

Maternal secure base scripts, children's attachment security, and mother–child narrative styles

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Abstract

This paper reports the results of a study examining links between maternal representations of attachment, child attachment security, and mother and child narrative styles assessed in the context of reminiscences about shared experiences. Participants were 90 mother–child dyads. Child attachment security was assessed using the attachment Q-set and maternal attachment representations were measured using a recently designed instrument that assesses the script-like qualities of those representations. Analyses examined dependencies in the mother–child memory talk data and then assessed the overlap between both mother and child reminiscing styles and the attachment variables. Narrative styles of both the mothers and their children were coherent and consistent for each dyad member. Furthermore, maternal narrative style (e.g., specific and elaborative questions, using confirming evaluation comments) was significantly related to child participation in the narrative. Maternal and child attachment variables were positively and significantly correlated, and child security was positively associated with maternal narrative style. Maternal secure base scripts were also found to be significantly related to the number of references to emotions in both mother and child narratives as well as to children's overall participation in the memory talk. The pattern of results suggests that attachment representations serve as one influence on the manner(s) in which mother–child dyads think about and discuss emotion-laden content relevant to the child's personal autobiography. Furthermore, the results are consistent with the notion that the manner in which children organize their thoughts about emotion are (at least potentially) shaped by the narrative styles of their parents.

Keywords: *Attachment security, secure-base scripts, narratives, preschool, reminiscing*

Introduction

One of the more compelling conjectures of the Bowlby/Ainsworth theory of attachment is the claim that caregiver–child attachment relationships are broadly implicative for children's social and personality development across the life span (Bowlby, 1973, 1980, 1969/1982, 1988). Bowlby believed that parent–child interactions were informed by complementary behavioral systems (i.e., attachment and caregiving) that were based in the evolutionary history of our species. The trajectory of these early parent–child interactions through time constitutes the foundation of attachment relationships that, in turn, are the

basis for fundamental beliefs about the self, about others, and about the nature of future relationships. Attachments are also thought to lie at the core of hedonic/affective tone or capacity characteristic of individuals (e.g., Sroufe, 1996). Bowlby suggested that attachments, once established, are meaningful to both partners in an attached dyad and that *meaning* implies representation, however, during infancy such representations are predominantly sensorimotor and external (in Piaget's sense, 1951). Assessments of attachment representations (at least from the perspective of the infant) rely on observations of the child's secure base behavior in ordinary (e.g., at home) and in emergency (e.g., laboratory separation/reunion procedures) situations. Examples of both ordinary and emergency assessments are presented by Ainsworth, Blehar, Waters, and Wall (1978).

Beyond infancy, perhaps by the end of the second year, as cognitive, linguistic, and social skills mature, representations begin to be internalized (as internal working models, Bowlby, 1973; Craik, 1943). Internal working models (Bowlby, 1973, 1980, 1969/1982) are presumed to be mental, affect-laden structures available in memory that are transportable (thus making possible the tolerance of longer and longer physical separations between members of the attached dyad) and also serve to guide affect, cognition, and behavior in new relationships beyond the family (e.g., Bost, Vaughn, Washington, Cielinski, & Bradbard, 1998; Bretherton & Munholland, 1999; Bretherton, Ridgeway, & Cassidy, 1990; Main, Kaplan, & Cassidy, 1985; Sroufe, 1983, 1996). However, the range of mechanisms, processes, and transactions supporting the transition from sensorimotor to mental representations has not been described comprehensively (e.g., Bretherton et al., 1990; Oppenheim & Waters, 1995; van IJzendoorn, 1995), and there have been recent calls for developmental scientists to conceptualize and measure attachment representations and caregiver support for attachment representation in more detail (e.g., Maier, Bernier, Pekrun, Zimmermann, Strasser, & Grossmann, 2005; Meins, 1999). This report is a response to that call.

The preschool period is an opportune time to consider representational questions because of conceptual advances self-understanding (Ontai & Thompson, 2002; Thompson, 1998, 2000). As the child's cognitive, language, and representational capacities become more sophisticated, she can access and report information about the caregiver as an attachment figure using several communicative modalities. Parents also may manifest sensitivity in different ways by trying to understand their child through the use of multiple communicative channels. Most frequently, language is the medium through which parents and their children express and respond to emotion, intent, needs, and goals (Waters & Cummings, 2000). These developmental advances have prompted researchers to employ socio-emotional, narrative/linguistic, and cognitive approaches to examine children's mental representations of relational events (Bretherton & Munholland, 1999; Crittenden, 1994). Of particular interest is research regarding autobiographical memory development, event representations, and scripts (Fivush, 1993, 1994; Laible & Thompson, 2000; Nelson, 1990, 1993; Reese, 2002; Reese & Fivush, 1993). As children begin to select and represent novel experiences in their lives, this broadband approach becomes crucial for documenting the content and form of specific memories and representational structures (Thompson, 1998).

Memory researchers often emphasize the social contexts in which memory about events is constructed (Nelson, 1996; Nelson & Fivush, 2004), and they have expended theoretical and empirical effort describing and interpreting the narratives parents and children share about past events (i.e., memory talks). Analyses of such data show that parents use a range of narrative styles in discussions of past events with their children. Some provide rich details of the event that include background, orienting, and evaluative information. These "elaborative" conversations are also marked by synchronous responses and probing questions that expand or embellish the child's memory (Engel, 1986; Fivush, 1991; McCabe &

Peterson, 1991). In contrast, “repetitive” or pragmatic styles are characterized by reduced detail or contextual information about the event and repetitious questions or statements (Reese & Fivush, 1993). Parental narrative styles tend to be used consistently over time with the same child (Reese, Haden, & Fivush, 1993), across different children in a family (Haden, 1998), and tend to be linked to children’s own cognitive and narrative styles. From a social cognitive perspective, differences in children’s narrative styles are thought to reflect differences in the representational structure of their memories and that capacities to both recall and organize past experiences facilitate (or impede) the achievement of social and emotional goals in everyday interactions (Fivush, Haden, & Reese, 1996; Hudson, 1990; Nelson, 1996; Welch-Ross, 1995).

Because memory researchers are seeking social explanations for individual differences in autobiographical memory development (e.g., Fivush & Vasudeva, 2002), and because attachment researchers are exploring social cognitive mechanisms underlying the socialization of internal working models after infancy (e.g., Bretherton, 1990, 1993; Thompson, 1998, 2000), there has been considerable interest in linking the concerns of these research orientations in the context of parent–child memory talks. Bowlby (1988) and others (e.g., Bretherton, 1991, 1996) emphasized the importance of open and fluent parent–child communication about attachment-related events in the co-construction of secure attachments. In recent studies, investigators have shown that mothers of securely attached children tend to use more elaborative reminiscing styles than mothers of insecurely attached children (Fivush & Vasudeva, 2002; Reese & Farrant, 2003). Reese and Farrant (2003) reported that securely attached children recalled more event-related information and were more engaged in the discussions with their mothers than insecurely attached children. These kinds of findings offer important clues regarding the socialization of representational thinking and suggest that attachment relationships may provide affordances for parents to shape the content and structure of their children’s mental models. Data from the present study are relevant to testing this hypothesis.

Attachment researchers have also used narrative assessments to examine parent–child communication and representations of relationships for children and adults (e.g., Bretherton et al., 1990; Main et al., 1985; Waters, Rodrigues, & Ridgeway, 1998). Securely attached dyads tend to engage in more open and coherent communication that integrates both positive *and* negative events than do insecurely attached parent–child dyads (e.g., Etzion-Carasso & Oppenheim, 2000; Pillemer, 1998, Thompson, 2000). Laible and Thompson (2000) found that secure children and their mothers used more references to emotions and evaluations in their conversations than did insecurely attached children and their mothers, and Belsky, Spritz, and Crnic (1996) found that early attachment security predicted memory for emotional events. Furthermore, securely attached children, from 2 to 6 years old, had more sophisticated understandings of negative emotions than did insecure children (e.g., Laible & Thompson, 1998; Steele, Steele, Croft, & Fonagy, 1999). These findings support the argument that attachment security should be integrated with memory of relational experiences and with the understanding of emotional events and states (e.g., Laible, 2004).

A range of assessment protocols have been designed and validated for adolescent and adult attachment representations (e.g., Armsden & Greenberg, 1987; George & West, 2001; Hesse, 1999; Main et al., 1985). For adults, the most widely used protocol is the Main and Goldwyn (1984, 1998) Adult Attachment Interview (AAI) which was designed to assess an adult’s current state of mind about attachment relationships (see Hesse, 1999). Although the AAI is a reliable and valid instrument for the assessment of adult state of mind regarding attachment (Hesse, 1999), its administration and scoring protocols are time consuming and

several research teams have designed alternative and more streamlined assessments for describing and quantifying adult attachment representations (e.g., George & West, 2001; Waters & Rodrigues-Doolabh, 2004). For this report, we used the recently developed attachment script representation protocol (Waters, 2006; Waters & Rodrigues-Doolabh, 2004) to assess maternal access to and use of a “secure base script” as our measure of attachment representation.

Research reported in this issue and elsewhere suggests that the “scriptedness” of maternal stories is associated with infant attachment classifications from Strange Situation assessments (Tini, Corcoran, Rodrigues-Doolabh, & Waters, 2003) as well as with preschool children’s attachment security using the Waters (1987/1995) Attachment Q-Sort (AQS; Vaughn et al., 2006). Furthermore, adult script representation scores predict maternal sensitivity in the context of parent–infant interactions (Coppola, Vaughn, Cassibba, & Costantini, 2006). Also, maternal secure base script scores are associated with the AAI Coherence Scale (Coppola et al., 2006; Dykas, Woodhouse, Cassidy, & Waters, 2006). Studies using the attachment script representation measure suggest that mothers who access and use the secure base script when forming stories tend to have a history of sensitive responsiveness to their children’s communicative signals and have children who use them as a secure base in both ordinary and emergency settings. These findings are important because they link the scriptedness score with established attachment protocols and because they link three critical elements of the Bowlby/Ainsworth theory (i.e., representation, dyadic interaction, and the organization of children’s secure base behavior).

Although linking the attachment and memory talk perspectives has produced empirical evidence relating child security with maternal elaborative narrative styles, no studies to date have examined whether the mothers’ attachment representations influence the structure and content of their own (or their children’s) narrative styles during specific, event-related memory talks. That is, do mothers’ own attachment-related scripts guide their discussions of past events with their children? Are maternal attachment representations and their narrative styles covarying or independent supports for child attachment security? Answers to these questions will contribute to the ongoing discussion within the attachment research community on understanding the “gap” between adult’s mental representations of attachment and their children’s sensorimotor representations of attachment (e.g., Fonagy & Target, 1997; Meins, Fernyhough, Fradley, & Tuckey, 2001; Slade, Grienenberger, Bergach, Levy, & Locker, 2005).

This study has two broad aims. First, we attempt to replicate previous findings (e.g., Fivush & Vasudeva, 2002; Reese & Farrant, 2003) demonstrating that stylistic aspects of dyadic reminiscences about emotion-laden events are intertwined (i.e., maternal styles predict child styles), and that maternal narrative style attributes are related to child attachment security. Second, we probe relations between maternal representations of attachment, child attachment security, and dimensions characteristic of different maternal narrative styles. Following Fivush and associates (e.g., Fivush & Vasudeva, 2002), we test the hypothesis that mothers of secure children tend to discuss past events in ways that pull their children into the conversation and foster the collaborative construction of a coherent, detailed, and emotionally integrated narrative. Specifically, we expect mothers of secure children: to ask more open-ended (versus close-ended), event-related questions; to be more elaborative; and to use more evaluations in their discussions than mothers of insecure children.

Existing empirical and conceptual frameworks do not provide bases for a strong directional hypothesis regarding relations between maternal attachment representations and

narrative style. It may be that narrative style can stand as a proxy for maternal sensitivity and we could anticipate a positive relation between these variables, however, existing literature is equivocal regarding this relation. For example, Pederson, Gleason, Moran, and Bento (1998) reported a positive association with sensitivity mediating the relation between mental representations (of the mother) and sensorimotor representations (of the child); whereas, Atkinson et al. (2005) failed to find evidence for mediation effects of sensitivity and proposed a moderating role instead. Alternatively, maternal narrative styles in these memory talk tasks may have more in common with reflective functioning (Fonagy & Target, 1997) than sensitivity, in which case we might expect to find that narrative styles mediate the relation between maternal representations and child attachment security (e.g., Grienemberger, Kelly, & Slade, 2005). Our analyses afford opportunities to explore these possibilities.

Method

Participants

Ninety mothers and their preschool-aged children (47 boys and 43 girls) participated in this study. Families were recruited when their children were between 2.0 and 3.0 years of age. Thirty nine families (20 boys and 19 girls) were recruited through a university affiliated child development lab school in the Midwest. Fifty one families (27 boys and 24 girls) were recruited from two university-affiliated child-care centers in the southeastern region of the USA. Mothers in the Midwest sample ranged in age from 22 to 43 years ($M = 33.55$, $SD = 4.18$), whereas, in the southeastern sample maternal age ranged from 28 to 46 years ($M = 35.4571$, $SD = 4.38$). Annual family income levels ranged from $<US\$20K$ to $>US\$60K$ in both samples. The majority of families had incomes $>US\$60K$ (64% in the Midwest sample, 95% in the southeastern sample) and only three mothers reported annual family incomes $<US\$20K$ (two in the Midwest sample, one in the southeastern sample). Over 85% of mothers in each sample had earned a first level university degree (BA/BSc) or beyond. Approximately 27% of the total sample were of minority ethnic/racial status, however, ethnicity/race was not associated significantly with age, income level, or education level in either of the two sub-samples.

Procedures

Center directors or classroom teachers distributed consent forms to the parents in classrooms with children between 2 and 4 years of age. In over 90% of families, the target child was between 2.5 and 3 years of age at enrolment to the study. Older children ($N = 4$) who were in mixed age groups with younger children were also enrolled, if parents returned consent forms. After agreeing to participate, a home observation was scheduled with mothers and their children. In the Midwest sub-sample, two trained observers visited the homes of all participating families for a 2-hour visit in order to assess attachment security. Due to illnesses and scheduling difficulties, two children from this sub-sample were not observed at home (maximum $N = 88$ for analyses involving home observation data). In the southeastern sample, approximately 25% of the home visits were completed by two observers and a single observer visited the remainder of the families in this sub-sample. For the majority of cases, home visits were completed shortly before the child's third birthday. Within 60 days of the home observation, mothers and their children participated in a videotaped laboratory procedure that involved the memory talk and adult narrative tasks. For approximately 85% of children, these assessments took place shortly after their third

birthday. All visits were conducted at times most convenient for mothers and their children. A video-recording malfunction resulted in the loss of one case (southeastern sub-sample) from the sample for memory talk data (maximum $N = 89$ for memory talk variables).

Measures

Attachment script representation task. The attachment script representation task is an assessment of the content and quality of a secure base script (see Waters & Waters, 2006, for a description of the protocol and scoring rules). The task was completed in the context of a laboratory visit. After two mother–child interaction tasks were completed, the mother went with a research staff member to an adjacent room to complete the attachment script task. Mothers were given a series of word-prompt outlines (one list at a time) that guide production of a story. They were instructed to read down each column from left to right to get a sense of the content of the story and they also were told that their stories would be recorded and that they could stop a story and start it over from the beginning if they chose to do so. Four of the six word-prompt lists are intended to prime the secure base script: two involve a parent/child dyad (*Baby's Morning* and *Doctor's Office*) and two involve adult/adult couples (*Jane & Bob's Camping Trip* and *Sue's Accident*). The remaining two stories are filler tasks that are not scored for secure base scriptedness. Six different list-orders were used, with the convention that the three parent–child lists were presented as a cluster and three adult–adult lists were presented as a cluster. The audio-recorded stories were transcribed prior to scoring. Four trained coders read and rated each story for secure base knowledge using the 7-point scale designed by Waters and Rodrigues-Doolabh (2004). Within-story rater agreement (calculated as intraclass correlations) ranged from .65 to .91. Cronbach's α for total scores across raters for each story was greater than .94. A composite derived by averaging the secure base scriptedness scores across all four stories was used in our analyses.

Memory talk. Mother–child narrative styles were assessed using a memory talk procedure described by Fivush (e.g., Fivush & Fromhoff, 1988). Each dyad was asked to engage in a conversation about memories of shared experiences during the laboratory visit. Prior to the memory talk, mothers named three one-time events they shared with their children over the past year. Events such as movies, plays, or other activities with a story line were excluded because children might retell the story line instead of talking about what they actually experienced. After approximately 20 minutes of play and cleanup, mothers were asked to get their children to remember these events “in as natural a way as possible.” No time restrictions were placed on the length of the conversations.

All memory conversations were transcribed verbatim from videotapes. Then two coders marked the beginning and ending of each event narrative. Maternal and child coding categories were mutually exclusive and exhaustive. For all codes, each unique or implied verb formed a new propositional unit. Maternal narratives were coded for open-ended general memory questions, level 2 general memory questions, specific memory questions, yes/no questions, do you remember questions, statements, and evaluations (Fivush & Fromhoff, 1988). General memory questions are open-ended questions asking child to provide memory information about the event (e.g., “Tell me about going to the circus”) whereas level 2 general memory questions are open-ended questions asking for information about a particular duration of the event or class of information (e.g., “What did we do first?” “What kind of animals did we see?”). Specific memory questions are ones asking the child to provide very specific information about the event such as the name of a person, place, or location of object (e.g., “Who drove the car to Disneyland?” “What color was the tiger at the

zoo?" "What did you have in your hand?"). Narrative events were further coded as "elaborations" or "repetitions" within each of the above broad categories (with the exception of evaluations). *Elaborations* consisted of mothers' questions or statements that requested or provided new information about the event. *Repetitions* included mothers' questions or statements repeating *their own* previous question or statement about the event, or gist of information, without providing any new information. Maternal *evaluations* were coded as confirmations (e.g., "Yes" "Yeah" "That's right" "Yes, you remember!"); negations (e.g., "No" "That's not true" "You're wrong"); or repetitions of *their children's* comments (e.g., "Yes, you liked the blue balloon"). Additional codes were used to describe mothers' comments that clarified a statement, that were off topic, or that provided information that was not event related.

Children's utterances were classified as *memory elaborations* whenever they provided new information about the event being discussed or when they shifted the discussion to a new aspect of the event (e.g., "We saw elephants at the zoo, too"). Children's *memory repetitions* consisted of child utterances that repeated information already given by either the mother or child or took a legitimate turn without adding any new information (e.g., "I don't know" or "You tell me"). Children's confirmation and negation of mothers' utterances were also coded as *evaluations*.

In addition, the number of positive and negative emotion words used by mothers and children was computed. Examples of positive emotion words included were "happy," "fun," and "love" and negative emotional words included words such as "sad," "angry," and "scared." The number of positive and negative emotion words used was significantly correlated both for mothers ($r = .46, p < .001$) and children ($r = .36, p < .01$) and a total emotional reference score was calculated and used in further analyses.

Two assistants independently coded 20% of the transcripts. Agreement for elaborations was between 85% and 100% for evaluations, repetitions, and children's memory responses. Differences between coders were identified and decision rules were made for subsequent coding. One coder coded the remaining transcripts. After completion of the coding, mean frequencies of occurrence of each code per event were computed and used in subsequent analyses (see Haden, 1998; Reese et al., 1993).

Attachment security. Attachment security was assessed using the Attachment Behavior Q-Set (AQS; Waters, 1995). The AQS contains 90 statements designed to describe children's behaviors relevant to the use of the parent as a secure base for exploration and as a haven of safety when threatened or otherwise distressed. The AQS is a valid measure of attachment security as indexed by the child's secure base behavior organized around a specific caregiver (e.g., van IJzendoorn, Vereijken, Bakermans-Kranenburg, & Riksen-Walraven, 2004).

AQS observations were made during a 2–3 hour home visit. Prior to initiating observations with the test sample, observers were trained to a criterion of .70 (Q-correlations between observers). Observations for test sample children were made by either one or two observers. In the Midwest sub-sample, two observers were present on all home visits and each observer independently described the child using the AQS. In the southeastern sub-sample, two observers were present for approximately 25% of the home visits and a single observer completed the remaining 75% of visits. Joint visits in this sample were sorted by consensus of the two observers. After observations were completed, Q-sorters described the behavior of the child by sorting the 90 AQS items into nine categories (ranging from items least descriptive of the child to items most descriptive of the child). By convention (Waters, 1995) the AQS is sorted into a rectangular distribution (10 items in each of the 9 categories). Independent sorts for two observers were averaged before calculating scores for attachment

security. Security scores were calculated by correlating observer Q-sorts with the criterion sort for a “very securely attached” child provided by (Waters, 1995). The mean security score for this sample was .35 ($SD = .22$).

Results

The results are presented in three sections. First, we examined the data for potential effects associated with age, gender, and sub-samples. Second, descriptive analyses for the memory talk variables were calculated for the mother and child data. In the third section, mother and child memory talk variables were reduced and correlations with attachment security and maternal representations were examined using the reduced data. Finally, regression analyses tested for mediating, moderating, and independence in terms of relations between the maternal variables and child attachment security.

Preliminary analyses

Correlations between the child’s age and the attachment variables were not significant. Two of 39 correlations between age and narrative variables scored from the memory talk task were significant (i.e., older children repeated their own statements more frequently and tended to use more words in the narrative task than did younger children), both significant correlations were less than .30. Although the associations between age and the narrative scores are interpretable in terms of increased language and cognitive skills of older children, we did not include age as a covariate in substantive analyses. *t*-tests using sub-sample as the grouping variable did not yield any differences for the attachment variables. Three sub-sample differences for the narrative task were significant. Mothers from the Midwest sub-sample tended to use more statement repetitions and mothers from the southeastern sub-sample tended to use more general memory question elaborations and general memory repetitions. Scores for the total number of elaborations and total number of repetitions did not distinguish the sub-samples. Furthermore, neither mothers nor children differed across samples in terms of the number of words and propositions used. Given the number of tests calculated, finding a small number of differences between the sub-samples could have occurred by chance and we are not inclined to interpret these differences. No gender difference tests for the memory talk variables reached significance. For the attachment variables, mothers of girls were not different from mothers of boys for at attachment script representation task, however, girls did receive somewhat higher AQS security scores on average than did boys, means = .40 vs. .31 for girls and boys, respectively, $t(86) = 2.00$, $p < .05$. Again, given the number of tests calculated (18 across the whole variable set), finding two significant is near chance level and we are not inclined to interpret these results further. For subsequent analyses, data for the full sample are reported without breakdowns by age, sub-sample, or gender.

Maternal and child narrative styles during memory talks

Item correlations. Means, standard deviations, and inter-item correlations for variables scored from the memory talk task are presented in Table I. As is common in these tasks, mothers used more words than did children (~218 vs. ~50 for mothers and children, respectively), maternal elaborations were more common than repetitions (*t*-tests > 6.00, $p < .001$ for 3 of 3 tests), and confirming evaluations were more frequent than negative evaluations (3.48 vs. 0.77). Correlations among the memory talk variables yielded moderate to strong

Table I. Descriptive statistics and intercorrelations between maternal and child narratives.

Variables (n = 86)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	
<i>Maternal narrative styles</i>																							
1. General Memory question: Elaboration	-																						
2. General Memory question: Repetition	.67***	-																					
3. General Memory2 question: Elaboration	.29**	.18	-																				
4. General Memory2 question: Repetition	.33**	.40***	.60***	-																			
5. Specific Event question: Elaboration	.23*	.10	.21*	.14	-																		
6. Specific Event question: Repetition	.00	.04	.13	.24*	.63***	-																	
7. Do You Remember question: Elaboration	-.01	-.14	-.07	-.17	.13	.25*	-																
8. Do You Remember question: Repetition	.03	-.13	.07	.03	.14	.37***	.63***	-															
9. Yes/No question: Elaboration	.44***	.30**	.22*	.23*	.44***	.26*	-.21*	-.11	-														
10. Yes/No question: Repetition	.21*	.18	.15	.13	.37***	.25*	.01	.19	.58***	-													
11. Statement: Elaboration	.12	-.01	.23*	.10	.23*	.23*	.45***	.42***	.07	.24*	-												
12. Statement: Repetition	-.15	-.15	.22*	-.04	.27*	.26*	.30**	.31**	-.14	.07	.59***	-											
13. Evaluation: Confirming	.27**	.07	.47***	.24*	.44***	.25*	.04	.18	.38***	.38***	.50***	.35**	-										

(continued)

Table I. (Continued).

Variables (n = 86)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
14. Evaluation: Negating	.31**	.17	.18	.24*	.34**	.25*	.08	.15	.27*	.21*	.13	.11	.15	-								
15. Evaluation: Repetition	-.01	.11	.04	.12	.20	.23*	.02	.12	.08	.13	.06	.10	.21	.06	-							
16. Total words used: Mother	.43***	.31**	.44***	.37***	.51***	.42***	.28**	.35***	.52***	.53***	.61***	.30**	.63***	.31**	.05	-						
<i>Child narrative styles</i>																						
17. Memory elaboration	.44***	.21*	.44***	.20	.49***	.09	-.14	-.09	.46***	.28**	.23*	.06	.76***	.26*	.03	.49***	-					
18. Memory repetition	.38***	.33**	.44***	.38***	.21*	.19	-.00	.10	.18	.13	.28**	.31**	.40***	.24*	.07	.34**	.36**	-				
19. Evaluation	.21*	.18	.27**	.17	.50***	.33**	.07	.16	.54***	.52***	.30**	.24*	.50***	.41***	.17	.49***	.49***	.50***	-			
20. Total words used: Child	.24*	.15	.25*	.05	.36**	.01	-.01	-.00	.31**	.23*	.22*	.18	.57***	.25*	.10	.43**	.76***	.41***	.54***			
<i>Emotional integration</i>																						
21. Maternal emotional words	.34**	.22*	.31**	.11	.25*	.05	-.01	.05	.45***	.40***	.33**	.18	.33**	.04	-.05	.56***	.33**	.25*	.37***	.34**	-	
22. Children's emotional words	.16	.15	.24	-.03	.13	-.01	.12	-.13	.18	.04	.06	.27**	.31**	-.13	.00	.22*	.37***	.27**	.20	.54***	.58***	-
<i>M</i>	5.05	4.29	5.86	2.55	6.05	3.37	6.84	5.75	15.73	5.30	4.30	1.17	8.61	.77	1.89	218.05	6.24	1.07	2.27	50.39	3.35	.69
<i>SD</i>	4.43	5.24	4.45	2.95	5.31	4.78	5.01	4.82	11.39	4.43	3.58	1.19	6.61	.86	2.48	93.13	3.92	.87	1.49	31.03	3.44	1.16

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

associations within and across dyad members. Within each category (e.g., general memory questions) scores for maternal elaborations and repetitions tended to be positively correlated. For the most part, maternal elaborations tended to have stronger associations with child participation variables (e.g., elaborations, evaluations, use of emotion terms) than did maternal repetitions and it was generally true that more talkative mothers had children who used more words in the discussions. Finally, mother's use of emotion words in the memory task was associated both with the child's own use of emotion words and with the child's elaborations, repetitions, and evaluative statements.

Data reduction. The data presented in Table I suggest that there is redundancy among the narrative style variables for both mothers and children and that narrative style variables are substantially related to the number of total words used in the memory talk task. To control for talkativeness and to reduce the number of maternal narrative variables, proportion scores were created for each maternal variable (i.e., each category was divided by total number of utterances within the event and then mean proportion scores were created across the three events) and a principal components analysis (PCA) was conducted for the 15 maternal narrative structure variables (i.e., all variables except references to emotion and total number of words). PCA results for maternal data are presented in Table II. A four-component solution (Eigen values over 1) accounted for over 59% of the variance of the 15 maternal variables. Eight of the maternal variables loaded highly on component 1 including General Memory and General Memory2 questions (elaborations and repetitions); Do You Remember and Yes/No questions (elaborations and repetitions); and Statement: Elaboration and Statement: Repetition (see Table II). This component was labeled Question/Statement/Elaboration/Repetition (QSER). Variables with high loadings on component 2 included Specific Memory Question Elaboration, Evaluation, Confirmation, and Evaluation Repetition (i.e., repetitions of the child's prior statement). Component 2 was labeled Specific Memory Question/Elaboration/Evaluation (SEE). The two Yes/No questions variables (i.e., elaboration and repetition) loaded highly on the third component and were labeled this component Yes/No Questions/Elaboration/Repetition (YNER). Finally,

Table II. Component loadings of maternal narrative style proportion variables.

Variable	QSER	SEE	YNER	SREN
GMQEL	.60	-.12	.38	.15
GMQRE	.74	-.22	.40	.08
Level 2 GMQEL	.71	.02	.45	.13
Level 2 GMQRE	.40	.23	.26	.23
Specific MQEL	.04	.53	-.42	.45
Specific MQRE	-.08	.27	-.37	.67
DYRememberEL	-.50	-.48	.23	.16
DYRememberRE	-.64	-.38	.14	.24
Yes/No EL	.55	-.03	-.58	-.29
Yes/No RE	.24	-.19	-.61	-.28
Statement EL	-.53	.04	.22	-.22
Statement RE	-.58	.21	.19	.09
Eval Confirm	-.08	.78	.31	-.20
Eval RE	-.09	.84	.17	-.27
Eval NEG	.14	.10	-.12	.40

Note: GMQEL = General Memory Question Elaboration; GMQRE = General Memory Question Repetition; MQEL = Memory Question Elaboration; DYRememberEL = Do You Remember Question Elaboration; DYRememberRE = Do You Remember Question Repetition; EL = elaboration; RE = repetition; NEG = negation.

Specific Memory Question Repetitions and Evaluation Negations had their highest loadings on the last component that was labeled Specific Memory Question Repetition/Evaluation Negation (SREN). Component scores were created and used in subsequent analyses. A PCA analysis for the three child memory talk variables (i.e., elaborations, repetitions, evaluations) yielded a single component. We refer to this score as Child Narrative Participation (CNP).

Relations among maternal attachment representation, child security, narrative style, and emotional integration variables

Correlations among the mother and child attachment measures, the narrative dimension scores, and the emotion reference variables are presented in Table III. As expected (e.g., Vaughn et al., 2006), mother and child attachment representation variables were positively and significantly correlated. In addition, maternal attachment script scores were positively associated with the number of references to emotions during memory reminiscences used by both mothers and their children and also with the child participation component score. Maternal attachment script representation scores were not significantly associated with maternal narrative style dimension scores. The AQS security score had a significant correlation with the SEE narrative style dimension (i.e., characterized by specific and elaborative memory questions and evaluations) and also with the number of emotion words used by the child during the memory talk. Of the maternal narrative style dimension scores, only SEE was associated with child participation in the narrative task. Finally, the child participation dimension score was significantly associated with the numbers of emotion words used by both the mother and the child ($r_s = .41$ and $.36$ $p < .01$, for maternal and child emotion scores, respectively).

Regression analyses

The patterns of correlation in Table III suggest that maternal script representation, narrative style, and references to emotion are important aspects of a secure relationship that mothers

Table III. Correlations among secure script score, attachment security, and narratives.

	Attachment Script Representation	AQS Security	QSER	SEE	YNER	SREN	C Narrative Participation	M Emotion References
AQS Security	.27**							
QSER	-.01	-.14	-					
SEE	.17	.30**	.00	-				
YNER	-.02	.12	.00	.00	-			
SREN	-.01	-.03	.00	.00	.00	-		
C Narrative Participation	.23*	.12	.21+	.46***	-.05	.07	-	
M Emotion References	.36**	.17	.15	.03	-.08	-.08	.41***	-
C Emotion References	.29*	.25*	.09	.13	.09	-.09	.36**	.58***

+ $p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$.

Note: QSER = Question/Statement/Elaboration/Repetition; SEE = Specific Memory Question/Elaboration/Evaluation; YNER = Yes/No Questions/Elaboration/Repetition; SREN = Specific Memory Question Repetition/Evaluation Negation.

The correlations between QSER, SEE, YNER and SREN are constrained to null because these scores were derived from orthogonally rotated components.

may also use to engage their children in an emotionally integrated narrative. To further examine these relations, three sets of regression analysis were carried out using the significant correlates of three child variables (i.e., security, participation in narratives, and emotional integration). Based on the integration of attachment and memory talk frameworks, we were especially interested in examining the unique, interactive, or redundant influences of script and narrative variables on child outcomes. However, because the maternal narrative dimensions were not significantly associated with the attachment script representation scores, the criteria for mediation were not satisfied for analyses with *child security* as the outcome, so we were only able to evaluate hypotheses of moderated relations (see Atkinson et al., 2005).

For the initial analysis, the AQS security score was the criterion variable and maternal attachment script scores, the SEE maternal narrative style dimension score, and the script score X SEE interaction term were the predictors. By convention (e.g., Aiken & West, 1991), all predictor variables used in the regression analyses (that were not already standardized) were centered before creating product terms. The overall regression model was significant $R = .37$; $F(3, 76) = 3.97$, $p = .01$ and, together, these variables accounted for approximately 14% of the variance in child security. The interaction term was not significant, $t = .26$, n.s. (i.e., no evidence of a moderated relation between representation and interaction measures). Both maternal narrative style ($t = 2.32$, $p < .05$; $\beta = .27$) and maternal scriptedness of attachment representation ($t = 2.06$, $p < .05$; $\beta = .21$) were significant and unique predictors of child security. Maternal scripts accounted for an additional 5% of the variance in security $F_{change}(1, 74) = 4.25$, $p < .05$ over and beyond that of narrative style, and maternal narrative style accounted for an additional 7% of the variance in security $F_{change}(1, 74) = 5.7$, $p < .05$) over and beyond that of maternal script scores. These results suggest that maternal attachment representations and narrative styles are (at least partially) independently associated with child security.

In the second set of analyses, CNP was the criterion variable and the SEE maternal narrative style variable, attachment representation, maternal references to emotions, and the interaction terms (i.e., script X maternal narrative and script X maternal narrative X maternal references to emotion) were entered as predictor variables. Results revealed that the overall regression model was significant $R = .62$; $F(5, 76) = 8.85$, $p < .001$ and, together, these variables accounted for approximately 38% of the variance in child participation. When entered simultaneously, maternal references to emotions ($t = 4.17$, $p < .001$) and narrative style ($t = 4.77$, $p < .001$) were found to be unique, significant predictors of child participation in memory talks. No moderating ($ts = .24$ and -1.5 , respectively, n.s.) or mediating effects were found. Thus, the child's degree of participation in the memory talk task appears to be largely a product of maternal behavior in the context of the task, and not an outcome that is directly contingent on either maternal or child attachment representations.

In the final regression analysis, child emotional integration was the criterion variable and maternal script scores, child security, maternal emotion words and relevant interaction terms (i.e., script score X security; maternal emotion X security; script score X maternal emotion) were the predictor variables. The overall regression model was significant $R = .60$; $F(6, 76) = 6.74$, $p < .001$ and, together, these variables accounted for approximately 36% of the variance in child emotional integration. The interaction terms were not significant. When entered simultaneously, the only unique and significant predictor of child references to emotion was the maternal emotion reference score ($t = 4.11$, $p < .001$; $\beta = .526$).

Discussion

Attachment theory makes explicit claims about the representation of primary attachment relationships, first as sensorimotor patterns of behavior (e.g., Ainsworth et al., 1978) and later as internal, mental models incorporating behavioral, cognitive, and affective features of the attachment relationship (e.g., Bowlby, 1973, 1988). Because early parent–child relationships are, at least from the perspective of the child, summaries of interaction histories across multiple contexts (e.g., maintenance activities like feeding or bathing, recreational contexts like play, and nurturance contexts such as comforting the child after distress or injury or accepting/sharing the child’s joy at discovery of some new object or skill; with the understanding that these contexts are not mutually exclusive), considerable effort has been expended to characterize qualities of parental interactive style that supports the construction of a secure, trusting relationship. Ainsworth’s (e.g., Ainsworth et al., 1978) interactive behavior scales (e.g., sensitivity to infant communicative signals) serve as the prototypes for these research efforts during the sensorimotor period (nominally infancy and toddlerhood). Empirical reports summarized in the meta-analysis reported by DeWolff and van IJzendoorn (1997) attest to the robustness of the relation between sensitivity and infant attachment across many samples. Research into the antecedents of sensitivity suggests that parental responsiveness is itself grounded in the quality of the adult representation of attachment (see meta-analysis by van IJzendoorn, 1995).

For preschool age children, the memory talk paradigm (e.g., Fivush, 1993; Fivush & Reese, 2002; Fivush & Vasudeva, 2002; Reese, 2002; Reese & Farrant, 2003) has been identified as a task with potential relevance to assessment of sensitivity to communicative signals (as well as the organization of representations), and elaborative maternal narrative styles have been shown to predict child attachment security. Our findings are consistent with the previous research documenting links between security and maternal narrative style, but they also suggest that narrative style constructs are complex and may not be best decomposed as broad preferences for elaboration vs. repetition. In this sample, significant relations with security were only found for one maternal style characterized by specific event-related questions asking the child for new information (e.g., “Who was the bus driver?” “What color was that hat?”) and by evaluations that repeated and confirmed child responses (e.g., “Yes, you are right, it was blue!”). It should be noted that this was also the only narrative style dimension (of the four identified by PCA) that was also significantly related to child participation, suggesting that mothers using this style were more likely to draw the child into the memory discussion. In contrast, narrative style dimensions characterized by general memory questions (elaboration and repetition) and statements (elaboration and repetition), or close-ended yes/no questions were not significantly correlated with child security or participation. Although relations between statements, close-ended questions and attachment variables were not expected, it is not clear why the general memory questions did not emerge as significant correlates of security. Research is needed that examines the differential influence of different types of memory questions, in particular, on representational capacities in the context of a secure relationship.

Overall, our correlational findings are consistent with the notion that mothers of secure children discuss shared events with their children in a way that builds a detailed, elaborative, and emotion-laden account of the event and is sensitive to child responses (e.g., Fivush & Vasudeva, 2002; Reese & Farrant, 2003). Specifically, these data suggest that sensitive discourse in the context of reminiscing (in the sense that a mother uses specific, open-ended

questions to engage the child in the conversation and evaluations that validate his or her participation) creates an important arena for socializing representational thinking and perhaps for shaping the content and structure of the child's mental models during the preschool years.

In this sample, maternal attachment script representations were not significantly related to maternal narrative style ($SEE \times$ script score, $r = .17$, n.s.), but both scores were significantly correlated with AQS security and children's participation in the memory talk task. The maternal script representation score was also significantly associated with the use of emotion words in the memory task for both mothers and children. When entered simultaneously in regression analyses, both the SEE dimension score and the attachment script score independently predicted AQS security and their interaction term was not significant. Thus, we find neither mediation nor moderation effects in the prediction of attachment security by attachment representation vs. interaction relevant variables. In addition, both maternal narrative style and references to emotions were unique and significant predictors of children's participation in the narratives. Together, these findings offer useful insights into how discourse about emotion-laden events may shape (and be shaped by) mental script representations (for mothers) and children's sensorimotor representations of attachment. That is, in the context of a close and secure relationship, mothers are better able to help children organize representations of events in order to build a shared history, and that this narrative style per se is not necessarily related to their attachment-related scripts. However, mothers' and their children's tendencies to integrate emotional content into these relational narratives are driven, in part, by mothers' own attachment representations. This set of relations is consistent with theoretical models of the pathways of influence from maternal attachment to child outcomes articulated by Bowlby (e.g., 1973) and others (e.g., Main et al., 1985), but also prompts researchers to consider the mechanisms through which different communicative modalities influence cognitive (representational) and affective components of a secure relationship in the preschool period.

Our findings regarding maternal and child references to emotion words are also noteworthy and are consistent with findings linking attachment security to open communication about a wide range of emotional states (e.g., Etzion-Carasso & Oppenheim, 2000; Laible & Thompson, 1998). Indeed, it was clear that the mother-child conversations of secure dyads included emotion words more frequently (both positive and negative) than was true for dyads in which the child had a lower security score. This is important because children's capacities to talk about and label emotions help them to understand both the causes and consequences of emotion (see Dunn, Brown, & Beardsall, 1991). Bowlby suggested that "the language of feeling is an indispensable vehicle for talking about ways in which a situation is appraised and about behavioral systems in a state of activation" (Bowlby, 1969/1982, p. 123). Our data suggest that, even early in the preschool years, the extent to which children integrate emotions into their narratives about past events is associated with attachment security (see also Fivush & Reese, 2002).

Findings from this study are also consistent with current research on mother-child reminiscences per se, independent from their relations to attachment measures. For example, mothers who asked more memory questions, were more elaborative, repetitive, and evaluative in the memory talk task had children who tended also to be more elaborative, repetitive, and evaluative during these reminiscences. Overall, mother and child codes tended to show internal coherence for the memory talk task and cross-member codes (i.e., mother codes with corresponding child code) also tended to be associated significantly. These findings suggest that young children respond to the structure and style of their

mothers in these conversations; they are not passive listeners (see Fivush & Reese, 2002). We did not find significant gender differences in narrative style items for mothers or children in this sample. The literature on mother–child reminiscences is not consistent regarding gender differences; they are reported in some (e.g., Haden, Haine, & Fivush, 1997; Reese, Haden, & Fivush, 1996), but not other (e.g., Farrant & Reese, 2000) studies. This may be due to the age of the children in this sample (most were under 4 years), and future research might test for age-related changes in the narrative styles of boys and girls (and/or their mothers) (see Adams, Kuebli, Boyle, & Fivush, 1995).

Although we are generally satisfied with the results of this study, several factors limit our interpretations of the findings. First, we do not have a direct measure of children’s mental representations of attachment and this will be necessary to test the hypothesis that parents actively instruct their children as they construct the elements of such a representation (e.g., that the child is loved and accepted, that the parent will be available to support the child’s exploration or to comfort the child as needed). The AQS is a valid and reliable tool for assessing children’s secure base *behavior* at home (van IJzendoorn et al., 2004), but the AQS security score is a summary of the child’s pattern of behaviors (and, thus instantiates the sensorimotor representation of attachment) and is not a measure of *mental* models. Measures such as the McArthur story-stem task (e.g., Bretherton et al., 1990) might afford an assessment of children’s mental attachment representations that we would anticipate being related to both maternal attachment representations and maternal narrative style. It would also be informative to include independent measures of verbal skills (for both parent and child) to determine whether the narrative style we find associated with attachment variables and child narrative style is a general or more specific support for positive adjustment. Finally, these data were not longitudinal making it impossible to determine the direction of the effects and thus causal interpretations must be made cautiously.

Despite these limitations, our data contribute to the understanding of preschool attachment and narrative capacities in several ways and raise important questions for future research. We document a link between maternal attachment representation, child security, and the inclusion of emotional content in maternal and child discourse about autobiographical events. Adult attachment representations have not been considered previously in the literature bridging attachment and reminiscing styles (Fivush & Reese, 2002), and our findings provide insights into individual differences underlying the various ways in which mothers talk about and organize relational experiences with their children that represent past events. Second, our data suggest the value of considering how multi-dimensional aspects of maternal narrative style relate to maternal and child attachment measures, and how different communicative modalities may influence representational and affective components of the attachment relationship. This illustrates the dynamic interplay of cognition and action in the dyadic co-construction of attachment, consistent with Bowlby’s original formulation (e.g., 1969/1982, 1973). Finally, our research design entails multiple observation settings and multiple informants (mothers, observers, mother–child conversations), which increases in our confidence in the robustness of the results. Taken together, our findings add to method and theory-building in the study of preschool children’s attachment relationships and narrative skills.

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