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CURRICULUM & TEACHING STUDIES | RESEARCH ARTICLE

Does pedagogical documentation support maternal reminiscing conversations?[1]

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Abstract: When parents talk with their children about lessons learned in school, they are participating in reminiscing of an unshared event. This study sought to understand if pedagogical documentation, from the Reggio Approach to early childhood education, would support and enhance the conversation. Mother–child dyads reminisced two separate times about preschool lessons, one time with documentation available to them and one time without. Transcripts were coded extracting variables indicative of high and low maternal reminiscing styles. Results indicate that mother and child conversation characteristics were more highly elaborative when documentation was present than when it was not. In addition, children added more information to the conversation supporting the notion that such conversations enhanced memory for lessons. Documentation could be used as a support tool for conversations and children's memory about lessons learned in school.

Subjects: Child Development; Early Childhood; Educational Psychology; Educational Research; Psychological Science; Teaching & Learning

Keywords: documentation; maternal reminiscing style; early childhood education; memory

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PUBLIC INTEREST STATEMENT

A popular question that parents ask children is what they learned at school that day. This study wanted to understand if a specific teaching technique, called documentation, could be used to support the conversations children and parents have about what they learned in school. In documentation, learning is recorded as it is occurring and often includes children's quotations and photographs from learning events. The study had mothers and children talk two separate times about preschool lessons, one time with documentation available to them and one time without. The conversations were studied and it was found that mothers were more elaborative when documentation was present than when it was not. In addition, children added more information to the conversation. These results suggest that conversations with documentation increase memory for lessons in school and can be used to support parent conversations with children through the use of documentation as a teaching technique in early childhood education classrooms.

1. Introduction

"How was school today? What did you learn?" These two questions might constitute the most frequent greeting that children around the country receive from their parents upon being reunited after school. Day after day, we ask our children to remember and reflect upon their time at school in an attempt to gain information about the child's cognitive growth. The conversation that ensues can be considered a moment of "reminiscing" about past events from the day. This paper discusses research related to how mothers communicate with their children about the past. Of focus is the effect that an educational practice called documentation has on these conversations and subsequently on young children's memory. The intersection of developmental theory and educational practice can help inform teachers and parents of the importance of supported conversations about the past, in particular, lessons learned in school.

Developmental literature suggests that children acquire narrative structure and content information through the social interactions of mother–child conversations. It has consistently been found that the events that are discussed with adults are more likely to be recalled at a later time period than those that are not (Fivush, 1991; Flvush, Hamond, Harsch, Singer, & Wolf, 1991; Haden, Ornstein, Eckerman, & Didow, 2001; McGuigan & Salmon, 2004; Pillemer, 1998; Tessler & Nelson, 1994). Such past-event talk is regarded as an important tool in early memory socialization where children learn to represent their experiences in an organized form in accordance to the adult model (Flvush et al., 1991; Pillemer, 1998; Tessler & Nelson, 1994; Tõugu, Tulviste, Schröder, Keller, & De Geer, 2011). Conversations help children understand an event by guiding the child's attention to its significant aspects and by highlighting its causal and temporal structure (Boland, Haden, & Ornstein, 2003; Haden et al., 2001). Children can then communicate more successfully with others, which permits rehearsal of the memories and enhances the likelihood that they will be maintained in autobiographical memory (McGuigan & Salmon, 2004; Nelson & Fivush, 2000). Adults' talk is thus a form of extraneous knowledge made available to the child. It guides children and provides them with all the advantages that prior knowledge has on memory, such as assisting encoding and retrieval (McGuigan & Salmon, 2004). As children's task experience increases, they rely less and less on the adult to provide the overall guiding structure and more on their own skills (Fivush, 1991).

1.1. Maternal reminiscing style

The characteristics of parent and child conversations about the past have been the focus of much investigation, especially involving mothers. Researchers have concluded that mothers talk with their children about past events in consistent and predictable ways known as maternal reminiscing style. Two such styles have been established, high and low elaborative styles (Haden, Ornstein, Rudek, & Cameron, 2009). Mothers classified as highly elaborative provide a rich narrative structure when reminiscing with their children about shared past events. These mothers elicit lengthy and detailed conversations and ask children many open-ended "wh-questions" such as who, what, why, where, and how. High elaborative mothers also add and embellish on information and they encourage their children's contributions to the conversation (Fivush, 1991; Fivush, Haden, & Reese, 2006; Haden et al., 2009; McGuigan & Salmon, 2004; Pillemer, 1998). Mothers who are classified as low in elaborative style stand in contrast to the high. These mothers are less lengthy, provide their children with less narrative structure, provide fewer embellishments, and often repeat information or questions (Fivush, 1991; Pillemer, 1998).

Researchers have linked maternal reminiscing style with an array of memory-related abilities in children including increased recall of information (Fivush, 1991; Flvush et al., 1991; Haden et al., 2001; McGuigan & Salmon, 2004; Pillemer, 1998; Tessler & Nelson, 1994), increased understanding of the mind (Reese & Cleveland, 2006), and increases in emotion knowledge (Van Bergen, Salmon, Dadds, & Allen, 2009). Mothers who use a high elaborative style have children who show high recall both initially and later when reminiscing independently (Cleveland & Reese, 2005; McGuigan & Salmon, 2004; Reese, Haden, & Fivush, 1993). Leichtman and colleagues report that maternal conversational style predicts the information provided by children during mother–child interviews about non-shared events, and also predicts later performance in interviews where the mother is not

present (Leichtman, Pillemer, Wang, Koreishi, & Han, 2000; Leichtman, Wang, & Pillemer, 2003). These results seem to be lasting. Jack, MacDonald, Reese, and Hayne (2009) found maternal reminiscing style to predict the age of adolescent's earliest memories. The more elaborations or open-ended questions that the mother used in early childhood, the earlier the youth's first autobiographical memory was.

Although seemingly so, it is important to note that high elaborative style is not of more or less value than low elaborative style. Cultural differences exist in how and why people reminisce about past events whereby conversational features match the norms in that society.

In cross-cultural studies, American mothers are found to be more elaborative, use more autonomous, off-topic and metacognitive talk with their children than Chinese mothers who use more didactic talk (about morals) and less affective talk concerning emotions (Wang, 2007; Wang, Leichtman, & Davies, 2000). The high elaboration style of US mothers matches mothers' value orientation toward independence that reflects the underlying values of elaborate personal narratives and a unique identity. The Chinese mothers' low elaborative style matches Chinese cultural emphasis on social conformity and less emphasis on personal narratives (Wang, 2007).

Schroder and colleagues investigated three different cultural models in a study of early reminiscing, suggesting that cultural context in this area of research is not a simple dichotomy (Schröder et al., 2013). The cultural models they assert include urban middle-class families (autonomy), rural farming families from non-Western society (relatedness), and urban middle-class families from non-Western societies (autonomy-relatedness). These cultural models were reflected in the way mothers reminisced with their children. Children's memory elaborations are higher in high autonomous context, moderate in autonomy-relatedness, and lower in relational context (Schröder et al., 2013). In addition, a large meta-analysis of Americans found large differences in individualistic and collectivist values within cultural sub groups such as Latino, African-American, European American, and across nationalities like Japanese and Korean (Oyserman, Coon, & Kemmelmeier, 2002). What these studies do indicate is that children learn from their mothers how to talk about the past and what to talk about in a culturally relevant way (Wang et al., 2000).

In addition to cultural differences, comparisons between genders have also been investigated. Parents of three-year-old daughters were found to be generally more elaborative than parents of sons. Because of this, daughters were more active participants in the conversations and provided more elaborations overall. Elaborative styles were connected with children's contribution of "types of event talk" and repetitive styles (a variable of low elaboration) were connected with little contribution from the child and a tendency not to respond (Reese & Fivush, 1993).

Although research on maternal reminiscing style and its effects on memory are plentiful, no research has been done to examine how such conversational characteristics might change based on educational practices.

1.2. Reggio-inspired documentation

The educational practice of interest in this study is that of pedagogical documentation. Documentation is a fundamental part of the Reggio Emilia approach to early childhood education. The Reggio curriculum is considered to be emergent where topics of study come from the children's interest as they actively explore, collaborate, express, and interpret knowledge in the classroom (Rinaldi, 1998). Children and teachers work together on projects in small groups to demonstrate and represent knowledge in multiple modalities (Edwards, 2002; Hewett, 2001; Katz, 1998; Rinaldi, 1998). Furthermore, children are viewed as protagonists, active constructors of their own understandings (Buldu, 2010; Caldwell, 1997).

Documentation, in the broad sense, refers to the ongoing and collaborative process of observing and recording children's work (Edwards, 2002; Gandini & Goldhaber, 2001). In this process,

educators are extensively observing, recording, and displaying young children's work through its progression (Project Zero & Reggio Children, 2001). Documentation involves observation and record keeping of children's memories, thoughts, and ideas including samples of their work at multiple stages of completion and in multiple ways, in a continuous spiral of activity (Katz & Chard, 1997; Thornton & Brunton, 2005; Wurm, 2005). Although not its original intent, educators and researchers have utilized it as a formative assessment technique to decide where the children are in their learning and where they need to go (Buldu, 2010; MacDonald, 2007). Analysis of the children's work and subsequent sharing of the products provoke reflection and serve as a jumping-off point for the next steps in the lesson (Buldu, 2010; Caldwell, 1997; Edwards, Gandini, & Forman, 1998).

In accordance to the Reggio perspective, knowledge is constructed though active collaboration with adults and peers through dialog, cooperation, and conflict resolution (Hewett, 2001; Rinaldi, 1998). Reggio educators claim that documentation provides an occasion for intense daily communication and reflection (Rinaldi, 1998). Children and peers, teachers and parents, all converse about the documentation that is present in the classroom (Project Zero & Reggio Children, 2001). As pedagogy, documentation is said to assist teachers in developing partnerships with parents, enabling them to participate in education (Goldhaber & Smith, 1997; Katz & Chard, 1997; Project Zero & Reggio Children, 2001; Project Zero, 2003; Rinaldi, 1998, 2006; Thornton & Brunton, 2005; Wurm, 2005).

This practice serves many broad social and cognitive purposes for children. When documentation is present in the classroom, children are provided the opportunity to revisit their own and others' work in conversations with peers, teachers, and parents (Rinaldi, 1998). Significant reinforcement is offered to the memory system by the images, voices, and notations within and around the documentation (Rinaldi, 1998). The documents become memory-enhancing materials as the children actively revisit them, necessitating their capacity for concentration and interpretation (Rinaldi, 2006).

In 2010, Buldu conducted a large empirical study to assess the use of pedagogical documentation. Six classrooms, including teachers, children, and parents, from the UAE were observed, interviewed, and distributed surveys. For 16 weeks, the classrooms created documentation panels that included a title, classroom artifacts or documents, transcriptions of children's conversations, photographs, and teacher's analysis of what was learned. The study found that teachers' perspectives on the value of documentation were very positive, believing that it was informative for instructional and reflective purposes. Teachers reported that the documentation worked as a scaffold for the children's learning, created a community of learners, and increased children's participation, motivation, sense of self-awareness, and interest in learning (Buldu, 2010).

Another researcher who was interested in documentation spent nine weeks observing students as they interacted with it either alone or with a teacher (Sevey, 2011). When mediated by an adult, the documentation was the most effective in supporting children's thought processes. Children were observed to use the documentation as a mental tool more and more as they were increasingly exposed to it. The teacher's perspectives, reported in the two studies above, are of central importance to the current paper. Both indicate that adult and child interaction/dialog increased (with teachers and parents) and that it is within that communication that documentation has many potential benefits (Buldu, 2010; Sevey, 2011).

In a more recent study, Fleck, Leichtman, Pillemer, and Shanteler (2013) sought to better understand the exact effects that documentation has on young children's memory. In this empirical study, 63 children participated in a learning event and were afterward exposed to documentation, a worksheet, or no reminder at all. The documentation consisted of a poster board that included factual information from the lesson, photographs, and verbatim quotations from the learning event. The worksheet included the same factual information but was presented in a series of short activities the child completed (circling, coloring, and identifying objects). Children took part in a second extended learning event, and after a two-week delay, participated in interviews to extract episodic memories

(i.e. memory for details of the learning event) and semantic memories (i.e. memory for the factual information learned).

Results of this study suggest that documentation works to support preschool and kindergarten children's memory. Preschool children are of particular interest because it is during this developmental time that memory talk with parents provides an essential guiding role (Leichtman et al., 2000; Tessler & Nelson, 1994). Children in the documentation and worksheet conditions showed an increase in semantic memories (they remembered more factual information) as compared to children in the no-reminder control condition. Looking closer at the conversations surrounding the documentation during the extended second learning event, children with documentation produced more on-topic speech than those who did not have documentation. Reviewing the documentation appeared to heighten children's focus on the factual information and produced greater recall for those facts (Fleck et al., 2013). These findings provide empirical evidence of that supports Reggio educators' claims that documentation provides conversational-, learning-, and memory-enhancing effects (Goldhaber & Smith, 1997; Katz & Chard, 1997; Project Zero, 2003; Project Zero & Reggio Children, 2001; Rinaldi, 1998, 2006; Thornton & Brunton, 2005; Wurm, 2005).

1.3. The present study

Past research has found that documentation is supporting children's memory (Fleck et al., 2013). The question now is how is it working to do so? The conversations that documentation is inspiring and supporting might be the key feature. The purpose of this study is to determine how documentation changes the conversations surrounding it. Mother–child conversations about a learning event are recorded both in the presence of documentation and not. It is hypothesized that conversations with documentation present will have more high elaboration characteristics than conversations without documentation, for both mother and children's speech. This way, the children's conversation characteristics would match that of their mothers, which has been shown to be predictive of later recollection (Fivush, 1991; Flvush et al., 1991; Haden et al., 2001; McGuigan & Salmon, 2004; Pillemer, 1998; Tessler & Nelson, 1994). Of special consideration is the amount of new memory information that children contribute to the conversation. Because Fleck and colleagues (2013) found a similar increase of content memory speech when children were exposed to documentation, it is predicted that when documentation is available, children will use it as a reminder, thus contributing more to the conversation than when documentation is not present.

2. Method

2.1. Participants

The participants of this study consisted of 30 preschool children and their mothers from various urban and suburban private schools in a Rocky Mountain state. There were 20 male children (66.7%) and 10 female children (33.3%). The children's ages ranged from 36 months to 61 months with the average child being 50.5 months old (4.2 years). Mothers' ages ranged from 23 to 45 years old, with the average mother being 35.3 years old. The average number of children per household was 2.28. See Table 1 for complete demographic data.

2.2. Materials

An informed consent form and demographic questionnaire were distributed to each of the interested families. The two learning events required the use of a digital camera. Photos were taken and used in the documentation panels created by the researchers. Each learning event utilized two books, two art projects, and various other items pertaining to the specific lesson including glue, scissors, crayons, markers, glitter, tissue paper, and construction paper for the art projects. For learning event one, additional materials consisted of a popcorn maker, popcorn kernels, and a bowl for the popcorn. For learning event two, additional materials consisted of honey sticks and a box of real honeycomb for children to touch.

Table 1. Demographic data of sample		
Variable	*f*	**%**
Child's ethnicity		
Caucasian	22	73.3
African-American	1	3.4
Multiracial	5	16.6
Did not report	2	6.7
Mother's ethnicity		
Caucasian	17	56.6
African-American	2	6.7
Multiracial	3	9.9
Latino or Hispanic	2	6.7
Asian/Pacific islander	1	3.3
Did not report	5	16.6
Mother's education level		
High school degree	2	6.7
Some college, profession, or vocational school	8	26.4
College degree	10	33
Graduate-level degree	9	29.7
Marital status		
Married or partnered	19	63.3
Single	3	9.9
Divorced	1	3.3
Separated	1	3.3
Did not report	5	16.6
Household income per year		
$100,000+	12	40
$75,000–99,000	5	16.7
$39,000 and below	8	26.7
Did not report	5	16.6
Community		
Urban	14	46.6
Suburban	10	33.3
Did not report	6	19.8

After each learning event occurred, conversations between the dyads were recorded using a small digital audio recorder. In addition to the recorder, researchers created a documentation panel that was made available during one conversation occasion for each dyad. The documentation panel was approximately 28 by 20 inches and was made up of three items. First, the panel was labeled with headings. At the top, the preschool's name and the title of the lesson appeared. For example, "School X Investigates Bee's & Honey." Subheadings on the panel existed including, "How Do Bees Make Honey," "Tasting Honey Sticks," and "Bee Art with Paper and Glue." Photographs of the children were placed on the documentation panel under each heading. The photographs were taken while the children were participating in the learning event. Care was taken to make sure each child participating in the study appeared in at least one of the photographs. Finally, verbatim quotations, taken from the children during the learning event, were presented on the documentation panel. For example, in response to the question asking how bees make honey, one little boy said, "Nectar comes out of the flower!" while another said, "Bees bring it to the hive."

2.3. Procedure

The experiment took place in four sessions over a four-week period. Two sessions were learning events that were intended to be similar to those naturally occurring at the school and are described below. The other two sessions were recorded reminiscing conversations between the mother and child participants. Documentation was made available to them for one conversation but not the other.

2.3.1. Session 1

Children met with the researcher to participate in a learning event called, "*How Does Popcorn Pop?*", modeled after similar lessons in Fleck and colleagues' previous research (2013). There were three phases to the lesson. In phase 1 (approximately 10 min long), children were read a story entitled "Popcorn" by Asch (2007). In phase 2, children discussed questions about the popcorn story (an additional 10 min). The researchers listened to and then expanded on the children's contributions to create a rich learning environment. The questions that guided the discussion included: "When do you eat popcorn?", "What other snacks does your family like to eat?", and "How does popcorn pop?" During the last discussion question, a page from the book "First Questions About Food" by Myers (1994) was read to the children. The page explained what makes popcorn pop using child friendly terms and illustrations.

In phase 3, children participated in four center-based activities. In the first activity, the children made popcorn with a convection popcorn maker. In the second activity, the children used their senses to feel the precooked kernels, and taste the popped popcorn. The precooked kernels were in a large open bowl as well as several smaller containers that allowed the children to shake and hear the sound the kernels made. During the third activity, the children colored a handout that was popcorn themed. The handout focused on the letter P. The final activity was an art project where children glued crumpled up pieces of tissue paper to construct a paper popcorn collage. The children were shown an example that was previously made of the art project; however, they were given complete freedom on how they wanted to make their picture. Children rotated through the activities while the researchers ensured they participated in each one. Phase 3 lasted approximately 45 min. In total, the lesson lasted roughly 1 h and 15 min.

2.3.2. Session 2

One week after session one, conversations between each individual child and their mother were recorded. The mother and child sat in a secluded area with a small digital audio recorder and were given the following prompt:

> Please have a conversation with your child about a learning event that took place in the classroom a few days ago. Please talk with them as you naturally would. There are no rules about how you choose to talk with your child. There is no time requirement. The learning event that took place was centered around the topic of how popcorn pops.

The conversation was open-ended, leaving the participants free to speak about the lesson openly and naturally. Chosen at random, half of the dyads were given a documentation panel during the conversation. The other half of the children did not receive the documentation panel. The documentation panel was left for the mother–child dyads to use however they wished. There were no additional instructions prompting the mothers to use the panel or directing them on how to talk about the learning event. This way, the conversation that unfolded in the presence of the documentation was as natural as it might be in a normal reminiscing occurrence.

2.3.3. Session 3

Children met with the researcher for a second time to participate in a second learning event this time called, "*How do Bees Make Honey?*" The lesson in session 3 was taught in the same way as session 1, aside from content. "Are you a Bee" by Judy Allen (2000) was read to the children and the questions that guided the discussion included: "Has anyone ever been stung by a bee?", "Have you

ever eaten honey?", and "How do bees make honey?" In addition, a page from the book "The Life and Times of a Honey Bee" by Micucci (1995) was read to the children which explained how bees make honey using child friendly terms and illustrations. The four center-based activities involved the children touching and tasting honey from small individual and organic honey stick snacks, investigating a real honeycomb so the children could see and feel what it looked like up close, coloring a handout of buzzing bees making honey with the focus on the letter B, and an art project where children cut out yellow bees from construction paper and glued tissue paper for flowers.

2.3.4. Session 4
One week after session two, conversations between each individual child and their mother were recorded again. The recording procedure matched that of session two's first recording. This time, the dyads that did not have documentation for the previous recording were given the documentation panel. The other half of the children did not receive documentation. The documentation panel was specific to the second lesson with pictures and quotations taken from the second learning event about bees.

2.4. Coding
Two trained research assistants transcribed and then systematically coded each of the recorded conversations. The two research assistants first coded the transcriptions separately. The total values that the two raters obtained for each coded variable were compared and discrepancies were resolved by discussion. Agreed codes were recorded as reliable data and used in analysis, resulting in 100% agreement.

The coding method for narrative memory variables taken from transcriptions was modeled after memory development literature (e.g. Haden et al., 2001; Leichtman et al., 2000; Reese et al., 1993). The coding consisted of four different phases. First, basic conversation characteristics were recorded including the total number of words spoken, the total number of words spoken by mothers and children separately, and the total time of the conversation in minutes and seconds. Second, the mother's speech was coded using a specific coding scheme created to extract variables indicative of high and low maternal elaboration styles. Third, the child's speech was coded using a similar, but less extensive coding scheme. In the last phase, the entire conversation was coded again using a response-based coding scheme.

2.4.1. Mother-specific communication coding
Pulling from past research, we adopted several coding scheme categories of communications. See below a for complete description of each category including definition, example, and source from past research. In addition to those defined below, metamemory speech and off-topic speech were also coded. These types of communication either occurred infrequently or were not about the topic under discussion and so these codes were not included in the main analysis.

- Wh-question Elaborations: Any open-ended question that required the other participant in the conversation to provide new information (Haden et al., 2009; Van Bergen et al., 2009). Asking for additional and new information is an important aspect of this code. For example, "What did you do?"

- Yes/No Questions: Any question that asked for a simple confirmation or denial about information the mother provided. It is important that the information was already stated in the question (Haden, 1998; Haden et al., 2009). For example, "Did you eat popcorn?"

- Statement Elaborations: Declarative comments that provided new information about the event, including information about people, places, occurrences, and other details, but that did not call for the child to respond (Reese et al., 1993; Van Bergen et al., 2009). New information is an important aspect of this code. For example, "You made a nice picture that day."

- Tag Questions: A statement elaboration (declarative comments that provide new information) that requested a response from the other participant in the conversation (Haden, 1998; Van Bergen et al., 2009). It had to first be an SE and if it was and the mother requests a response from the child, then it was a TQ. For example, "We went to the park, didn't we?"

- Statement Repetitions: Comments that provided the content or the gist of a previous statement (Harley & Reese, 1999; Reese & Fivush, 1993; Reese et al., 1993). It was a restatement of information about people, places, occurrences, or any other details. For example, the mother stated a second time: "You went to the park."

- Question Repetitions: Comments that provided the content or the gist of a question (Van Bergen et al., 2009). This could have been a restatement of a yes/no question, a wh-question, or a tag question. For example, the mother asked for the second time: "Did you eat popcorn?"

- Confirmations: Agreements or disagreements with information provided in the previous conversation turn (Van Bergen et al., 2009). These sometimes included a statement repetition of what he or she had said. The key aspect was that some kind of indicative value, simple praise, or disagreement of the child's previous statement was present. For example, "You're right, that is how popcorn pops!"

2.4.2. Child-specific communication coding

The child-specific coding scheme consisted of multiple coding variables used to quantify the child's utterances during the conversations that were based on past research. See below for a complete description of each coding scheme including definition, example, and source from past research.

- Memory Elaborations: Declarative comments that provided new information about the event, including information about people, places, occurrences, and other details (Haden, 1998). New information is an important aspect of this code. For example, "We read a story about popcorn."

- Memory Placeholders: Comments that repeat either their own or their mother's previous comments or that involve an appropriate taking of a conversation turn but offer no new memory information (Haden, 1998; Reese et al., 1993). No new information is an important aspect of this code. The information that the child might contribute is in the mother's previous statement. For example, "Yes, we did what you said."

- Child Question: Any original wh-question, yes/no question, or tag question posed by the child toward the mother (Haden, 1998; Haden et al., 2009). For example, "What is the seed called?"

- Child Repetitions: Comments that repeat either their own or their mother's previous comments about content or the gist of a previous statement or question. This is a restatement of information about people, places, occurrences, or any other details or is a repeat of a question (Fivush, Berlin, McDermott Sales, Mennuti-Washburn, & Cassidy, 2003; Reese et al., 1993). The mother or child has to have already said the gist of the comment and it is clear that the child is repeating it again. This is a statement that is either clarifying or restating, with no new information or answer to the previous statement/question. For example, when a mother said "The popcorn is crunchy," the child said "The popcorn is crunchy."

2.4.3. Response-based coding

In a final round of coding, both the mother and child's speech were re-examined, looking to see how participants responded to one another after particular utterances. Frequencies were totaled for the type of response given by children when mothers asked a wh-question. Did the children respond to their mothers with metamemory speech, an off-topic comment, a memory elaboration, a placeholder, a question, or with a repetition? Frequencies were also totaled for the type of response given by the mother when the child uttered either a placeholder or elaboration (coded independently). Did the mothers respond with metamemory speech, a wh, yes/no, or tag question, a statement elaboration, a statement repetition, or with a confirmation?

3. Results

To see if differences existed in conversation characteristics between those with documentation available and those without documentation available, a series of paired sample *t*-tests were run. Holm's Sequential Bonferroni method was used to control for type I error for all pairwise comparisons. The results indicated that the length of time of the conversations (roughly four minutes each), the total number of words spoken by mothers, children, and mothers and children combined did not differ.

3.1. Differences in mothers' speech

To determine if differences exist in maternal reminiscing style based on the presence of documentation, a high and low elaborative style score was calculated for mother's speech. To identify the amount of high elaborative speech in mothers, we computed a score by summing the number of wh-questions, yes/no questions, statement elaborations, and tag questions. To identify the amount of low elaborative speech in mothers, we computed a score by summing the number of statement repetitions, question repetitions, and confirmations. These variables were chosen because they are most characteristic and indicative of the style differences (high or low) and similar combinations have been made in past research (Reese & Newcombe, 2007; Van Bergen et al., 2009). The total high and low scores were compared between conversations when mothers had documentation present and when they did not have documentation present.

A 2 × 2 within-subjects analysis of variance (ANOVA) was conducted investigating mothers elaboration score (high and low) and condition (documentation and no documentation). The analysis yielded a significant effect for elaboration style, $F(1, 29) = 68.03$, $p < .001$, $\eta_p^2 = .701$. There was a main effect of documentation $F(1, 29) = 11.69$, $p = .002$, $\eta_p^2 = .287$. In addition, there was a significant interaction $F(1, 29) = 16.91$, $p < .001$, $\eta_p^2 = .368$. Overall, mothers were more highly elaborative with their children than low. Furthermore, when documentation was present, mothers spoke more, overall, than when documentation was not present. The interaction demonstrates, as illustrated in Figure 1, when the mothers were exposed to documentation, they demonstrated significantly more high elaborative speech patterns than when they did not have documentation present during the conversation.

Figure 1. Mother's elaborative style by documentation or no documentation on the number of coded communications.

	Documentation	No Documentation
■ High Elaboration	51.13	35.4
□ Low Elaboration	17.9	14.37

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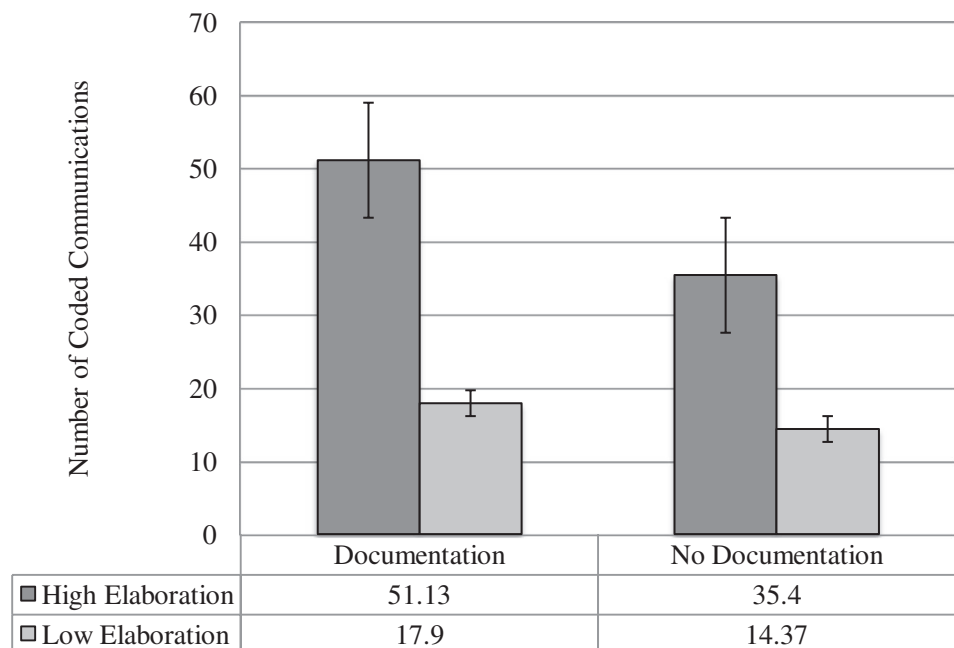
Table 2. Paired sample *t*-tests for all variables			
Coded communications	**Documentation**	**No documentation**	**d**
	M (SD)	**M (SD)**	
Mother			
Metamemory	0.40 (0.932)	0.23 (0.504)	
Off topic	5.40 (0.6.36)	7.53 (11.35)	
Wh-questions*	17.03 (10.27)	10.53 (6.97)	.74
Yes/No questions	20.43 (11.39)	15.77 (11.59)	
Statement elaborations*	13.50 (9.55)	8.23 (8.23)	.59
Tag questions	1.27 (1.70)	.83 (1.34)	
Statement repetitions	3.23 (2.27)	.2.17 (2.53)	
Question repetitions	9.60 (5.59)	9.40 (7.63)	
Confirmations	5.07 (5.85)	2.77 (4.01)	
Child			
Metamemory	.03 (1.83)	.03 (1.83)	
Off topic	.3.80 (4.24)	4.70 (7.20)	
Placeholders	18.43 (10.35)	14.77 (12.35)	
Statement elaborations	22.17 (13.50)	14.87 (9.81)	
Questions*	2.83 (3.13)	1.50 (2.06)	.62
Statement repetitions*	3.27 (3.03)	1.57 (1.75)	.59

*Significant difference after the Holm's Sequential Bonferroni correction at *p* < .05.

To obtain a nuanced view of mothers' speech, all coded variables for mothers were then analyzed separately in a comparison between documentation and no documentation. While the total high and low elaboration scores are informative, analysis on an individual level allows for precise comparisons for each coded variable independent of one another. The most frequent codes for mothers when documentation was present were yes/no questions, followed by wh-questions, and then statement elaborations. Without documentation, the most frequent codes were yes/no questions, wh-questions, and then repetitions. The least frequent code when documentation was present and was not present was metamemory.

After the Holm's Sequential Bonferroni correction, paired sample *t*-tests indicated two significant differences. Mothers uttered more wh-questions $t(29) = 11.69$, $p < .001$, $d = .74$, and statement elaborations $t(29) = 2.74$, $p = .006$, $d = .591$ in the presence of documentation than without documentation. Means and standard deviations are reported in Table 2.

3.2. Differences in children's speech

To determine if differences exist in children's speech based on the presence of documentation, scores for their elaborations and repetitions were compared. The elaboration total is a measure reflective of high elaborative style, while the repetition total is a measure reflective of low elaboration style. A 2 × 2 within-subjects ANOVA was conducted to assess the effects of the child's elaboration style (elaborations: high and repetitions: low) by condition (documentation and no documentation). The analysis yielded a significant effect for elaboration, $F(1, 29) = 93.01$, $p < .001$, $\eta_p^2 = .762$. There was a main effect of documentation $F(1, 29) = 10.79$, $p = .003$, $\eta_p^2 = .270$, and there was also a significant interaction $F(1, 29) = 6.47$, $p = .017$, $\eta_p^2 = .182$. Overall, children used more elaborations then repetitions. Furthermore, when documentation was present, children spoke more, overall, than when documentation was not present. The interaction demonstrates that when the children were exposed to documentation, they demonstrated more elaborations than when documentation was not present in the conversation. See Figure 2 for illustration of data.

Figure 2. Child's elaborative style by documentation or no documentation on the number of coded communications.

	Documentation	No Documentation
◼ High Elaboration	22.17	35.4
◻ Low Elaboration	17.9	14.37
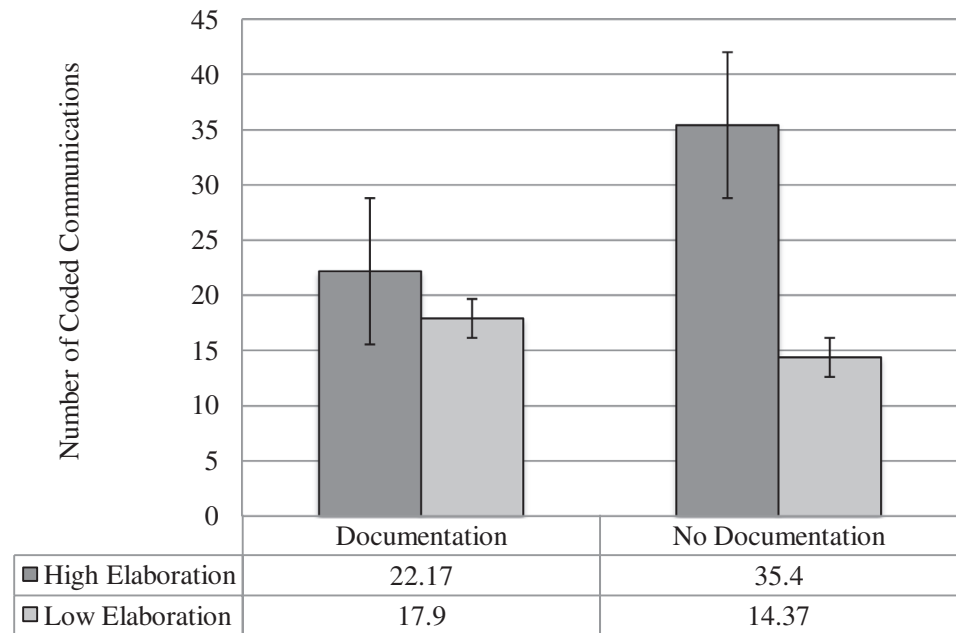
Each coded variable for children was then analyzed separately in a comparison between documentation and no documentation. The most frequent code for children when documentation was present was elaborations followed by placeholders. This was the same without documentation. The least frequent code was metamemory for both documentation and no documentation (occurring virtually never). After the Holm's Sequential Bonferroni correction, paired sample *t*-tests indicated two significant differences. Children uttered more statement elaborations $t(29) = 3.01$, $p = .005$, $d = .623$, and statement repetitions $t(29) = 3.05$, $p = .005$, $d = .591$ in the presence of documentation than without documentation. Means and standard deviations are reported in Table 2.

3.3. Correlation between mother and child's speech

This pattern of results indicates that children's speech is highly correlated to their mothers. Specifically, both are highly elaborative, both are affected by the presence of documentation and increased elaborative style. To further investigate if speech patterns of mothers and children are related, a series of Pearson correlations were run. Mothers' total statement elaborations (combined documentation and no-documentation values) were positively correlated to children's statement elaborations. Mothers' total statement repetitions (again combined) were positively correlated to children's statement repetitions. See correlation matrix presented in Table 3.

Table 3. Correlation matrix for mother and child combined speech				
Variable	Child elaboration	Child repetition	Mom elaboration	Mom repetition
Child elaboration	–	.398*	.565**	.581**
Child repetition		–	.355	.515**
Mom elaboration			–	.713**
Mom repetitions				–

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

3.4. Gender comparisons

To determine if conversation characteristics varied based on the child's gender, a series of independent sample *t*-tests were run. These analyses produced no significant differences. Mothers did not speak to male or female children using more words or for a longer duration of time. The number of words that children spoke was also similar based on gender. Analyses then tested if the child's gender affects the way in which mothers speak to them, either in a high or low elaborative style. No significant differences were revealed. Looking into children's speech, analyses were run on statement elaborations and statement repetitions with documentation and without. Again, no differences were found between genders.

3.5. Response-based analysis

In order to understand if responses are different when documentation is present compared to when it is not, paired sample *t*-tests were conducted on variables of interest using the response-based coding scheme and total speech values. Again, Holm's Sequential Bonferroni method was applied. Both with and without documentation, when mothers ask a wh-question, children's highest number of responses was with a statement elaboration. When children received documentation (M = 9.83, SD = 6.26), they responded to their mothers with significantly more statement elaborations than when no documentation was present (M = 6.00, SD = 4.92), $t(29)$ = 3.90, p = .001, d = .68.

A similar analysis was conducted looking at mother's responses to children's speech. When a child utters a statement elaboration to mothers, the highest number of responses was yes/no questions. When documentation was present (M = 9.60, SD = 6.64), mothers responded with significantly more yes/no questions compared to when it is not (M = 6.27, SD = 5.42) $t(29)$ = 3.90, p = .001, d = .55. The second highest response was to answer with a wh-question and again this occurred significantly more with documentation (M = 7.90, SD = 5.96) than without (M = 4.43, SD = 3.90), $t(29)$ = 4.17, p < .001, d = 69.

Finally, when the child uttered a placeholder, how did the mother respond? The highest response was yes/no questions. There was not a significant difference between documentation (M = 6.43, SD = 5.19) and no documentation (M = 5.80, SD = 6.46) on the number of yes/no questions $t(29)$ = .651, p = .520. The second highest response was the wh-questions. Due to the Holme's Sequential Bonferroni correction, there was no difference between documentation (M = 6.33, SD = 4.96) and no documentation (M = 4.47, SD = 3.64) on wh-question $t(29)$ = 2.61, p = .014.

4. Discussion

The comparison between conversations with and without documentation done in this study allows us to better understand documentation as a pedagogical tool, the nature of the conversations that surround it, and the previously established memory-enhancing effects it produces (Fleck et al., 2013). To begin, we see that the mothers in this sample were high in their elaborative style, overall. This is reflective of Western cultural values of independence and an autonomous self-concept (Fivush et al., 2006). Generally speaking, in the USA, culture personal narratives and individual autobiographical memories are valued and encouraged. Similar to past research, mothers in the current sample used numerous open-ended questions (wh-questions), which is a significant element of high elaborative style (Cleveland & Reese, 2005; Haden et al., 2009; Tõugu et al., 2011). It is evident that the mothers in the present study spoke according to their underlying cultural beliefs (Wang, 2007; Wang et al., 2000).

In accordance with the hypotheses, when documentation is present during a conversation, mothers speak using more utterances that are associated with high elaborative maternal reminiscing style. When mothers had documentation available during the conversation, their overall high elaboration score was greater than it was when documentation was not available. In addition, it should be noted that mothers were also speaking more with documentation than without. Analyses of variables individually indicated that mothers used more open-ended wh-questions and statement elaborations with documentation than without. The wh-questions work to elicit new information from

the child. Here, mothers are probing the child's memory system requesting them to contribute new content-rich information.

Wh-question and statement elaborations contribute to high elaborative style. Statement elaborations describe utterances in which the participant adds new information to the conversation. These findings suggest that mothers are using the documentation as a cue to understand the unshared past event (school lesson) that they were conversing about with their preschool child. Documentation is providing them with a tool to speak in an informed way about the event as well as allowing them to better participate in the conversation as a co-narrator (Tōugu et al., 2011). In contrast, when they did not have documentation, mothers most often asked simple yes/no questions to gain un-elaborative information from their children.

Although this is the first study to empirically assess the conversations surrounding documentation (through maternal reminiscing style coding), past research has found documentation to increase parent communication and dialog. Reggio educators have long claimed that documentation provides an occasion for parent interaction and contemplation (Goldhaber & Smith, 1997; Katz & Chard, 1997; Project Zero, 2003; Project Zero & Reggio Children, 2001; Rinaldi, 1998, 2006; Thornton & Brunton, 2005; Wurm, 2005). An increase in the amount of words spoken during these conversations and the elaborations within the conversations provide children with more opportunities to revisit, reinterpret, and talk about the past event. The conversations necessitate concentration and have potential benefits for memory (Rinaldi, 1998, 2006).

What did the analysis reveal with regard to the children's contributions to the conversations? Results indicate that when the children were exposed to documentation, they spoke with more elaborations than when documentation was not present in the conversation. In other words, the children added more new pieces of information to the conversation. Such elaborative reminiscing is thought to strengthen children's existing representations through language and, because of this, may boost children's narratives and memory for past events (McGuigan & Salmon, 2004; Reese & Newcombe, 2007). The elaboration evidence reveals that the children were remembering and talking about the previously learned information.

As a reminder, elaborations were also frequent for mothers, especially when documentation was present. This study replicated others in finding a relationship between mothers' speech style and children's. Past research indicates that children do not develop their own individual speaking styles until the age of five (Redford & Gildersleeve-Neumann, 2009); however, in this study (with three- and four-year olds), traces of children's styles did in fact match their mothers which has been shown to be predictive of later recollection (Fivush, 1991; Flvush et al., 1991; Haden et al., 2001; McGuigan & Salmon, 2004; Pillemer, 1998; Tessler & Nelson, 1994).

The response-based coding scheme helps to parse out some of more nuanced characteristics of the conversations. It was found that children responded to mothers' wh-questions with elaborations more when documentation was present than when it was not. Past work has linked maternal reminiscing style to the quantity of child elaborations (Reese & Fivush, 1993; Reese et al., 1993; Reese, Haden, & Fivush, 1996). When mothers use a high frequency of open-ended questions, children respond with new information (i.e. elaborations). Verbal confirmations and mothers' own statement elaborations have been found to predict child elaborations (Tōugu et al., 2011). In our sample, mothers were found to be highly elaborative and to use many wh-questions and so it is not surprising that children spoke in elaborations frequently and that this occurred more with the documentation than without.

Response-based coding was also used to investigate how mothers respond to particular statements from children. When the child used a statement elaboration, mom was more likely to respond to the child using a yes/no question or a wh-question with documentation as compared to without. Taken together, the response-based coding results suggest a formidable impact of documentation.

First, it appears that mothers are using the documentation as a tool to participate in the conversation by asking relevant questions. Subsequently, the child responds using the documentation as a tool to answer their mother and provide new information to the conversation. Second, the documentation serves as a reminder that helps the child recall the event. After the child adds new information, mothers with documentation are more likely to ask another question carrying the conversation forward. The documentation is thus a mechanism for supporting the conversation and child's memory for the learning event. Jack and colleagues (2009) suggest that mothers' use of elaborations and open-ended questions with low use of repetitions (as seen in our sample) allows children to form a more coherent narrative structure. "Open-ended elaborative questions encourage young children to engage actively in the recall process and to verbalize their memories for even stronger long term-retention" (Jack et al., 2009, p. 503).

The new evidence presented in this study should be considered alongside the memory-enhancing effects that have been empirically found by Fleck and colleagues (2013). In their study, children's semantic memory for a learning event was increased when documentation was present. The question that remained was why? The explanation for the present data points to the central role and importance that the conversations surrounding the documentation have. Reggio educators have made extensive claims regarding the effects of documentation on young children's learning and memory. They suggest that the opportunity documentation provides to revisit information, including specific factual information, and promotes learning (Fawcett & Hay, 2004; Hewett, 2001; Katz & Chard, 1997). Rinaldi (1998, 2006) affirms that revisiting documentation supports the memory system by allowing children to revisit, reinterpret, and converse about events which increase the likelihood they will recall the information later (Fivush, 1991; Flvush et al., 1991; Haden et al., 2001; McGuigan & Salmon, 2004; Pillemer, 1998; Tessler & Nelson, 1994).

The information yielded by this study sheds light on the potential positive effects that documentation can have as an educational approach. However, some limitations and surprising findings also exist. For example, no differences were found for any outcome variables with regard to gender. Previous research suggests that men and women speak about past autobiographical memories differently (Fivush, Marin, McWilliams, & Bohanek, 2009; Reese et al., 1996). Reese and Fivush (1993) found that parents were more elaborative with girls than boys and that girls were then more likely to be active participants in the conversation. Mothers have also been found to be more elaborative than fathers with older children (9–12 years) (Fivush et al., 2009). Because we saw no differences, a more even and diverse sample of male to female participants should be taken into consideration for future research.

Our results might also be different than others because research on gender and reminiscing has never used an unshared learning event as the topic of reminiscing. In fact, the goal of the reminiscing conversation is quite important (Kulkofsky, 2011). The functional goals of reminiscence reported in the literature include social (e.g. maintaining relationships), directive (e.g. planning or problem-solving), self (e.g. identity), and specific socialization. Mothers speak differently based on the goal at hand. For example, when trying to teach a lesson, mothers use more didactic statements and focus on the child related to others. The lesson goal in this case would be one related to socialization (Kulkofsky, 2011). Until now, no research has looked into the goal of understating an unshared event such as classroom lessons. In general, this type of reminiscing goal could be important and more research needs to be done to further understand it.

Finally, it should be noted that although the documentation panel used in this study modeled those that might be typically seen in Reggio classrooms, it was not a fully authentic documentation artifact. In real-world Reggio classrooms, children encounter documentation for extended periods of time as a part of ongoing project work. The documents are visited casually as dictated by the interest of the children, parents, or teachers. The conversations about documentation may be ongoing in the classroom among children and between children and adults, and they may be less systematic than in the present study. In a real-world context, the effect documentation has on conversations and

subsequently memory may be enhanced by multiple exposures and close proximity between documentation and the environment in which learning has occurred. In addition, verbal cues used by mothers may also be sophisticated and have a profound effect on conversations (Tõugu et al., 2011). A video recording in addition to audio would capture this.

Other educational approaches that use photographs of children's work could also be considered in the methods and results of this study. In one such study, Buldu (2010) posted panels similar to documentation in the classroom and in the school corridors so that parents could view learning events. Pre- and post-parent questionnaires revealed that parents were highly interested in their children's development and learning. The panels were reported to increase parents' dialog with their children, increase their awareness of their children's learning experiences, inform them of classroom activities, display what the children were learning at school, and show how they were learning.

Based on this literature, early childhood teaching programs as well as continuing professional development workshops could be offered around implementation of documentation or elaboration training. An early study successfully trained mothers to ask more wh-questions and found that children of trained mothers told longer past-event narratives with additional contextual information, as compared to children of untrained mothers (Peterson, Jesso, & McCabe, 1999). In another study, mothers of two-year-old children were instructed to talk more frequently with their child about past events using techniques such as praise, follow-up questioning, rephrasing, and drawing the child into the conversation with wh-questions (Reese & Newcombe, 2007). The training was successful. Mothers were found to be more elaborative and memory outcomes for children were also observed. Children of trained mothers had richer memories than untrained mothers and children with high levels of self-awareness were more accurate with their memories. Improvements in personal narrative skills such as these are being recognized as important for school achievement (Griffin, Hemphill, Camp, & Wolf, 2004; Reese & Newcombe, 2007).

The studies described above are not isolated in their results and conclusions. Van Bergen and colleagues (2009) also trained mothers in high elaborative and emotional reminiscing style. Both immediately and six months after training (which focused on wh-questioning, providing details, and discussion emotions), children of trained mothers used more high elaborations and emotion references during shared recall than children whose mothers were not trained (Van Bergen et al., 2009). Tõugu and colleagues (2011) recommend training for low elaborative mothers or caregivers so they can be more elaborative with their children who could then show positive developmental outcomes. We suggest that documentation should be considered as a support tool, possibly for training, to help mothers be elaborative in their conversations about the events of their child's school day. Bath (2012) further contends that instead of an indicator of progress, the true purpose of pedagogical documentation should be to enable adult and child communicative cooperation. This is important when the documentation is being created and later revisiting/reminiscing.

5. Conclusion

In summary, the results of this study indicate that conversations supported by documentation increase variables associated with high maternal reminiscing style. The mother–child dyads spoke differently and responded to one another in different ways when documentation was present as compared to when it was not. In addition, children add more pieces of new information (memory) to the conversation. Despite the study limitations, the evidence suggests that documentation should be considered not only a pedagogical tool but also as a mechanism to support mothers' conversations about unshared past events, in this case, school lessons. Documentation provides conversational support to parents when they ask "what did you do at school today" and conversely this support might affect the child's memory of the events themselves.

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