6.32 propositions in children's total recall.

Discussion

We assessed maternal reminiscing style using two approaches. As in many prior studies (Bauer & Burch, 2004; Haden & Fivush, 1996; Reese & Fivush, 1993), we characterized maternal verbal contributions along dimensions of elaboration. We also extended the research by characterizing the affective and behavioral qualities of support that mothers provided along four observational dimensions. As expected, two rating scales, structure and limit setting and quality of instruction, were related to verbal elaborations but not to the maternal use of repetitions. The pattern of relations suggested that these maternal measures reflected a similar reminiscing construct of elaboration that captures variability in maternal ability to structure the task of reminiscing in an effective and helpful manner. The finding that the observational dimension of respect for autonomy was not related to elaborations in maternal narratives is consistent with previous findings by Cleveland and Reese (2005) and Cleveland et al. (2007), who viewed autonomy support as an independent component of maternal reminiscing style. The dimension of supportive presence was only moderately related to elaborations. Thus, mothers who were elaborative and showed their attentiveness to the conversation were not necessary more sensitive to their children's emotional needs. Other studies that measured mothers' verbal and nonverbal expressions of warmth (Fivush & Vasudeva, 2002), or mothers' positive affect (Laible & Thompson, 2000) also did not find direct links between maternal emotional support and elaborativiness. In contrast, findings from studies that considered maternal reminiscing style in a broader context of mother-child socioemotional relationships have found links between maternal elaborativiness and the quality of attachment, rather than to mothers' expression of emotional support during reminiscing. Specifically, mothers of securely attached children tend to be more elaborative and evaluative than mothers of insecurely attached children (Farrar, Fasig, & Welch-Ross, 1997; Fivush & Vasudeva, 2002; Newcombe & Reese, 2004).

One of the maternal conversational categories, affirmations, was positively associated with all observational dimensions of support, although with the level of maternal talkativeness controlled, the relations remained significant only for supportive presence and quality of instruction. Affirmations can be expressed in a number of different ways, such as through repetitions of children's responses (“We *did* stay late than night.”), confirmations of information provided by them (“Oh, true, yes, you're right.”), and evaluations of their contributions (“You did a good job in remembering that!”). Thus, affirmations may serve a number of important purposes, such as helping children feel comfortable during the conversations (an element of supportive presence), and keeping them engaged (a component of quality of instruction).

The present research also provided the opportunity to examine relations between maternal and children's behavior in different contexts (i.e., in collaboration with mothers and in independent free and prompted recall with an experimenter). Considering the collaborative nature of the conversations between mothers and children, it was not surprising to find a number of associations between the measures of maternal and child performance. As predicted, both the quantitative and the qualitative measures of maternal behavior were related to children's narrative measures. On its own, the observational dimension of maternal support explained a considerable amount of the variance in children's recall. However, the observational measures did not increase the amount of the variance explained when maternal verbal contributions were already taken into account. In contrast, the verbal conversational

measures made a significant contribution in explaining children's recall even after accounting for contributions made by the dimensions of affective and behavioral support. Thus, overall, we may conclude that variability in the frequencies of mothers' verbal contributions is a stronger predictor of the variability in children's collaborative recall, relative to differences in the observational ratings of maternal support. Consistent with prior research that has identified maternal affirmations as an important characteristic of a high-elaborative reminiscing style (Fivush et al., 2006; Peterson, Jesso, & McCabe, 1999), maternal use of affirmations was an especially powerful predictor of children's collaborative narratives.

Consistent with previous research (Cleveland & Reese, 2005; Farrant & Reese, 2000), maternal narrative behavior did not figure prominently as a predictor of individual differences in children's contributions during the experimenter-child interviews. In contrast, the observational ratings of affective and behavioral support explained variance in children's independent narratives. Under the most demanding conditions of the free-recall portion of the experimenter-child interviews, each point increase in maternal ratings for respect for autonomy and quality of instruction was associated with an increase of more than three more new pieces of information and total propositions per event in children's narratives. These results support our prediction that the aspects of maternal behavior captured by observing mother-child interactions are important in predicting children's reminiscing skills. For example, the observational dimension of quality of instruction assessed not only how much new information the mother offered to help her child remember but also whether the information was offered in a manner sensitive to this particular child's needs. Sensitivity might be displayed in terms of the timing and pacing of cues provided, the clarity of introduction, and/or graded increases in support as the conversation developed. Interestingly, the positive effect of quality of instruction varied as a function of another aspect of maternal behavior, structure and limit setting. The dimension of structure and limit setting focused more on the issues of children's compliance during the conversations rather than on facilitating children's remembering. However, when mothers were skillful in establishing high expectations for compliance from their children, the effect of quality of instruction on children's narrative skills was stronger, especially in terms of their overall involvement during the experimenter-child interviews.

The effect of maternal quality along the dimension of respect for autonomy on children's narratives was observed in each reminiscing context but the pattern of relations was different. For collaborative recall, maternal respect for autonomy uniquely predicted only children's overall involvement in the conversations; it did not predict their contributions of specific details. This finding is consistent with findings by Cleveland and colleagues (2007), who proposed that parental autonomy support primarily affects children's interest in reminiscing rather their memories about the past experiences. On the other hand, respect for autonomy, together with the quality of instruction, were important predictors of both the content that children provided and their engagement during the free-recall phase of the interviews. Moreover, in the context of prompted recall, respect for autonomy was the only dimension of maternal affective and behavioral qualities that predicted children's narrative measures. Thus, children who experienced higher levels of respect for their autonomy seem to be the most responsive to and benefit the most from the prompted *wh*-questions provided by a researcher. This might suggest that mothers who act in ways that recognize and respect the validity of their children's contributions, perspectives, and individuality facilitate children's intrinsic motivation to participate in a memory conversation, even with an unfamiliar partner. These children also may feel more confident in presenting their own “voice” when they are asked to tell about their personal experiences (for a similar argument see Fivush, 2004).

One dimension of maternal support that was not related to children's narratives was the quality of maternal supportive present. A possible explanation for this null finding is the measures of children's outcome used. In the previous literature on the quality of mother-child interactions, supportive presence was associated with children's persistence, enthusiasm, and affective involvement during joint mastery-play activities (Matas et al., 1978; Sroufe, Egeland, & Kreutzer, 1990; Weinfield et al., 2002). Although some of these behaviors can be indirectly assessed through the narrative measures (i.e., persistence through narrative length), other behaviors, such as enthusiasm or affective involvement, might require additional, more fine-grained measures. Similar to the argument that a more complex view of maternal reminiscing style is needed to attain a deeper understanding of how social interactions during reminiscing shape children's autobiographical memory skills (Fivush et al., 2006), a more complex consideration of different components of children's reminiscing behavior also might be beneficial. Individual differences in the degree to which children are comfortable, eager, and excited to share what they remember about their past might be as important as how much and how well they remember the past.

There are some of limitations of the present study. First, the sample size of thirty mother-child dyads was small, especially for the variable-to-subject ratio in some statistical analyses. Second, all measures were obtained at one developmental time point, thus precluding strong conclusions regarding the direction of effects. Finally, there is limited generalization of the obtained results. Our participants were from predominantly middle-class families. The homogeneity of this sample was reflected in relatively low variability in the behavioral ratings of maternal support. The pattern of relations between maternal behavior and children's memory outcomes might differ for other cultures or social-economic classes.

In conclusion, overall the findings of the present study suggest that maternal behavior may facilitate different aspects of children's autobiographical memory skill while mothers engage their children in collaborative remembering. Moreover, children might utilize different components of their autobiographical memory skills depending on the specific demands of the context of recall. To understand what regulates children's reminiscing behavior in different contexts, we need to assess maternal verbal as well as affective and behavioral qualities, which seemingly complement each other.

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Table 1

Rating Scales for Affective and Behavioral Qualities of Maternal Support

Scale Name	Scale Description (Adaptation to Memory Conversations Indicated in Parentheses)
Supportive Presence	Degree to which mother provides emotional support to child's efforts.
	1 = Mother fails to be supportive to the child, either being aloof and unavailable or being hostile when the child shows need of some support. (Mother fails to show her interest in child's memories; she is passive and uninvolved in the conversation.)
	6 = Mother skillfully provides support throughout the session. If the child is having difficulties, she finds ways to structure the problem to reward some sort of success by the child and encourage whatever solution the child can make. Mother not only is emotionally supportive but continuously reinforces the child's success. (Mother is emotionally supportive by confirming, repeating, encouraging, and praising the child's conversational contributions. If the child has difficulties in recalling the event, she reassures the child that she has confidence in child's abilities to remember. Mother often finishes the conversation by providing some kind of closing, saying for example “Did you have fun there?” or “Do you want to do this again?”)
Respect for Autonomy	Degree to which the mother's actions acknowledge the validity of child' perspective and individuality.
	1= Mother completely denies the child's individuality in the techniques she uses. She is very intrusive and forceful in controlling the child. (Mother denies the child's point of view and insists on her own agenda in the conversation; she shows no interest in the child's opinion; she often interrupts and negates the child's contributions.)
	6 = Mother encourages the child to acknowledge her/his intentions, and to negotiate the course of interactions in the sessions. (Mother acknowledges the validity of the child's perspective by giving the child an opportunity to talk, by following the themes introduced by the child, and by focusing on the child's memories. She shows an interest in the child's opinion and her/his version of the event.
Structure and Limit Setting	Degree to which mother establishes structure and expectations for the child and consistently sets limits on noncompliance.
	1= Mother fails to communicate her expectations and shows no effective leadership; she seems powerless to affect the child's behavior.
	6 = Mother responds consistently and authoritatively to compliance problems; she may be intrusive or respectful of child's autonomy, but achieves this level of structure and limit setting.
Quality of Instruction	Degree to which mother structures the tasks with cues that are clear about the task objectives. Her provision of help is timely, clear, and useful.
	1= Mother's instructions are of poor quality: she either is totally uninvolved or gives clues that are of no help to the child's efforts and appears to embody no effective plan of teaching. (Mother either does not provide any helpful information about the event, or most of her information does not require the child's responses, or she repeatedly asks the child for the same information. She often changes the topic of the conversation, especially if the child had difficulties of remembering. The conversation does not have a clear organization and narrative structure.)
	6 = Mother structures the task that the child understands the objectives and can attempt to solve the problems directly. Mother's assistance is matched to the child's abilities and needs. (Mother provides a clear narrative structure in the form of open-ended *wh*-questions that helps organize recall of the event. She clearly introduces the event and makes sure that the child knows the topic of the discussion. She provides additional, more effective cues to help the child in a timely manner. The mother's approach suggests that she has some sort of a plan for how elaborative questions will help the child to recall the event. Yet, she is also sensitive in recognizing the child's themes during the conversations and is flexible in responding to these themes.)

Table 2

Means (and Standard Deviations) for Children's and Mothers' Variables

Participants	Recall Type	Variable	*M (SD)*	*Range*
Panel a				
Children	Free Independent	Content	7.13 (5.24)	0 – 21.25
		Propositions	9.07 (5.15)	0.75 – 21.75
	Prompted Independent	Content	18.46 (9.68)	2.25 – 43.50
		Propositions	28.24 (12.27)	5.75 – 51.25
	Collaborative	Content	12.52 (6.67)	1.50 – 25.50
		Propositions	21.48 (10.10)	5.75 – 48.75
Panel b				
Mothers	Collaborative	Statement elaborations	9.18 (4.47)	3.00 – 20.50
		Question elaborations	9.21 (4.37)	3.50 – 27.75
		Repetitions	4.93 (2.37)	0.75 – 10.50
		Affirmations	11.39 (5.62)	4.25 – 26.50
		Total talk	45.18 (16.53)	19.25 – 91.75
		Supportive presence	5.10 (0.85)	3 – 6
		Respect for autonomy	5.20 (0.76)	4 – 6
		Structure and limit	5.03 (0.93)	3 – 6
		Quality of instruction	4.67 (0.88)	3 – 6

Table 3

Correlations among Maternal Variables (Partial Correlations Controlling for Total Talk are in Parentheses)

	Conversation codes					Dimensions of affective and behavioral support			
	Statement elaborations	**Question elaborations**	**Repetitions**	**Affirmations**	**Total Talk**	**Supportive presence**	**Respect autonomy**	**Structure and limit**	**Quality of instruction**
Statement elaborations	-	.28 (−.63**)	.17 (−.39*)	.40* (.57**)	.67**	.33$^{\wedge}$ (.10)	.19 (−.11)	.40* (.18)	.37* (−.05)
Question elaborations		-	.59**(.24)	.79** (.24)	.82**	.31$^{\wedge}$ (.05)	.29 (.06)	.24 (−.11)	.47** (.26)
Repetitions			-	.48**(−.14)	.59**	-.09 (−.34$^{\wedge}$)	-.06 (−.30$^{\wedge}$)	-.11 (−.39*)	.06 (−.20)
Affirmations				-	.89**	.51** (.43*)	.43* (.28)	.46** (.27)	.58** (.48**)
Total talk					-	.35$^{\wedge}$	.34$^{\wedge}$	.39*	.41*
Supportive presence						-	.54**	.59**	.60**
Respect for autonomy							-	.48**	.46*
Structure and limit								-	.67**
Quality of instruction									-

$^{\wedge}p < .10$

$^{*}p < .05$

$^{**}p < .01$

Table 4

Correlations between Measures of Maternal Support and Children's Narratives during Memory Interviews (Partial Correlations Controlling for Mothers' Total Talk are in Parentheses)

Maternal variables	Children's conversation codes					
	Collaborative Recall		Independent Recall			
			Free Phase		Prompted Phase	
	Content	Propositions	Content	Propositions	Content	Propositions
Panel a: Conversation Codes						
Statement elaborations	.38* (−.29)	.34^ (−.34^)	.16	−.05	−.01	−.21
Question elaborations	.62** (−.04)	.62** (−.01)	.01	−.07	−.14	−.15
Repetitions	.29 (−.31^)	.36* (−.32^)	−.10	−.15	−.23	−.31^
Affirmations	.86** (.60**)	.81** (.46**)	.28	.14	.13	.01
Total talk	.77**	.76**	.20	<.01	.01	−.18
Panel b: Affective and Behavioral Support Dimensions						
Supportive presence	.46*	.33^	.30	.32^	.28	.18
Respect for autonomy	.45*	.43*	.43*	.41*	.37*	.33^
Structure and limit	.51**	.33^	−.03	−.07	.10	.05
Quality of instruction	.49**	.41*	.38*	.36*	.30	.17

Note. The correlations between maternal affective and behavioral support dimensions and children's recall measures reflect partial *rs* with child language partialled out.

^ $p < .10$

* $p < .05$

** $p < .01$

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Table 5

Predicting Children's Conversation Codes at Collaborative Recall from Maternal Support

	Total Content			Total Propositions		
Predictor	***B***	***SE B***	***β***	***B***	***SE B***	***β***
Step 1						
Total talk	.01	.08	.02	.11	.15	.18
Affirmations	.95	.24	.84**	1.17	.44	.65*
	$F(2,27) = 38.62^{**}$, Adj.R^2 = .72			$F(2,27) = 27.01^{**}$, Adj. R^2 = .64		
Step 2						
Total talk	.01	.08	.02	.11	.14	.18
Affirmations	.95	.24	.74**	1.13	.45	.63*
Supportive presence	−1.20	.96	−.16	−3.46	1.77	−.29^
Respect for autonomy	1.81	.98	.22^	4.29	1.80	.32*
Structure and limit	1.86	.89	.27*	1.31	1.66	.12
Quality of instruction	.09	.92	.01	−.85	1.70	−.07
Child language	−.12	.15	−.08	.04	.28	.02
	$F(7,22) = 14.81^{**}$, Adj.R^2 = .77 ΔR^2 = .08			$F(7,22) = 10.12^{**}$, Adj. R^2 = .69 ΔR^2 = .10		

Note. The final models contained seven predictors, which with a small sample size might produce unstable estimates in the regression equations and variance accounted for could be overestimated (Cohen & Cohen, 1983). Accordingly, we report adjusted R^2 which take into account the number of predictors in the models.

^ $p < .10$

* $p < .05$

** $p < .01$.

Table 6

Predicting Children's Conversation Codes at Free Independent Recall from Maternal Support

	Total Content			Total Propositions		
Predictor	***B***	***SE B***	***β***	***B***	***SE B***	***β***
Respect for autonomy	3.02	1.26	.43*	3.30	1.27	.49*
Structure and limit	−2.02	1.21	−.36	−2.82	1.21	−.51*
Quality of instruction	3.52	1.19	.60**	3.05	1.21	.52*
Child language	−.24	.21	−.21	−.11	.21	−.10
	$F(4,25) = 4.81^{**}$, Adj. $R^2 = .35$			$F(4,25) = 4.24^{**}$, Adj. $R^2 = .31$		

*$p < .05$

**$p < .01$