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Working Together to Make Sense of the Past: Mothers' and Children's Use of Internal States Language in Conversations about Traumatic and Nontraumatic Events

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Mother–child conversations about a devastating tornado and about 2 nontraumatic events were examined to determine whether there were (a) differences in use of internal states language when talking about traumatic and nontraumatic events and (b) similarities in mothers' and children's use of internal states language. At Session 1, which took place 4 months after the tornado, with conversational length controlled, there was no evidence of differential use of internal states language as a function of event for mothers or children. At Session 2, which took place 6 months later (10 months after the tornado), older children's narratives about the tornado were more saturated with internal states language, relative to their narratives about nontornado events. For both the traumatic and the nontraumatic events, there were cross-lagged correlations between maternal use of emotion language at Session 1 and children's use of emotion language at Session 2. The pattern of findings is consistent with the suggestion that mother–child conversations are one context for the socialization of language about emotional experiences.

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Individuals have many personal experiences, some that they remember vividly and others that they forget. A major question that has been addressed in a number of studies is whether traumatic experiences are differentially remembered relative to more benign, and even mundane, nontraumatic experiences. Yet, as noted by Fivush and Baker-Ward in the introduction to this special issue, one feature that may distinguish traumatic and nontraumatic events, namely representation of internal states in general and emotional experiences in particular, has received relatively little attention. In this research, we examined potential differences in the language adults and children use to describe internal states in memory narratives about traumatic and nontraumatic events. Because the memory narratives were from mother–child conversations, we also were able to use them to study the process of socialization of expression of internal states.

There are a number of reasons to focus on use of internal states language in memory reports of traumatic and nontraumatic events. First, individuals' perceptions of events (i.e., what they saw and heard during the event) and their emotional and physiological reactions to events make experiences more or less personally significant. In a very real sense then, internal states serve as an important determinant of event memory. Verbal descriptions of internal states provide a "window" on the impact of an event on an individual.

Second, internal states language is important because it is a major vehicle for socializing how we are to think and feel about our experiences. It is apparent that the ways in which parents talk about the past with their children influence children's own autobiographical narratives. Briefly, parents who discuss past events in more detailed and narratively coherent ways have children whose later narratives are more detailed and coherent (e.g., Reese, Haden, & Fivush, 1993). Adult guidance in how to talk about the past may be especially important for traumatic experiences because, on their own, children may not be able to understand or gain perspective on such events (Fivush, 1998). Consistent with this suggestion, when parents or medical personnel discuss and explain painful medical procedures such as the voiding cystourethrogram fluoroscopy (a diagnostic procedure involving insertion of a catheter into the bladder), children have more accurate recall of them (e.g., Goodman, Hirschman, Hepps, & Rudy, 1991; Goodman, Rudy, Bottoms, & Aman, 1990). Discussions of internal states are especially important: Because they cannot be directly observed, may be fleeting, and are sometimes conflictual, internal states often require interpretation and evaluation by the individual, as well as by others.

Although there are reasons to examine internal states language in reports of traumatic and nontraumatic events, few studies have permitted direct comparisons. Much research on possible effects of trauma on memory has focused on whether the accuracy of reports is affected. Researchers have compared, for example, memory performance of children who endured a stressful medical procedure (e.g., voiding cystourethrogram fluoroscopy) with that of children who experienced a

substantially less stressful procedure (a pediatric examination; e.g., Brown et al., 1999). Stressful procedures are recalled at least as well as, and in some cases better than, more benign ones (e.g., Ornstein, 1995; see Fivush, 1998, 2002, for reviews). Studies such as these have high forensic relevance. They are not especially informative regarding the qualities of the narratives that children provide about different types of events, however.

Another reason there has been little empirical attention to the use of internal states language in reports about traumatic and nontraumatic events is that most comparisons across event types have been between subjects, yet investigation of possible differences in narrative quality are best accomplished within subjects. The few studies that afford within-subjects comparisons suggest differences across event types. Fivush, Hazzard, Sales, Sarfati, and Brown (2003) reported interviews of 5- to 12-year-old children who talked about both stressful or traumatic and nontraumatic events. The stressful or traumatic events were serious illness or death, minor illness or injury, property damage, violent and minor interpersonal altercations, and parental separation; the nontraumatic events were family outings, vacations, and parties. Overall, the children included fewer descriptions (i.e., adjectives, adverbs, possessives, and modifiers) and mentioned fewer objects and persons when recounting traumatic relative to nontraumatic experiences. Conversely, relative to nontraumatic experiences, the children's narratives about traumatic events included more information about internal states (i.e., emotional, cognitive, and volitional states of self or other). This study thus suggests that memory narratives about traumatic events are more internally focused, relative to narratives about nontraumatic events.

Sales, Fivush, and Peterson (2003) examined conversations between parents and their 3- to 5-year-old children about two types of events: a positive event chosen by the parent (e.g., family vacation) and the stressful or traumatic experience of a medical emergency for the child, one sufficient to necessitate a trip to the emergency room (e.g., a broken bone). Both parents and their children spent proportionally more time discussing the causes of behavior (e.g., "What did you do to get hurt?" p. 192) in their conversations about traumatic events, relative to positive events. In contrast to the findings of Fivush et al. (2003), children spent proportionally more time talking about emotions in their conversations about positive events relative to traumatic events. The same pattern was observed for the children's parents. In addition, when talking about the positive events, parents featured a higher proportion of positively valenced relative to negatively valenced emotion; when talking about the traumatic medical emergencies, they featured a higher proportion of negatively valenced relative to positively valenced emotion. Children's use of emotion language was too infrequent to support a parallel analysis.

The third investigation featuring a direct comparison of reports of traumatic and nontraumatic events is one in which we interviewed mothers and their 3- to 11-year-old children about a devastating tornado that hit the small, rural town of

St. Peter, Minnesota (population 9,500) on March 29, 1998 (Ackil, Van Abbema, & Bauer, 2003). We describe the event in some detail because it was the subject of the traumatic-event narratives for the participants in Ackil et al., as well as the source of data for this research. The winds of the storm exceeded 200 mph and cut a 1.25-mile-wide path of destruction through the town. The tornado took the life of a 6-year-old child who was known to most of the participants in the study. Seventy-five percent of the town's homes were damaged, with 28% completely destroyed or damaged to the point they were uninhabitable (Murray, 1998; "Officials Revise," 1998). As quoted in Ackil et al. (p. 289), one mother described the scene she observed as she emerged from the basement after the storm:

> It just literally looked like a bomb had gone off … I probably walked about a mile and a half through town over power lines, over people's roofs and dressers. I expected to walk over bodies, the streets were so littered you could not get through … you were just literally walking across shingles and walls. You couldn't even identify where you were in town because everything looked so completely different … People were just milling around trying to find where their loved ones were, trying to make sure people were okay and stuff. Trying to get to other households to make sure that people had survived.

The effects of the tornado were felt long after the storm itself. Homes that remained standing were without power for a minimum of 8 days and in some cases for more than a month. The town's nearly 2,100 elementary and secondary school children were out of school for 9 days. On their return, children of all ages attended the same school in shifts for the remainder of the academic year. In short, the tornado and resulting destruction had immediate, pronounced, and prolonged impact on the residents of the town, and thus, the participants in Ackil et al. (2003).

Approximately 4 months after the tornado, we visited mothers and their children in their homes (or alternate location, as necessary) and asked them to talk about the storm and about two non-tornado-related events: one that had taken place within 3 months prior to the tornado and one that had taken place since the storm but which was not related to it. Although we gave no other specific instructions about event selection, for both non-tornado-related events the dyads talked about positive experiences (with the exception of one dyad that talked about a grandmother's funeral as one of their non-tornado-related events). The types of events discussed were similar to those in Fivush et al. (2003) and Sales et al. (2003). Because one of the nontraumatic experiences was from before and the other was from after the tornado, we were able to differentiate narrative features associated with the type of event discussed from features associated with the time since the event occurred. Six months later (10 months after the storm), we interviewed the dyads again, thereby permitting assessment of changes in narratives over time. We examined both interviews using a detailed coding scheme that captured the range of nar-

rative elements (i.e., the *who, what, where, when, why*, and *how* of the events) included in conversations of each event type.

In Ackil et al. (2003) we reported that the proportion of narratives that included discussion of causes and consequences of events (i.e., precursors to and outcomes of the events), as well as temporal connections between episodes in events (e.g., "and then …"), was greater for the traumatic than for the nontraumatic events (which did not differ from one another). This finding parallels that observed in Sales et al. (2003). Moreover, the difference largely endured over the 6-month interval between sessions. Whereas the range in ages of the children in the study was large, age-related differences were not especially pronounced and there were no interactions with age at Session 1 and few at Session 2 (see Ackil et al., for details).

Although Ackil et al. (2003) focused on the range of narrative elements represented and thus not on internal states per se, the coding scheme included categories that captured mention of the emotional (positive and negative emotion), perceptual (sound, sight, smell, taste, and touch), and cognitive (thoughts) experiences associated with the events. At both sessions, more dyads included mention of negative emotional experiences in their conversations about the tornado, relative to the non-tornado-related events, which did not differ. There was no corresponding difference in the mention of positive emotional experiences at either session. This implies that the dyads expressed a wider array of emotions in their conversations about the tornado, relative to the two non-tornado-related events. In addition, at both sessions, more dyads mentioned perceptual experiences associated with the tornado, relative to the non-tornado-related events, which did not differ. Dyads' mention of cognitive experiences did not differ across events at either session. Overall, consistent with Fivush et al. (2003), the findings suggest a more internal focus in conversations about traumatic relative to nontraumatic events.

In our research, we undertook a more thorough examination of inclusion of internal states in conversations about the event of the tornado compared with the non-tornado-related events. We did so for two reasons. First, in Ackil et al. (2003), the unit of analysis was the mother–child dyad at the level of the conversation as a whole. That is, for each conversation, dyads were credited with an internal states category if the child mentioned an internal state or if the mother mentioned an internal state that then was affirmed by the child. As a consequence, the study did not permit examination of children's independent contributions or of mothers' own use of internal states language. In addition, because the primary analyses were at the level of the conversation as a whole (i.e., whether the category was represented in the conversation), they did not permit evaluation of whether narratives about the tornado were more saturated with internal states language, relative to narratives about the non-tornado-related events. Accordingly, in this research, we coded the frequency of mention of internal states by mothers and children separately.

Second, as noted earlier, conversations about past events provide an ideal context for reflection on internal states and thus, opportunity for socialization of

use of language to describe them. The literature on gender differences in autobiographical narratives provides a model for the socialization process in the domain of emotional experiences (see Fivush & Buckner, 2000, for a review). It suggests that children receive implicit and perhaps even explicit "instruction" in the interpretation of their own and others' internal states, as a function of expectations of individuals in each gender group. For example, Adams, Kuebli, Boyle, and Fivush (1995) found that both mothers and fathers used a greater number and variety of emotion words with 40-month-old daughters than with same-age sons. By 70 months of age, girls used a greater variety of emotion words than boys. The "lessons" learned as young children seem to persist: In adulthood, women use more emotion words when describing past events, relative to men (Bauer, Stennes, & Haight, 2003).

It is reasonable to expect that just as they are socialized to gendered use of internal states language, children also may be socialized about the ways that they should and should not think and feel about traumatic experiences (see Fivush, 2004, for discussion). Consistent with this suggestion, in Sales et al. (2003) parents' and children's approaches to talking about internal states were consistent: There were significant correlations between parents' and children's use of emotion words when talking about both positive (r = .43) and traumatic (r = .53) events. The mixture of emotional experiences represented in narratives about the tornado event in Ackil et al. (2003) also may reflect socialization: In addition to negative emotional experiences associated with the tornado, children were encouraged to think about positive experiences (e.g., that the family was "lucky" because, even though their house was destroyed, nobody was physically injured). Mother–child conversations such as in Sales et al. and Ackil et al. provide an ideal context in which to examine the socialization of language about internal states associated with traumatic and nontraumatic experiences. By examining both mothers' and children's use of internal states language, and possible relations between them, we can begin to gain some perspective on this process. Sales et al. provided an opportunity for concurrent assessment; Ackil et al. provided an opportunity to assess possible cross-lagged relations as well.

In our research, we examined the use of internal states language in accounts of the tornado and the two nontornado events for both members of the mother–child dyads included in Ackil et al. (2003). We used the comparison to inform the questions of whether internal states language was differentially represented in narratives about traumatic and nontraumatic events either 4 months after the storm or 10 months after the storm and whether use of internal states language changed over time. To begin to address socialization of internal states language, we examined concurrent relations between mothers' and children's expressions of internal states at each interview, as well as cross-lagged relations from the first to the second interview.

METHOD

Participants

The participants were mother–child dyads who were residents of St. Peter, Minnesota, at the time of the March 29, 1998, tornado. Twenty-nine of the dyads participated in an initial interview approximately 4 months after the storm ($M = 4.4$ months; range = 3.5–5.1 months); 28 of the dyads participated in a second interview approximately 6 months later ($M = 6.2$ months; range = 5.4–6.9 months; one mother and her 9-year-old son were unable to participate in Session 2). Eleven of the children were girls. All of the participants were Caucasian and of roughly middle- to upper middle class socioeconomic status. In six cases, mothers participated with more than one child (one mother participated with three of her children and five mothers participated with two of their children). Thus, 22 mothers participated in 29 unique mother–child pairs.[1] The participants were recruited through a day camp specifically organized by the town of St. Peter, Minnesota, to serve the community after the tornado. Each dyad received a token of appreciation for their participation (a gift certificate or donation to a charitable organization). Four additional dyads participated but were not included in the sample because of audiovisual equipment failure ($n = 3$) or because the child resisted talking about the storm ($n = 1$).

At the first interview, the children ranged in age from 2.6 to 11.8 years (M age = 6.7 years). To examine possibilities of age-related differences in the use of internal states language by mothers as a function of the ages of their children and of age-related differences in children's use of internal states language, we grouped the children into three age groups. Seven children (1 girl) were included in the *youngest* age group ($M = 3.6$ years; range = 2.6–4.9 years), 12 children (6 girls) were included in the *middle* age group ($M = 6.3$ years; range = 5.3–6.9 years), and 10 children (4 girls) were included in the *oldest* age group ($M = 9.3$ years; range = 7.2–11.8 years). Although the age groups were constructed post hoc and based largely on the ages available, the divisions proved reasonable in prior analysis (Ackil et al., 2003).

Procedure

As outlined in Ackil et al. (2003), the dyads participated in two sessions, 6 months apart.

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[1] The data in this report are based on the 29 mother–child pairs, as opposed to the 22 unique mothers who participated. Although it required that some mothers be represented more than once, use of the dyad as the unit of analysis is appropriate given that mothers' use of internal states language could reasonably be expected to vary as a function of the characteristics of their children, including, but not limited to, children's age and gender, as well as a function of the children's contributions to the conversations. Thus, although the data analysis is not based on 29 unique mothers, it is based on 29 unique dyads.

Session 1. Approximately 4 months after the tornado, mothers and their children were visited by two female researchers. Twenty-four of the visits took place in the participants' homes; five dyads were met in alternate locations because they had been displaced by the storm (n = 3 dyads) or for convenience (n = 2 dyads).

The procedure for the first visit included several tasks. First, out of hearing range of the child, a researcher asked the mother to recount her family's experience of the tornado. Mothers were asked to describe events preceding the tornado, the storm itself, and its aftermath. To minimize influence on the subsequent mother–child conversation, researchers relied solely on open-ended prompts, such as "Tell me what happened the day of the storm." The interviews were audio- and videotaped. Second, mothers were asked to select two unique events that they and their children had experienced together and which they would discuss with their children. One event was to have occurred no more than 3 months prior to the storm (hereafter referred to as the pretornado event) and the other was to have occurred after the tornado but to be unrelated to the storm (hereafter referred to as the posttornado event). As noted earlier, although mothers were not explicitly instructed to select positive experiences, they did so, by and large.

Third, children joined their mothers, and the dyads were asked to discuss each of the events as they would normally, in any order, for as long as they desired. The researcher then left the room. The conversations were audio- and videotaped. Fourth, at the end of the mother–child interview, mothers were asked specific questions to assess the severity of damage sustained.[2] Finally, the researcher collected demographic information and asked the mother to complete the Beck Depression Inventory II (BDI-II) for herself and the Achenbach Child Behavior Checklist (CBCL) for each participating child. Data from the BDI-II and CBCL are not included in this report.

Session 2. Approximately 6 months after Session 1 (and 10 months after the tornado), 28 of the 29 dyads were revisited by an experimenter who delivered an audiotape recorder and instructions for the Session 2 tasks. The timing of the second session was deliberately chosen to avoid contamination by the 1-year commemorations of the storm orchestrated by the town and the media. Mothers were reminded of the three events they discussed 6 months previously and were asked to talk with their children about the events, at their convenience. They were asked to sit alone with each participating child and talk about the events as they would nor-

[2] To determine whether the damage the family sustained related to mothers' or children's use of internal states language, we calculated Pearson product–moment correlations between estimates of damage and production of internal states language in conversations about each event, for each session, for each participant group. None of the correlations reached statistical significance at either session. Moreover, inspection of the data revealed no systematic nonlinear relations.

mally, in any order, and for however long they desired. The conversations were audiotaped. Mothers again were asked to complete the BDI-II for themselves and the CBCL for each participating child. Approximately 2 weeks after delivering the materials for the second session, a researcher collected the audio equipment, taped conversations, and completed inventories.

Coding and Reliability

The conversations were transcribed verbatim and subsequently reviewed by an independent transcriber who made any necessary corrections. The transcripts were then coded for all instances of internal states language, using an adaptation of the coding scheme described in Bauer et al. (2003). Specifically, all internal states terms in the narratives were coded into one of four mutually exclusive categories: (a) emotion (e.g., *happy*, *sad*), (b) cognition (e.g., *thinking*, *wondering*), (c) perception (e.g., *see*, *hear*), and (d) physiological (e.g., *tired*, *hungry*). Terms were categorized in accord with their meaning in the narrative. For example, in the utterance "It really made me *see* the extent of the damage," *see* was categorized as a cognition term (i.e., meaning to come to understanding), whereas in the utterance "I was able to see all the downed trees," *see* was categorized as a perception term. Both explicit mentions of emotion (e.g., "I was *happy*," "I felt *sad*") and implied emotional experiences (e.g., "I *laughed*," "I *cried*") were included. In addition, emotion terms only were coded for valence. Valence refers to whether the term was positive (e.g., *love*), negative (e.g., *angry*), or neutral (e.g., "I did *not* get *angry*," "I was *not afraid*"). Separate calculations then were made of the total number of terms in each category for the pretornado, tornado, and posttornado events. In addition, for each event, we derived a total internal states score by summing the number of internal states terms in each category.

The transcripts were coded by two independent coders (AFL and JR). Each coded approximately one half of the transcripts from each interview; mothers' and children's contributions were coded separately. For purposes of establishing the reliability of coding, the transcripts for seven of the dyads (24% of the sample at Session 1 and 25% of the sample at Session 2) were recoded by the other individual. Overall reliability of coding was 90% (mothers at Session 1, $M = 91\%$, range = 88–94%; children at Session 1, $M = 87\%$, range = 77–100%; mothers at Session 2, $M = 92\%$, range = 88–96%; children at Session 2, $M = 91\%$, range = 89–95%).

RESULTS

To determine whether mothers' use of internal states language, children's use of internal states language, or both, differed at either of the interviews or over time as a function of event type, we examined mean levels of production of internal

states terms by mothers and their children.[3] To determine whether at either interview, mothers' use of internal states terms was related to children's use, we examined concurrent correlations between participant groups. To address the possibility of socialization of use of internal states language, we also examined cross-lagged correlations both within and between participant groups, from Session 1 to Session 2.

Mean Levels of Production of Internal States Terms at Session 1

Descriptive statistics on the use of internal states terms by mothers and their children are provided in Table 1, Panels A and B, respectively. For each group, we conducted 3 (event: pretornado, tornado, posttornado) × 3 (age group of child: youngest, middle, oldest) mixed analyses of variance (ANOVAs) with repeated measures on event, for the total number of internal states terms and for the individual internal states categories of emotion, cognition, and perception. We did not conduct a separate analysis for physiological states terms because the incidence of their use was quite low in general (all Ms < 0.60) and in the pre- and posttornado events in particular (all Ms < 0.45). For the internal states category of emotion only, we conducted supplementary analyses with emotion type (positive vs. negative) as a factor. Although we coded some emotion terms as neutral in valence because the frequency of production of terms classified as neutral was so low (see Table 1; all Ms < 0.50), we did not include neutral terms in the analyses. For all analyses, main effects involving more than two means were examined with Tukey tests of significant difference ($p < .05$).

Mothers. At Session 1, mothers' use of internal states terms did not differ as a function of the age of the children with whom they were talking. However, mothers produced more internal states terms overall, and more emotion, cognition, and perception terms in their conversations about the tornado than in their conversations about the pretornado and posttornado events, which did not differ from one another; Fs(2, 52) = 17.85, 5.24, 20.12, and 6.12, ps < .005, respectively. However, as reported in Ackil et al. (2003), a 3 (event) × 3 (age group of child) mixed ANOVA,

[3]Another perspective on the question of whether mothers' use of internal states language, children's use of internal states language, or both, differed either 4 months or 10 months after the storm as a function of event type can be gained by examining patterns of correlation between the events (i.e., stronger correlations between variables in the two non-tornado-related events relative to between either non-tornado-related event and the tornado, would provide evidence of differential use of internal states terms). Because of space constraints, the relevant analyses are not presented in this manuscript. Briefly, at Session 1, mothers' use of internal states language was differentiated as a function of event type, whereas that of the children's was not. The opposite pattern was observed at Session 2. Details of the analyses are available from the first author.

TABLE 1
Mothers' (Panel A) and Children's (Panel B) Use of Internal States Terms at Sessions 1 and 2

		Session			
		Session 1		*Session 2*	
Participant	*Category*	*Mean*	*SD*	*Mean*	*SD*
Panel A: Mothers	Pretornado				
	Total	11.28	6.93	10.64	6.49
	Emotion	2.83	3.62	1.43	1.75
	Positive	2.24	2.72	1.29	1.33
	Negative	0.59	1.72	0.07	0.26
	Neutral	0.00	0.00	0.07	0.38
	Cognition	7.24	4.24	8.32	5.40
	Perception	0.90	1.40	0.82	1.22
	Physiology	0.31	1.49	0.07	0.26
	Tornado				
	Total	26.83	18.46	24.32	23.18
	Emotion	5.97	5.94	4.00	4.15
	Positive	1.55	2.10	1.54	2.50
	Negative	3.59	4.14	2.14	2.37
	Neutral	0.48	0.91	0.32	0.72
	Cognition	17.34	11.71	17.14	17.05
	Perception	3.17	3.78	2.57	3.98
	Physiology	0.34	0.55	0.61	1.50
	Posttornado				
	Total	11.24	8.10	10.52	7.21
	Emotion	3.21	3.74	1.37	2.10
	Positive	2.34	2.97	0.93	1.47
	Negative	0.79	1.24	0.44	0.93
	Neutral	0.07	0.37	0.00	0.00
	Cognition	6.69	5.70	7.96	5.95
	Perception	1.17	1.87	1.04	1.51
	Physiology	0.17	0.66	0.15	0.60
Panel B: Children	Pretornado				
	Total	4.66	4.51	5.57	7.05
	Emotion	1.17	1.75	1.32	2.26
	Positive	0.86	1.30	0.89	1.29
	Negative	0.31	0.71	0.43	1.43
	Neutral	0.00	0.00	0.00	0.00
	Cognition	2.38	2.81	3.46	3.97
	Perception	0.69	1.17	0.71	1.49
	Physiology	0.41	1.68	0.07	0.38
	Tornado				
	Total	14.03	15.92	16.43	16.60
	Emotion	4.48	5.59	4.57	4.78
	Positive	1.03	1.78	1.32	2.31
	Negative	3.38	4.00	3.21	3.46
	Neutral	0.07	0.26	0.11	0.42

(continued)

TABLE 1 *(Continued)*

		Session			
		Session 1		*Session 2*	
Participant	*Category*	*Mean*	*SD*	*Mean*	*SD*
Panel B: Children	Cognition	6.41	7.80	8.32	10.26
	Perception	2.59	4.30	2.82	2.68
	Physiology	0.55	1.18	0.71	1.36
	Posttornado				
	Total	5.83	6.58	6.78	6.86
	Emotion	1.31	2.02	1.56	2.29
	Positive	0.93	1.49	1.19	2.11
	Negative	0.38	0.82	0.33	0.73
	Neutral	0.00	0.00	0.04	0.19
	Cognition	3.52	3.94	4.30	4.84
	Perception	0.86	1.60	0.78	0.89
	Physiology	0.14	0.52	0.14	0.60

with repeated measures on event, revealed that conversations about the tornado were longer than those about the pretornado and posttornado events, which did not differ; $F(2, 52) = 19.70$, $p < .001$ (M numbers of conversational turns = 44.34, 19.97, and 21.17, SDs = 31.13, 11.34, and 11.39, respectively). As a result, mothers had more opportunities to mention internal states in their conversations about the tornado, relative to the nontornado, events. With the number of conversational turns controlled in analyses of covariance (ANCOVA), the total number of internal states terms, and the numbers of emotion, cognition, and perception terms that mothers used no longer differed across events. Thus, mothers' contributions to conversations about the tornado were not differentially saturated with internal states language, relative to their contributions when talking about the pre- and posttornado events. Because of the sizable difference in the number of conversational turns across events, in all subsequent analyses of the data from Session 1 we controlled for conversational length.[4]

[4] Differential length of narratives about nontraumatic and traumatic events is consistent with Sales et al. (2003) and with an observation in Bahrick, Parker, Fivush, and Levitt (1998), namely, that 3- and 4-year-olds' narratives about Hurricane Andrew were substantially longer than narratives about positive events in other studies (e.g., Hamond & Fivush, 1990). Given that participants in Sales et al., Bahrick et al., and this study were recruited because they had experienced specific types of traumatic events (i.e., medical emergencies and natural disasters), it is possible that conversations about these events were longer because, either implicitly or explicitly, participants were aware that the traumatic events were the focus of the research. Consistent with this suggestion, in Fivush et al. (2003), in which recruitment was not based on experience of a natural disaster or medical emergency, conversations about nontraumatic and traumatic events did not differ in length. The possibility that the length of a narrative may be influenced by the basis for recruitment into a study reinforces our decision to approach the analyses with conversational length controlled, thereby reducing the likelihood of potentially artifactual findings.

Although there was not a difference in the density of use of emotion terms used across events, a 3 (event: pretornado, tornado, posttornado) × 3 (age group of child: youngest, middle, oldest) × 2 (valence: positive, negative) mixed ANCOVA with repeated measures on event and valence revealed that mothers used different types of emotion terms across events. Specifically, analysis of the Event × Valence interaction, $F(2, 52) = 11.78$, $p < .0001$, revealed significant effects of valence for each event; Fs(1, 28) = 10.37, 10.60, and 8.76, ps < .007, for pretornado, tornado, and posttornado, respectively. For the pre- and posttornado events, mothers used more positive emotion terms than negative emotion terms. In contrast, when talking about the tornado, mothers used more negative emotion terms than positive emotion terms (see Table 1 for means).

Children. The 3 (event) × 3 (age group of child) ANCOVA revealed that, like their mothers, at Session 1, with conversational length controlled, the children did not differ in their total production of internal states terms or in their production of terms from any of the individual internal states categories as a function of the event about which they were talking or as a function of their age. Thus, children's contributions to conversations about the tornado versus the pre- and posttornado events were not differentially saturated with internal states language. Older and younger children's conversations did not differ in the density of internal states language represented.

Also like their mothers, the children tended to use different types of emotion terms when talking about the tornado and nontornado events; the effects were apparent only in the two older age groups, however. Specifically, the three-way analysis of Event × Age Group × Valence revealed a significant interaction among the variables, $F(4, 52) = 2.93$, $p < .03$. Separate analyses revealed that across events, the youngest children used roughly comparable numbers of positive and negative emotion terms. In contrast, the children in the middle and the oldest age groups produced patterns similar to that of their mothers. For both age groups, there were significant Event × Valence interactions, $F(2, 22) = 8.89$, $p < .002$, and $F(2, 18) = 11.25$, $p < .0007$, for the middle and oldest age groups, respectively. For the pre- and posttornado events, both age groups produced more positive than negative emotion terms; the effects were significant for the middle age group, for the pretornado event, and for the oldest age group, for the posttornado event, $F(1, 11) = 4.71$, $p = .05$, and $F(1, 9) = 5.06$, $p = .05$, respectively. In contrast, when talking about the tornado, both age groups produced significantly more negative than positive emotion terms, $F(1, 11) = 9.77$, $p < .01$, and $F(1, 9) = 13.33$, $p < .006$, for the middle and oldest age groups, respectively.

Concurrent Correlations: Session 1

Because of the differences in the lengths of the conversations across event types, we calculated all correlations with conversational length partialled out. In addi-

tion, to control for the variance associated with the wide range in ages of the children, we also partialled out children's age. The resulting Pearson product–moment correlations are provided in Table 2, Panel A. In general, the correlations were moderate in magnitude, suggesting that the individual members of the dyads tended to use similar levels of internal states language. The dyads tended to have higher degrees of concordance in their use of emotion terms in general, and positive emotion terms in particular, relative to the other internal states categories. With the exception of generally weaker correlations for the posttornado events, relative to the pretornado and tornado events, there was not a strikingly different pattern of correlation as a function of the event about which the dyads were talking.

Mean Levels of Production of Internal States Terms at Session 2

Descriptive statistics on the use of internal states terms by mothers and their children at Session 2 are provided in Table 1, Panels A and B, respectively. We approached analysis of the Session 2 data in the same manner as the Session 1 data. As was the case for the Session 1 data, we did not conduct a separate analysis for the category of physiological states because the incidence of use of these terms was quite low in general (all Ms < 0.75) and in the pre- and posttornado events in partic-

TABLE 2
Concurrent Correlations Between Mothers' and Children's Production of Internal States Terms for Each Event at Session 1 (Panel A) and Session 2 (Panel B)

	Event		
	Pre-Tornado	*Tornado*	*Post-Tornado*
Panel A: Session 1			
Total internal states	.25	.02	.43**
Emotion	.47**	.40**	.35*
Positive emotion	.48**	.41**	.34*
Negative emotion	.36*	.46**	.31
Cognition	–.05	–.07	.32*
Perception	.46**	.11	.71****
Panel B: Session 2			
Total internal states	.05	–.22	–.06
Emotion	.46**	.24	.11
Positive emotion	.56***	–.02	.17
Negative emotion	.72****	.27	.21
Cognition	–.10	–.05	.21
Perception	.40**	–.18	.45**

*p < .10. **p < .05. ***p < .01. ****p < .001.

ular (all *M*s < 0.20). Also as in Session 1, we did not include neutral emotion terms in the analysis of the valence of emotion terms because the frequency of production of terms classified as neutral was so low (see Table 1; all *M*s < 0.35). Finally, as was the case at Session 1, conversations about the tornado at Session 2 were significantly longer than those about the pretornado and posttornado events, which did not differ, $F(2, 49) = 32.95$, $p < .0001$ (*M* numbers of conversational turns = 39.89, 16.50, and 20.56, *SD*s = 28.43, 10.42, and 13.36, respectively). Accordingly, to control for the difference in conversational length and thus opportunity to mention internal states, all analyses were conducted with the number of conversational turns covaried.

Mothers. At Session 2, the Event × Age Group ANCOVAs on the total number of internal states terms and the numbers of emotion, cognition, and perception terms used by mothers revealed no statistically significant effects. Thus, as was the case at Session 1, with conversational length controlled, mothers' use of internal states terms did not differ as a function of the event about which they and their children were talking or as a function of the age of the children with whom mothers were talking.

As we observed at the first session, the valence of emotion terms mothers used varied as a function of event. Specifically, the Event × Age Group × Valence ANCOVA yielded a significant interaction of Event × Valence, $F(2, 49) = 6.80$, $p < .003$. Mothers used more positive than negative emotion words in their conversations about both non-tornado-related events. For the pretornado event, the effect was statistically significant, $F(1, 27) = 28.79$, $p < .001$, for the posttornado event, the effect approached significance, $F(1, 27) = 3.81$, $p < .07$ (see Table 1 for means). In conversations about the tornado, use of positive and negative emotion terms did not differ significantly. This effect contrasts with that observed at Session 1, at which time in conversations about the tornado mothers used significantly more negative than positive emotion words.

Children. In contrast to Session 1, in which the density of internal states terms used by the children in the sample did not differ across events, at Session 2, even with the number of conversational turns controlled, there were event effects for the total number of internal states terms used, as well as for the numbers of emotion and perception terms used, *F*s(2, 48) = 6.12, 3.57, and 5.94, *p*s < .04, respectively. For cognition terms, the effect approached significance, $F(2, 48) = 2.62$, $p < .09$. In each case (i.e., total terms; and emotion, perception, and cognition terms), children used more internal states terms in their conversations about the tornado, relative to the nontornado events, which did not differ from one another (see Table 1 for means). In the cases of the total number of internal states terms used, and the numbers of emotion and cognition terms used, the effects were qualified by interactions with age group, *F*s(4, 48) = 4.25, 2.81, and 2.88, *p*s < .05, re-

spectively. Separate analyses for each age group revealed the event effect for the children in the oldest age group only; Fs(2, 14) = 6.75, 10.32, and 3.65, ps < .05, for total internal states, emotion, and cognition terms, respectively. Among the children in the youngest and middle age groups, there were no event effects. Thus, the contributions to the conversations about the tornado made by the children in the youngest and middle age groups were differentially saturated with perception words alone. The contributions of the children in the oldest age groups were more saturated with perception words as well as with internal states terms in general, and with words describing emotions and cognitions in particular.

In the first interview, the valence of emotion terms that the children in the middle and oldest age groups used varied as a function of event; at Session 2, the effect extended to the youngest children in the sample as well. Specifically, the Event × Age Group × Valence ANCOVA yielded a significant Event × Valence interaction, $F(2, 49) = 8.29$, $p < .0009$. Separate analyses for each event revealed that, like their mothers, at Session 2, the children used more positive than negative emotion terms in conversations about the posttornado event, $F(1, 26) = 4.20$, $p = .05$. In the case of the children, the effect did not extend to the pretornado event. As they had at Session 1, at Session 2, the children contributed more negative than positive emotion terms to conversations about the tornado, $F(1, 27) = 7.68$, $p < .01$ (see Table 1 for means). This was observed even though, as noted previously, mothers did not exhibit this effect at Session 2.

Changes in Mean Levels of Production of Internal States Terms From Session 1 to Session 2

The analyses just reviewed suggest some changes in use of internal states language over time for both mothers and children. To determine whether the changes were statistically significant, for each category of participant we conducted 2 (session: Session 1, Session 2) × 3 (event) × 3 (age group) mixed ANCOVAs with repeated measures on session and event, and the numbers of conversational turns as covariates, for the total number of internal states terms used and for each category of internal states terms. For emotion only, we also conducted 2 (session) × 3 (event) × 3 (age group) × 2 (valence) mixed ANCOVAs with repeated measures on session, event, and valence and the numbers of conversational turns as covariates.

Mothers. There was no change in the total number of internal states terms used by mothers from Session 1 to Session 2. There were, however, changes in the number of emotion terms used and, to a lesser extent, in the number of cognition terms used. For emotion terms, the effect of session was statistically significant, $F(1, 25) = 12.42$, $p < .002$. Across events and age groups, mothers produced fewer emotion terms at the second session than they had at the first session (Ms = 2.28 and 4.00, SDs = 3.10 and 4.72, respectively). Conversely, mothers tended to produce more cogni-

tion terms at the second session than they had at the first session (*M*s = 11.18 and 10.43, *SD*s = 11.61 and 9.24, respectively), although the effect fell below the conventional level of statistical significance, $F(1, 25) = 3.13$, $p < .09$. Levels of production of perception terms did not change over the 6-month interval between sessions. Thus, it seems that over the between-session interval, mothers began to substitute information regarding how they (and/or other participants) *thought* about the events discussed for information regarding how the principal players *felt* about the events. Notably, none of the ANCOVAs yielded main effects of or interactions involving event. Thus, changes in mothers' use of internal states language over time did not vary as a function of the event about which they were talking.

In the four-way analysis that considered the valence of emotion terms used, there were interactions of Session × Age Group × Valence and Session × Event × Valence, $F(2, 25) = 5.28$, $p < .02$, and $F(2, 49) = 3.49$, $p < .04$, respectively. To pursue the three-way interaction involving the ages of the children with which the mothers were conversing, for each age group, we conducted separate two-way analyses of Session × Valence. For mothers of children in the youngest and oldest age groups, the effects of session were not statistically reliable. For mothers of children in the middle age group, analysis of the interaction of Session × Valence, $F(1, 11) = 6.40$, $p < .03$, revealed decreases in both positive and negative emotion terms over time, *F*s(1, 11) = 6.27 and 8.66, *p*s < .02, respectively. The decrease in production of negative emotion terms was greater than the decrease in production of positive emotion terms (differences = 1.72 and 0.58, respectively).

To pursue the three-way interaction involving event, for each event we conducted separate two-way analyses of Session × Valence. For the pretornado event, mothers used significantly fewer emotion terms at Session 2, relative to Session 1, $F(1, 26) = 6.28$, $p < .02$ (*M*s = 0.68 and 1.41, *SD*s = 1.13 and 0.68, respectively). For the posttornado event, analysis of the interaction of Session × Valence, $F(1, 26) = 7.12$, $p < .02$, revealed that mothers used significantly fewer positive emotion terms at Session 2, relative to Session 1, $F(1, 25) = 12.08$, $p < .002$ (*M*s = 0.93 and 2.34, *SD*s = 1.47 and 2.97, respectively). They did not differ in their use of negative emotion terms over time (*M*s = 0.19 and 0.44, *SD*s = 1.24 and 0.93, for Sessions 1 and 2, respectively). Finally, in their conversations about the tornado, mothers' use of emotion terms at Sessions 1 and 2 did not differ significantly (*M*s = 2.57 and 1.84, *SD*s = 3.41 and 2.43, respectively). These three-way interactions inform the main effect for total emotion terms produced discussed earlier: The reduction in use of emotion terms from Session 1 to Session 2 was observed in conversations about the pre- and posttornado events, but did not extend to the tornado-event conversations; the effect was especially pronounced in the conversations of mothers of children in the middle age group.

Children. The 2 (session) × 3 (event) × 3 (age group) ANCOVAs revealed that like their mothers, the children did not change in the total number of internal

states terms used between Sessions 1 and 2. Also, like their mothers the children increased their production of cognition terms over the between-session interval, $F(1, 25) = 4.64$, $p < .05$ (Ms = 5.37 and 4.10, SDs = 7.20 and 5.51, for Sessions 2 and 1, respectively). For the children, however, there was no corresponding decrease in the use of emotion terms (Ms = 2.49 and 2.32, SDs = 3.62 and 3.86, for Sessions 2 and 1, respectively). Children's levels of production of perception terms did not change over the interval between sessions. Thus, over the between-session interval, children maintained their levels of use of emotion and perception terms and increased their use of cognition terms. For both mothers and their children, the effects were across events. For the children, the four-way analysis that considered the valence of emotion terms used yielded no statistically significant effects involving session.

Concurrent Correlations: Session 2

As with the Session 1 analyses, we calculated all correlations with conversational length and children's age partialled out. The resulting Pearson product–moment correlations are provided in Table 2, Panel B. Unlike at Session 1, at Session 2 the pattern of concurrent correlations between use of internal states language by mothers and their children varied as a function of the event about which the dyads were talking. There were moderate to high correlations between mothers' and children's use of internal states terms when talking about the pretornado event. In contrast, when talking about the tornado and the posttornado events, there was little concordance between mothers and their children. It is likely that differences in the patterns of cross-lagged correlation from Session 1 to Session 2 for the mothers relative to the children, discussed in the next section, contributed to the relatively low degree of concordance at Session 2.

Cross-Lagged Correlations From Session 1 to Session 2

Because at both sessions the lengths of conversations about the tornado were greater than the lengths of the conversations about the pre- and posttornado events, in calculating cross-lagged correlations, we controlled for conversational length at both sessions. In addition, to control for the variance associated with the wide range in ages of the children in the sample, we also partialled out children's age. The resulting Pearson product–moment correlations are provided in Table 3.

Within-participant groups. Table 3, Panel A shows the cross-lagged correlations for mothers (left three columns) and for children (right three columns). Over time, mothers were consistent in their levels of production of emotion terms on all three events. For the pre- and posttornado events, consistency was observed for total emotion terms, as well as for both positive and negative terms. For the tor-

TABLE 3
Cross-Lagged Correlations from Session 1 to Session 2: Within-Participant Groups (Panel A) and Between Participant Groups (Panel B)

	Session/Participant Group/ Event					
	Session 2					
	Mothers			*Children*		
Session 1	*Pre-tornado*	*Tornado*	*Post-tornado*	*Pre-tornado*	*Tornado*	*Post-tornado*
Panel A: Within-participant groups						
Total terms	.31	.29	.44**	.52***	.76****	.32
Emotion	.56***	.41**	.56***	.53***	.57***	.46**
Positive emotion	.54***	.00	.47**	.60***	.55***	.44**
Negative emotion	.40**	.31	.55***	.47**	.50***	.06
Cognition	.26	.25	.00	.54***	.84****	.19
Perception	.30	.20	.37*	.16	.07	.38*
Panel B: Between-participant groups						
Total terms	–.16	–.33	–.13	.07	–.07	.04
Emotion	.11	–.14	–.14	.42**	.22	.45**
Positive emotion	.29	–.34*	–.04	.57***	–.23	.60***
Negative emotion	.10	–.07	–.14	.10	.43**	–.07
Cognition	–.31	–.12	–.23	–.33	.12	–.15
Perception	.26	.17	.00	.06	–.09	.40**

Note. In Panel A are the significant cross-lagged correlations from mothers at Session 1 to mothers at Session 2 (first 3 columns), and from children at Session 1 to children at Session 2 (last 3 columns). In Panel B are the significant cross-lagged correlations from children at Session 1 to mothers at Session 2 (first 3 columns), and from mothers at Session 1 to children at Session 2 (last 3 columns).

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

nado, consistency was apparent only at the level of total emotion terms used. The only other significant cross-lagged correlation for mothers was in the total number of internal states terms used in conversations about the posttornado event.

Like their mothers, children were consistent in their use of total emotion terms across all three events. For children, consistency extended to use of positive emotion terms for all three events. In addition, for the pretornado and tornado events, children were consistent over time in their use of negative emotion and cognition terms and in the total number of internal states terms used. Overall, the children were more consistent over time, relative to their mothers: For children, 12 of 18 correlations were significant, whereas for mothers, only 8 of 18 correlations were significant. The most striking difference was observed in mothers' and children's use of internal states language in their conversations about the tornado: Whereas mothers were consistent only in the total number of emotion terms used, children

were consistent in total internal states terms, total emotion terms, both positive and negative emotion terms, and cognition terms.

Between-participant groups. In Table 3, Panel B, are the cross-lagged correlations from children at Session 1 to mothers at Session 2 (left three columns) and from mothers at Session 1 to children at Session 2 (right three columns). Children's use of internal states terms at Session 1 was not predictive of mothers' use of the terms at Session 2. There were no statistically significant correlations; only one correlation approached significance. Thus, although mothers were not especially consistent in their use of internal states terms across sessions, they apparently did not alter their behavior in response to their children's language at Session 1.

Mothers' use of emotion terms at Session 1 was predictive of their children's use of emotion terms at Session 2; the patterns were different for the nontraumatic and traumatic events. Specifically, for the pre- and posttornado events, both the total number of emotion terms and the number of positive emotion terms mothers used at Session 1 predicted children's use in the same categories at Session 2. Regression analyses revealed that for both nontornado events, maternal use of positive emotion terms at Session 1 predicted significant unique variance above that predicted by the children's own use of positive emotion terms at Session 1, total R^2 = .53 and .67; ts = 2.70 and 4.44, ps < .02, respectively. Once the variance associated with the total number of emotion terms the children produced at Session 1 was accounted for, the total number of emotion terms used by mothers at Session 1 did not contribute significant unique variance to children's use of emotion terms at Session 2 for the pretornado event, t = 1.29. The total number of emotion terms used by mothers at Session 1 did add significant unique variance to children's use of emotion terms when talking about the posttornado event at Session 2, total R^2 = .52; t = 2.68, p < .02.

In discussions of the tornado event, only maternal use of negative emotion terms was predictive of children's behavior at Session 2: The more negative emotion terms mothers used at Session 1, the more negative emotion terms their children used at Session 2. However, once the variance associated with the children's production of negative emotion terms at Session 1 was accounted for, maternal use of negative emotion terms at Session 1 did not contribute significant unique variance to children's use of negative emotion terms at Session 2, t < 1.00.

DISCUSSION

The first question addressed was whether the memory conversations that mothers and their children had about the traumatic event of the March 29, 1998, St. Peter, Minnesota, tornado included more references to internal states relative to their

conversations about nontraumatic events from before and after the storm. At Session 1 there were null effects for both mothers and their children: Representation of internal states language did not differ across event types. For mothers, there also were no differences in use of internal states words at Session 2. In contrast, at Session 2, the children's contributions to conversations about the tornado were more saturated with perception terms, relative to their conversations about the nontraumatic events. For the oldest children, the effect extended to total internal states terms and to emotion and cognition terms. The pattern at Session 2 is consistent with that reported in Fivush et al. (2003): greater internal focus in memory narratives about traumatic relative to nontraumatic events. Thus, in this research, even though their mothers' contributions to the conversations were not differentially saturated with internal states at either session, by Session 2 those of the children were.

Both mothers and their children differed in the valence of the emotion terms used to describe the events. Four months after the storm, when talking about the pre- and posttornado events, mothers and children from the middle and oldest age groups used more positive than negative terms. When talking about the tornado, they used more negative than positive terms. This pattern was not apparent among the youngest children. Because six of the seven children in the youngest age group were boys, it is possible that what appears to be an age effect could actually be a gender difference: Boys produce fewer emotion terms, relative to girls (e.g., Adams et al., 1995). Ten months after the storm, mothers still used more positive than negative emotion terms when talking about the non-tornado-related events, but the difference was less robust. In their conversations about the storm, the difference no longer was apparent. In contrast, for the children, differential use of negative and positive emotion terms was apparent in all three age groups.

What might account for the apparent *decrease* over time in the contrast in valence of emotion terms mothers featured in their conversations and for the increase in contrast in valence apparent in the children's contributions? For the mothers, it is possible that over time, the intensity of affect associated with the events diminished. Thompson (1998) observed that with increasing delay, adults' ratings of the affective intensity of their experiences become less extreme; the change is greater for unpleasant than for pleasant events. This pattern could result in less differentiated emotion-related language over time, with greater change to traumatic relative to nontraumatic events. We might further expect the pattern to be especially pronounced for individuals at the extremes, due to regression to the mean. In accord with this suggestion, in conversations about the tornado, mothers were not especially consistent in their use of emotion terms across sessions, yet there were no mean differences in use of emotion language at Session 1 and Session 2. This suggests that mothers who were on the extremes of use of emotion terms at Session 1 had, by Session 2, moderated their use of emotion language when talking about the tornado. In contrast, for both the pre- and posttornado events, mothers used less

emotion language at Session 2 relative to Session 1. Nevertheless, for the non-tornado-related events, their use of emotion language in general and of both positive and negative emotion terms was correlated over time.

What might have led to the changes in the way that mothers talked about the events at Session 2, relative to Session 1? Unfortunately, little in the currently available data addresses this question. It does not seem that the changes were in response to the children's behavior at Session 1, however. None of the 18 possible correlations from the children's language at Session 1 to maternal language at Session 2 was significant. Only one correlation approached significance: Children who used few positive emotion terms 4 months after the storm had mothers who tended to use more positive emotion terms 6 months later. This trend may reflect conscious or unconscious efforts by mothers to bring the tornado and its consequences into more positive light for their children. With the exception of this trend-level correlation, there were not suggestions regarding the source of change in maternal use of internal states language at Session 2 relative to Session 1.

In contrast to mothers, whose use of emotion-related language became less differentiated over time, children's emotion-related language became more differentiated. We suggest that the changes were associated with the processes of socialization of expression of internal states. Evidence consistent with a socialization account was found in the pattern of positive relations between mothers' and children's use of internal states language 4 months after the tornado. This was especially true for emotion-related language in general, and positive emotion-related language in particular. Six months later (10 months after the tornado), mothers and their children were much less consistent with each other. In fact, 10 months after the storm, the members of the dyads were concordant only when talking about the event that had happened before the tornado.

At first blush, that there were few concurrent correlations between mothers' and children's use of internal states language at Session 2 seems contrary to the suggestion of socialization of use of such language. However, the lower degree of concordance likely was due to changes in the ways that *mothers* talked about the events at the two sessions, in the face of consistency in the ways that the children talked about the events. Specifically, whereas for children, 66% of the possible correlations between use of internal states language at Session 1 and Session 2 obtained, for mothers, only 44% of the possible cross-lagged correlations were significant. Mothers were especially inconsistent in reference to the tornado: The only correlation between Session 1 and Session 2 was for the total number of emotion terms used.

The second pattern of findings that is consistent with a socialization account is that of the between-participant correlations from Session 1 to Session 2. Mothers who at Session 1 used many emotion words in general, and positive words in particular, when talking about the pre- and posttornado events had children who 6 months later also used a large number of these terms when talking about the

nontraumatic events. Mothers' use of positive emotion terms at Session 1 contributed unique variance to children's use of positive emotion terms at Session 2, for both the pre- and posttornado events. Mothers who 4 months after the tornado used a large number of negative emotion words when talking about the storm had children who 6 months later also used a large number of negative emotion words in reference to it. Mothers' use of negative emotion terms at Session 1 did not add significant variance to children's use of negative emotion terms at Session 2, however. Nevertheless, it appears that what was important in determining children's expression of negative emotion about the storm was how the children's mothers had talked about the event 6 months previously, as opposed to how they were talking about the event concurrently. At Session 2, when talking about the tornado, the children differentially expressed negative relative to positive emotion even though their mothers did not. Moreover, the concurrent correlation between maternal and child use of negative emotion terms about the tornado was not significant at Session 2. Overall, the pattern is consistent with a model of socialization of language about emotional experiences.

A surprising feature of the results of this study is the relative lack of age-related differences, in spite of a wide age range (2.6–11.8 years at Session 1). With conversational length controlled, mothers did not differ in their use of internal states language as a function of the ages of their children. Moreover, with conversational length controlled, older and younger children did not differ in their use of internal states language. The null effects highlight the importance of future efforts to determine whether positive correlations between age and use of internal states language by parents and children might be accounted for by increases in conversational length, as opposed to changes in the manner of expression or representation of internal states per se.

Whereas there were no mean differences in children's use of internal states terms (once conversational length was controlled), there were other suggestions of differential use as a function of age. At Session 1, the youngest children (most of whom were boys) did not differ in use of positive and negative emotion terms across events, whereas the children in the middle and oldest age groups did. At Session 2, similar effects were observed across age groups. Thus, over the between-session interval, the children in the youngest group "caught up" to those in the older groups and, like them, made differential use of emotion terms when talking about traumatic and nontraumatic events. Significant cross-lagged correlations suggest that the change may be attributed in part to exposure to narrative models who themselves made differential use of emotion terms. Although by 10 months after the storm younger as well as older children used more negative than positive emotion terms when talking about the tornado, a new type of age-related effect had emerged. At Session 2, the oldest children evidenced differential saturation of internal states language as a function of event: They produced more internal states terms when talking about the tornado relative to the non-tornado-related events. In

the middle and youngest age groups, the effect was apparent only for perception. We suggest that the increase in the representation of perception terms in reference to the tornado may have come about as a function of repeated discussion and retelling of the events associated with the visually and auditorally salient storm and its aftermath. For the oldest children, intervening discussions may have fostered increased cognitive reflection and recognition of the emotional consequences of the storm as well.

In conclusion, for children's mothers, there was little evidence of quantitative differences in use of internal states language in conversations about traumatic and nontraumatic events. With conversational length controlled, mothers' contributions when talking about the traumatic event were not more saturated with any type of internal states language, relative to their contributions when talking about nontraumatic events. By 10 months after the storm, the oldest children's contributions to conversations about the traumatic experience were more heavily saturated with internal states language; in the domain of perception, the effect extended to the middle and youngest age groups as well. Finally, patterns of correlation suggest that over time children's use of internal states language came to approximate that used by their mothers 6 months previously. The pattern was specific to the category of emotion. Whereas the findings were similar for the traumatic and nontraumatic events, the valence of the emotion affected by socialization was different. What children seemed to learn was to talk about negative emotional experience when an event was traumatic and to talk about positive emotional experience when it was not.

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