

Caregiver Emotion Socialization and Adolescent Meaning Making about a Devastating Tornado

By

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Abstract

The first aim of the current study was to explore if emotion socialization (ES) constructs, (egocentrism, structure, reward, match/magnify, override, punish, acknowledge, argue, and direct to interviewer) could be identified in and reliably measured during a task in which adolescents who were at-risk for aggression at a young age and their female caregivers discussed a shared tornado experience. The second aim of the study was to investigate the degree to which caregiver ES behaviors during conversations were associated with variables thought to represent how adolescents were reflecting on, processing emotion and cognitions related to, and making meaning out of events (elaborativeness, coherence, internal states language, and meaning). Two hundred and twelve adolescents (ages 12 to 17, 66% male, 77% African American) and their female caregivers who experienced an EF4 tornado provided joint recollections and adolescents provided independent interviews in 2014 (38 to 42 months post-tornado) and 2015 (50 to 54 months post-tornado). Verbatim caregiver-adolescent transcripts were coded for indicators of ES and adolescent individual interviews were coded for recollection qualities. Several ES constructs were found to be present and vary in caregiver-adolescent conversations, could be reliably coded, and were related to adolescent individual recollection qualities. Results indicate that caregivers use certain ES behaviors during caregiver-adolescent conversations about a tornado (which can be reliably measured in a low-income population of at-risk youth) and that these ES behaviors may be relevant to how adolescents recollect, process, and made meaning out of natural disaster experiences, above and beyond the level of distress and exposure experienced during the event. Implications for the future study of ES processes during caregiver-child co-recollections are discussed. *Keywords:* emotion socialization, parenting, trauma, disaster, narrative recollection qualities, at-risk youth

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Caregiver Emotion Socialization and Adolescent Meaning Making about a Devastating Tornado

Trauma exposure prompts intense cognitive and emotional reactions and efforts to integrate trauma-related events into one's understanding of the self, others, and the world (Fivush, Sales, & Bohanek, 2008; Greenhoot, Sun, Bunnell, & Lindboe, 2013). How adolescents talk about a traumatic event through personal narratives may offer a window into how they are processing emotional and cognitive reactions to the trauma as well as how they are attempting to make sense of the event (Bronfman, Biron Campis, & Koocher, 1998). Caregivers engage their children and adolescents in efforts to regulate emotions and make meaning through co-construction of narratives as they reminisce about past events, particularly those that are stressful and evoke negative emotions (Larson, Richards, Moneta, Holmbeck, & Duckett, 1996; McLean & Jennings, 2012; McLean & Mansfield, 2011). However, the processes by which caregivers influence their children and adolescents' memories for events is not well understood. How caregivers talk about emotions and respond to their adolescent's emotional expressions are elements of emotion socialization (ES; Eisenberg et al., 2001). It has been proposed that caregiver ES during caregiver-child reminiscing about stressful and traumatic events may influence how their adolescents remember and make meaning out of the event (Campos, Frankel, & Camras, 2004; Stocker, Richmond, Rhoades & Kiang, 2007). However, to this date, the link between caregiver ES during co-reminiscing and adolescent's recollection qualities has been largely theoretical (Fivush, 2009). The current study seeks to examine caregiver ES during a caregiver-adolescent co-reminiscing task around a shared stressful event (the Tuscaloosa-Birmingham Tornado) and how these ES constructs relate to aspects of adolescent recollections of the event.

Natural disasters involve exposure to acute traumatic events, but may also result in families facing more chronic long-term stressors related to loss (e.g., loved ones, personal possessions, economic security), disruption (e.g., moving to a new school), and rebuilding (e.g., repairing houses and businesses). Caregivers vary in their availability to help their children cope with disaster-related thoughts and feelings (Prinstein, La Greca, Vernberg, & Silverman, 1996) and adolescents may even distance themselves from caregivers who appear emotionally overwhelmed or preoccupied (Felix, You, Vernberg, & Canino, 2013). However, consistent emotional support and reassurance from caregivers can help adolescents feel more connected and supported in the aftermath of a natural disaster and contribute to successful processing of trauma-related cognitive and emotional reactions (Bonanno, Brewin, Kaniasty, & La Greca, 2010; Masten & Narayan, 2012; Vernberg, Hambrick, O'Connor, & Hendrickson, 2016). The aims of this study were to (1) explore caregiver emotion socialization in a low-income, at-risk, predominantly African American sample during caregiver-adolescent conversations about a shared natural disaster experience and (2) examine how caregiver ES is related to aspects of adolescent recollection qualities measured in individual recollections about their experiences during and after a devastating tornado.

Tuscaloosa-Birmingham Tornado

Participants in the current study lived in communities that experienced a multi-vortex tornado which struck the cities of Tuscaloosa and Birmingham, Alabama on April 27, 2011. The Tuscaloosa-Birmingham Tornado was rated an EF4 on the Enhanced Fujita Scale with winds up to 190 miles per hour. The tornado stayed on the ground for 5.9 miles and the widest point was 1.5 miles, flattening many businesses and devastated several residential neighborhoods. Twelve percent of the buildings in the city of Tuscaloosa were destroyed. Close to 2,500 residential

structures were damaged by the storm and 1,300 were destroyed. The storm resulted in 1,500 injuries and 65 fatalities; 52 deaths occurred in Tuscaloosa, making the Tuscaloosa-Birmingham tornado the deadliest natural disaster in the state in nearly 40 years and the second-worst natural disaster in state history in terms of fatalities (National Weather Service Data, 2011). Four schools were closed due to damage from the tornado and students were displaced to other school facilities. FEMA allocated 5 million dollars to Project Rebound, a crisis-counseling initiative organized by the University of Alabama, which served about 104,512 people in the Western Alabama area over the course of 13 months after the tornado. Children made up 84,000 (80%) of those counseled (Tuscaloosa News, 2012).

Caregiver Emotion Socialization and Adolescent Emotional Development

Researchers have asserted that it is integral to children's healthy development for caregivers to understand, validate, and respond empathically to their children's emotional experiences (Gottman, Katz, & Hooven, 1996; Stocker, Richmond, Rhoades, & Kiang, 2007). Specific emotion socialization (ES) practices related to emotion-coaching (e.g., acceptance, validation, empathy, and problem-solving) and emotion-dismissing (e.g., criticizing, invalidating, ignoring, punishing) have been linked to adolescent well-being (Stocker et al., 2007; Yap, Allen, & Ladouceur, 2008).

Coaching and supportive caregiver behaviors. In general, studies have found that caregivers who reward the expression of negative emotions by engaging in supportive, accepting, and coaching (i.e., going beyond labeling and validating emotions to address causes and consequences of emotions and/or strategies to cope with emotions) behaviors have adolescents with better emotion regulation, as well as fewer externalizing and internalizing symptoms (Katz & Hunter, 2007; Shortt, Stoolmiller, Smith-Shine, Mark Eddy, & Sheeber, 2010). Additionally,

research supports the view that it is beneficial for caregivers to be child-centered in their discussion of emotions, to serve as a scaffold, and to be sensitive to their children's developmental needs for coping with strong emotions (Izard, 1991; Klimes-Dougan, Bran, Zahn-Waxler, Usher, Hastings, Kendziora, & Garside, 2007). A supportive and coaching caregiver style is characterized by openness, curiosity, and a willingness to hear their adolescent's point of view and individual experience. Supportive parenting behaviors may include acknowledging factual contributions the adolescent makes to the conversation, as well as rewarding expressions of emotion (i.e., asking questions about emotions, empathizing, and, when necessary, problem-solving around coping).

Dismissing and unsupportive caregiver behaviors. Remaining child-centered in emotionally-salient discussions requires caregivers to set aside their own needs and to not shut down their child's emotion, respond with their own negative emotions, or amplify their child's experience of a negative emotion (Izard, 1991; Klimes-Dougan et al., 2007). Adolescents with caregivers who are punitive of (i.e., punish or attempt to override emotions) or ignore emotional displays have greater instances of internalizing and externalizing behaviors (Katz & Hunter, 2007; Shortt et al., 2010). Magnifying or matching (i.e., showing the same emotion or amplifying the emotion) adolescents' expressions of anger is related to more youth internalizing problems (Katz, Shortt, Allen, Davis, Hunter, Leve, & Sheeber, 2014; Klimes-Dougan et al., 2007). Similarly, female caregivers who are angrier, more rejecting, more egocentric (i.e., self-focused), and exert more control (i.e., structure) during discussions about negative emotions with their adolescents have youth with higher levels of anxiety and depressive symptoms (Hastings, Klimes-Dougan, Kendziora, Brand, & Zahn-Waxler, 2014). Unsupportive or dismissive caregiver behaviors may include arguing with their youth about the facts of the event, punishing

or overriding their youth's expressed emotion experience, responding to the youth's emotional expression with their own negative emotions, exerting a large amount of control over the content of the conversation, or being overly focused on their own emotions and experiences.

Cultural influences on emotion socialization. Ethnicity and culture can have a large influence on the goals, beliefs, and practices caregivers use to socialize emotions (Cole & Tan, 2007). One critique of the ES literature summarized above is the dearth of ethnically and culturally diverse samples and overrepresentation of middle-class, European American families (Bowie, Carrère, Cooke, Valdivia, McAllister, & Doohan, 2013).

Studies have found that emotion coaching around strong emotions plays a similar role in child outcomes in low-income and African-American families compared to middle-class and upper-class European American families (Bowie et al., 2013; Cunningham, Kliewer, & Garner, 2009). However, cultural values and norms may impact the degree to which caregivers engage in emotion-coaching/supportive versus emotion-dismissing/unsupported behaviors and also have implications for how these behaviors are related to child development. For example, African American mothers tend to hold beliefs that their children's (especially sons') displays of negative emotions are less acceptable because they are associated with more negative social consequences (Nelson, Leerkes, O'Brien, Calkins, & Marcovitch, 2012). These beliefs may impact African American mothers' willingness to engage in supportive responses to their children's negative emotions. African American mothers' beliefs about their sons' negative emotions likely serve to protect their sons from discrimination in a culture that may be especially critical of the negative emotional displays of African American males. These findings provide an example for how environmental and cultural factors may play a complex role in the ES behaviors observed in different cultural and socioeconomic groups. The current study sample is predominantly low-

income, at-risk for aggression, and African-American and will allow for a greater understanding of how ES processes operate within diverse populations.

Emotion socialization and natural disasters. In the aftermath of a natural disaster, it can be especially important for caregivers to engage in behaviors that help their adolescents feel psychologically safe, socially connected, and supported (Brymer, Jacobs, Layne, Pynoos, Ruzek, Steinberg, Vernberg, & Watson, 2006; Vernberg et al., 2016). Conversations about past stressful events provide an especially salient opportunity for caregiver socialization of how to reflect on, label, regulate, and cope with difficult emotions (Bauer, Stark, Lukowski, Rademacher, van Abbema, & Ackil., 2005; Bauer, Burch, van Abbema, & Ackil, 2007; Fivush, Haden, & Reese, 2006). Caregiver ES behaviors may influence how comfortable adolescents are expressing their negative emotions as well as their ability to successfully resolve these negative emotions (McLean & Mansfield, 2012). Discussions about stressful and traumatic events are likely to be salient contexts for ES processes, however, it may be difficult for caregivers who have shared a trauma experience with their adolescent to be able to set aside their own emotional reactions and engage in adolescent-centered emotion-coaching practices. Therefore, caregiver ES practices appear to be important constructs to measure in the context of talking about a shared traumatic event. The following section describes how caregiver ES behaviors may be related to adolescent recollection qualities.

Adolescent Recollection Qualities

Narrative research and recollection qualities. Researchers have long argued that examination of the development and content of autobiographical narratives can offer a window into how individuals make sense of, process emotional and cognitive reactions to, and derive meaning from, their experiences (Bruner, 1990). Qualities of autobiographical narratives may

provide clues for how an individual's memory of events shapes their conception of themselves, others, and the world. Exposure to negative and stressful events creates a salient context in which to study these autobiographical narrative qualities, as individuals are struggling to make sense out of, or derive meaning from, seemingly senseless and unpredictable events (Waters, Shallcross, & Fivush, 2013). In fact, it is widely accepted that attempts to make sense and find meaning are part of natural and healthy responses to experiencing a stressful event (Fivush, Sales, & Bohanek, 2008; Greenhoot, Sun, Bunnell, & Lindboe, 2013). For example, several studies with adult samples that asked participants to provide narrative recollections of traumatic experiences found length, coherence, emotional expression, and indications of meaning to be associated with aspects of post-traumatic adjustment (e.g., Park & Blumberg, 2002).

Many different narrative qualities have been proposed to be important indicators of meaning as well as the emotional and cognitive processing that represents efforts toward meaning making (Park, 2010). How much and which details of the event are recollected (Hambrick, 2014) may indicate whether individuals are avoiding anxiety-provoking aspects of the event (Mossige, Jensen, Gulbrandsen, Reichlt, & Tjersland, 2005). Internal states language (emotions, cognitions, etc.), may indicate that individuals view an event as relevant to their own lives and are attempting to understand their own personal (potentially distressing) cognitive and emotional reactions in relation to the event (Legerski, Greenhoot, Vernberg, La Greca, & Silverman, 2015; Waters, Shallcross, & Fivush, 2013). Recollections that are coherent (organized, situated in time and place and around central themes) may help create a structure for linking different events together and evaluating events in relation to one's understanding of the self, others, and the world (Waters, Shallcross, & Fivush, 2013). Finally, interpretive statements, or direct references to meaning, may include instrumental changes, personal impacts, lessons

learned, or insights gained (Greenhoot, Sun, Bunnell, & Lindboe, 2013; Hambrick, 2014). These statements may represent how an individual is currently understanding a stressful or traumatic event in relation to their personal global beliefs, goals, and subjective sense of purpose (Park, 2010).

Caregiver-adolescent co-reminiscing and adolescent recollection qualities.

Reminiscing, or talking about the past with others, is thought to play a crucial role in the development of autobiographical memory and ability to process intense emotions and draw meaning from events (Reese & Farrant, 2003). There is substantial evidence to support that, from an early age, caregivers begin to socialize and shape their children's autobiographical memory through co-reminiscing about past events (Fivush & Reese, 2002) and that children's memories are shaped by caregivers' reminiscing styles (Fivush, Haden, & Reese, 2006). Although adolescence represents a time of increased independence, adolescents still rely on guidance from caregivers in order to create narratives because narrative development requires sophisticated cognitive and socioemotional skills (Habermas & Bluck, 2000; Thorne, McLean, & Lawrence, 2004). In fact, Fivush, Bohanek, and Marin (2010) inferred from their findings on caregiver reminiscing style and adolescent well-being that caregivers who express and explain more specific emotion terms may be helping their adolescents understand the emotional causes and consequences of stressful events, leading to more coherent narratives and greater adolescent well-being (i.e., self-esteem, social competence, and academic competence). Relatedly, Fivush, Bohanek, and Marin (2010) also noted their findings indicated that, when caregivers talk about emotions in more general terms or use more repetitions than elaborations, they may be demonstrating a more ruminative style of discussing emotions, leading to poorer adolescent well-being.

Caregivers co-reminisce with their children about neutral or positive, as well as negative, stressful events (Fivush et al., 2008). However, the ways in which caregivers talk with their children about stressful, negative events, tend to differ substantially from how they reminisce with their child about positive or neutral events. For example, when talking about traumatic or stressful events, caregivers appear to place more emphasis on creating coherent narratives (Ackil, van Abbema, & Bauer, 2003), tend to be more elaborative and emotionally expressive (Bauer et al., 2005; Peterson, Sales, Rees, & Fivush, 2007), and may focus more on emotional resolutions (Fivush, Berlin, Sales, Mennuti-Washburn, & Cassidy, 2003). Thus, it has been hypothesized that caregivers alter their style during recollections about stressful or traumatic events to focus on helping their children regulate emotional responses to these difficult events. Further, caregivers' level of success at helping their children modulate emotions during co-reminiscing is thought to influence the quality and content of children's recollections for stressful events (Fivush, 2009).

Emotion socialization and the development of meaning making skills both happen within a socioemotional context and have both been conceptualized as forms of caregiver scaffolding (Fivush, 2009; Sales & Fivush, 2005). There is a theoretical link between caregiver ES behavior during co-reminiscing and how children reflect on and recall events (Fivush, 2009). However, there has been little research examining whether (and how) caregivers might engage in ES behaviors during co-reminiscing about stressful events to help socialize emotion regulation and coping skills. To the author's knowledge, there have been no prior studies clearly capturing caregiver constructs hypothesized in the ES literature as supportive/coaching or unsupportive/dismissing during co-reminiscing and linking these ES behaviors to how adolescents interpret, recall, and process emotions and cognitions related to traumatic and stressful events. However, given that this link has been assumed theoretically, it appears that

empirical research is needed to investigate the relation between caregiver ES during caregiver-adolescent reminiscing and adolescent recollection qualities. Further, more research is needed to understand ES processes within diverse populations, such as the low-income, at-risk for aggression, predominantly African American population in the current study.

Aims of the Current Study

The broad goal of this study was to provide a greater understanding of whether there is evidence for caregivers attempting to socialize emotions during co-reminiscing about stressful or traumatic events and the degree to which caregiver emotion socialization behaviors are associated with how adolescents reflect on and recollect events on their own. Specifically, two related aims were examined in a sample of adolescents and their female caregivers in 2014 (38 to 42 months) and 2015 (50 to 54 months) following their exposure to the Tuscaloosa-Birmingham Tornado.

Aim 1: Measuring caregiver emotion socialization behaviors. The first aim of the study was to adapt a coding scheme used in previous ES research to examine whether similar ES constructs could be captured and reliably measured, and if caregivers exhibited similar patterns of ES behaviors (compared to prior ES studies) in a co-reminiscing task in which caregivers were asked to talk about with their adolescent about a shared traumatic experience (a tornado). Caregiver ES processes have been linked to adolescent well-being, as well as internalizing and externalizing problem behaviors (Klimes-Dougan et al., 2007), and are longitudinally related to treatment outcomes (Dunsmore, Booker, Ollendick, & Greene, 2015). However, these processes have mostly been examined in middle-class, European American families and tasks used in these studies have focused on discussing recent, emotionally-salient (but not necessarily extremely stressful or traumatic) events. Little is known about how these caregiver ES processes operate within diverse samples and during caregiver-adolescent co-reminiscing tasks about traumatic

events, such as a natural disaster. In the current study, it was expected that ES dimensions would be present within caregiver-adolescent conversations about a tornado and that ES constructs would vary and could be reliably measured during the tornado conversation. Further, it was hypothesized that coded variables would be present in similar frequencies and co-occur (based on correlations) in similar patterns observed in previous ES research (Brand, Mulvihill, Klimes-Dougan, Usher, & Zahn-Waxler, 2005) with different populations and conversation tasks, by forming distinct emotion-coaching/supportive (Reward, Acknowledge, Match/Magnify Positive) and emotion-dismissing/unsupported (Egocentrism, Structure, Argue, Direct to Interviewer, Match/Magnify Negative, Override, and Punish) dimensions.

Aim 2: Caregiver emotion socialization and adolescent individual interview

qualities. The second aim of the current study was to examine how indicators of caregiver ES practices related to aspects of adolescent recollections during individual interviews about their tornado-related experiences. Additionally, measures of objective tornado exposure and tornado-related distress were included in the current study because participants were thought to be fairly heterogeneous with regard to the level and number of their exposure experiences. Greater levels of exposure likely prompt greater efforts to process trauma-related emotions and cognitions in order to understand and make meaning out of events and may influence the content of adolescents' individual interviews (Weems & Graham, 2014). For this aim, it was expected that ES constructs would be related to adolescent recollections qualities, above and beyond the adolescents' self-reported tornado-related distress and exposure. These relations would provide evidence that adolescent memories and meaning making efforts are not just based on tornado experience, but that ES processes are related to how adolescents are attempting to process their tornado-related emotions and cognitions in order to understand and make meaning out of events.

Method

Participants

The current study sample was drawn from an ongoing, longitudinal, prevention intervention study with children who were identified as at-risk for aggression in their 4th-grade year, between 2009 and 2011. Participants were recruited from 20 elementary schools using a multiple-gate screening procedure of both teacher reports on the Proactive-Reactive Aggression Questionnaire (Dodge & Coie, 1987) at school (Gate 1) and caregiver-reported Aggression on the BASC (top 30%, T-score = 55; Gate 2). The 6 children who were rated as the most aggressive in their 4th grade class were selected from each school to participate in the Coping Power school-based prevention program. Students were between 9 and 13 years old when the tornado struck in April, 2011. Data used in the current study were collected in the summer and fall of 2014 and 2015.

A total of 212 female caregiver and adolescent dyads completed conversations and adolescent individual interviews about the tornado at the same time point. Please see Figure 1 (pg. 61) for a more detailed breakdown of inclusion criteria for the current study. For the 212 families whose data were used in the current study, adolescents were between the ages of 12 and 17 (*Mean age* = 14.45) when tornado interviews were conducted (66% male, 77% African American). Female caregivers were the adults identified as adolescents' primary caregivers over the 6-months prior to data collection: 87% of the caregivers were birth mothers, 3% were adoptive mothers, and 5 % were grandmothers. In regard to living arrangements, 47% of the adolescents lived with single mothers, 20% lived with their mother and another adult male, and 15% lived with both biological parents. The sample was considered to be low-income, with 53% of families making less than \$25,000 a year.

Procedures

A measure of tornado-related exposure and distress (TORTE; Vernberg & Jacobs, 2005) was collected approximately 12 months post-tornado and tornado interview data were collected approximately 38 to 42 months (2014) and 50 to 54 months (2015) post-tornado as part of a larger longitudinal study on the effects of the tornado on a sample of at-risk youth. Participants' caregivers were contacted by phone to schedule annual assessments at which time they were reminded of the primary purpose of the study, the length of the interview (90 minutes), information about the assessment, voluntary involvement in the research, and compensation.

Female caregivers and adolescents met with researchers at the family's place of residence or in research offices, depending on participant preference. Caregivers and adolescents separately completed assessment measures and individual interviews and then reconvened to complete the caregiver-adolescent conversation. Individual tornado interviews were always conducted prior to caregiver-adolescent combined interviews. Tornado interviews were conducted by trained undergraduate research staff members as the final part of the assessment protocol and were audio-recorded for later transcription. Not all measures collected were used in the current project. Families were given \$80 for completing the assessment battery (\$65 for caregivers, \$15 for adolescents).

Measures

Tornado interviews. Trained upper-level undergraduate research assistants conducted interviews by reading aloud a standard protocol of five open-ended prompts designed to elicit discussion of tornado-related events and memories. These interviews were conducted individually with adolescents and then together with the caregiver-adolescent dyad. Prompt 1 was "Tell me some things that happened to you or your family because of the tornado," Prompt 2

was “What were some challenging or difficult things that happened to you or your family because of the tornado,” Prompt 3 was “What were some positive things, if any, that happened to you or your family because of the tornado,” Prompt 4 was “How have things been different for you or your family since the tornado?,” and Prompt 5 was “Is there anything else you would like to say about the tornado?” Similar prompts have been used by other researchers who obtained caregiver-child recollections of natural disasters (Bauer et al., 2007; Hambrick, 2014).

The interviewer remained in the room during both the adolescent individual and caregiver-adolescent combined recollections. A preliminary review of the transcripts from the 2014 data collection indicated that interviewers occasionally deviated from the protocol and asked leading questions. For the 2015 data collection, interviewers were retrained by project staff on the importance of maintaining fidelity with the protocol. Interviewers were shown training videos made by project staff and the study protocol was updated to include a more detailed script for the interviewers to use with families. Additionally, interviewers were instructed to emphasize that the caregiver-adolescent combined interview task was meant for caregivers and adolescents to talk with each other, and to physically turn away from the family members during the task (except to give prompts). Please see Appendix A (pg. 63) for this updated protocol. Analyses comparing 2014 and 2015 caregiver-adolescent conversation interview length and emotion socialization qualities are described in the Results section of this manuscript.

Tornado-Related Traumatic Experiences (TORTE; Vernberg & Jacobs, 2005). The TORTE was modeled after the Hurricane-Related Traumatic Experiences (HURTE) questionnaire originally developed to measure children’s disaster exposure and distress during and after Hurricane Andrew (Vernberg, La Greca, Silverman, & Prinstein, 1996). The HURTE was derived from clinical interviews with children and families about their experiences during

Hurricane Andrew as well as the Post Disaster Supplement to the Diagnostic Interview Schedule (DIS; Robins & Smith, 1993). The TORTE was used to create two variables to assess adolescent-reported objective exposure experiences and subjective tornado-related distress; distress and exposure are thought to differentially impact post-disaster responses (Scott, Lapré, Marsee, & Weems, 2014). Exposure experiences were measured by summing 16 items endorsed as occurring During the Storm and After the Storm (respondents indicated yes =1 or no = 0 to indicate whether they were exposed to the event listed). Distress was measured by two questions: “Overall, how scared or upset were you during the tornado?” and “Overall how scared or upset were you in the weeks after the tornado?” The two items were scored on a 4-point Likert scale from 0 (not at all) to 3 (a whole lot) and were summed to create a variable of tornado-related distress. Because the TORTE is a frequency count of distinct, potentially unrelated aspects of a person’s tornado experiences, internal consistency is not an appropriate measure of scale reliability. This scale is provided in Appendix B (pg. 65).

Caregiver-Adolescent Conversation Coding Constructs and Procedures

Caregiver-adolescent conversation coding procedures. Prior to coding, caregiver-adolescent tornado conversations were transcribed verbatim. Caregiver content in the transcripts was broken down by the author into separate segments for coding. A segment was defined as a unit of caregiver speech that was uninterrupted and appeared to contain a single thought. A new segment was defined when a caregiver was interrupted by the interviewer or adolescent, changed topics, or completed a thought (Legerski, Biggs, Greenhoot, & Sampilo, 2015). Participant-generated content that occurred after interviewers asked leading questions was marked to not be included in coding.

The transcribed content was combined with vocal expression from the audio tapes in order to code for qualities of caregiver-adolescent conversations. Coders listened to each interview in its entirety before coding. Then, coders were instructed to code for one variable at a time. They could reread the transcript and listen to the audio as many times as necessary until they were confident with a code. Therefore, interviewers made multiple passes through the same interview (reading the transcript and listening to audio) during the coding process. Caregiver and adolescent content were not separated at any point during coding. Coders assigned codes based on caregiver-generated content. However, adolescent-generated content was considered essential to the context of the conversation and some codes were dependent upon caregiver responses to adolescent content (Emotion and Content codes, described below). How adolescent content was taken into consideration with coding is provided in more detail in the sections below.

Caregiver-adolescent conversation coding constructs. The coding scheme used in the present study was adapted from previous observational research on methods used to capture supportive/coaching and unsupportive/dismissive caregiver ES practices during emotionally-salient conversations with children in middle childhood (Emotion-Talk Task; Dunsmore, Booker, & Ollendick, 2013; Dunsmore et al., 2015; Lunkenheimer, Shields, & Cortina, 2007) and adolescence (Emotion Discussion Coding System; Hastings et al., 2014). Several elements from these coding schemes were adapted to measure caregiver ES during the tornado interviews. Table 1 (pg. 20) describes the caregiver-adolescent conversation qualities coded in this study, and Appendix C (pg. 67) contains the ES coding protocol.

Global codes. Global codes for caregiver *Structure* and *Egocentrism* were adapted from the EDCS and were applied to caregivers' overall patterns of behavior across the entire interview. These codes were based on caregiver contributions to the conversation and rated on a

5-point Likert-type scale from 1 (very low) to 5 (very much). Caregivers received a score of 0 if they did not speak during the entire interview; this code was added to the original EDCS because some caregivers were observed to remain silent throughout the entire interview. The Global code of Egocentrism was meant to reflect the overall tendency of the caregiver to center the conversation on her own emotions, perceptions, experiences, and concerns at the expense of the adolescent's emotions and perspectives. The Global code of Structure was meant to reflect how much initiative the caregiver took to direct the course of the discussion by asking questions and making statements. In previous studies, inter-rater reliability for these constructs has been acceptable (ICCs > .80; Brand, 2009) and they have demonstrated acceptable convergent (negatively related to caregiver displays of positive emotions and positively related to caregiver displays of negative emotions) and divergent (not strongly related to measures of more general parenting styles) validity (Brand et al., 2005).

Emotion codes. Emotion codes from the EDCS were used to assess parental responses to adolescent emotional content (both verbal and nonverbal). These responses were coded as present/absent in each segment of parental speech: *Reward* (empathize/comfort/ask questions about emotions/coach), *Override* (distract/minimize), *Punish* (shame/show contempt), and *Match/Magnify* (escalate/show same emotion). Dimensions were coded separately for positive and negative emotions and each caregiver-adolescent conversation received a total of 8 Emotion Codes: Reward Positive, Reward Negative, Override Positive, Override Negative, Punish Positive, Punish Negative, Magnify Positive, and Magnify Negative. A frequency count for the 8 coded variables was generated by counting the number of times each variable was observed. These codes represent an adaptation from the original protocol because they were coded as present/absent in segments of caregiver speech, rather than as present/absent in 30-second

intervals of conversation content (Brand et al., 2005). Inter-rater reliabilities for these constructs in previous studies have ranged from ICCs of .74 to .92 (Brand et al., 2005). The Emotion codes of the EDCS have demonstrated acceptable convergent and divergent validity. In regard to convergent validity, observed Emotion codes have been related to parent and adolescent answers on the Emotions as a Child Scale (Magai, 1996), a questionnaire meant to measure similar constructs. In regard to divergent validity, discrete Emotion codes on the EDCS do not have strong relations to measures of general parenting styles (Brand et al., 2005).

Content codes. Three additional codes were developed to capture other pertinent aspects of the caregiver-adolescent conversations. Specifically, these codes were meant to capture caregiver behavior that may have had an influence on how reinforcing adolescents found the discussion or how safe they felt talking about difficult events. The *Acknowledge* code was meant to capture when caregivers acknowledged, added additional information to, or gently corrected information the adolescent brought up. The *Argue* code was meant to capture when the caregiver disagreed with, argued, or criticized information the adolescent brought up during the conversation. These codes are similar to the codes used to measure lower levels of emotion-coaching (acknowledges the fact or discussed the event) and emotion-dismissing (argues the events/facts or dismisses the event) in the coding scheme used by Dunsmore and colleagues (2013, 2015). The code for *Direct to Interviewer* was meant to capture how much of the conversation the caregiver spent talking to the interviewer about the adolescent (as if the adolescent were not present). The Direct to Interviewer code was not based on prior coding schemes but was added by the author because it was thought to capture a behavior that might represent an important aspect of how the caregiver interacts with their adolescent. Using the adolescent's name and third-person pronouns were often indicators that caregivers were talking

about their adolescent to the interviewer. A frequency count of each of the coded variables was created by counting the number of times they were observed in the transcript and audio recording.

Interviewer prompting pattern coding. Due to significant variability in how interviewers presented the conversation task and prompted caregivers and adolescents through completing the conversation, a variable was developed to measure interviewer prompting patterns. For the interviews, coders measured whether interviewers prompted caregiver-adolescent dyads to “tell each other” or “talk to each other” consistently throughout the interview (which was consistent with study protocol), whether they said “tell each other” or “talk to each other” at the beginning of the interview but did not consistently specify this throughout the interview, or if they said “tell me” or “tell us” at the beginning of the interview. Interviewer prompting coding was used to capture an element of interviewer fidelity and determine if the frequency of ES qualities coded during caregiver-adolescent interviews differed based on interviewer prompting (please see Results section for a summary of how interviewer prompting related to the frequency of coded ES variables).

Coder training. Three undergraduate research assistants (URAs) were trained in the coding system using data from 5 to 10 dyads (depending on how long it took the coder to become reliable at 90%). Each URA was assigned to be the master coder for either the Global, Emotion, or Content codes. Master coders coded each transcript and 25% of the transcripts were coded by the author, who was masked to the codes assigned by the master coder, for reliability. Inter-rater reliability analyses for ES variables are reported in the Results section of this paper.

Table 1
Emotion Socialization Variables Coded: Female Caregiver-Adolescent Conversations

Coding Dimension	Unit of Analysis	Information Used	Codes	Resulting ES Variable	Related Dimension
Global	Whole Convo.	Caregiver Content	Structure (0-5)	Structure Scores	Dismissive/Unsupport.
	Whole Convo.		Egocentrism (0-5)	Egocentrism Scores	Dismissive/Unsupport.
Emotion	Per Segment of Caregiver Speech	Caregiver Content	Reward Neg/Pos (#) Magnify Neg/Pos (#) Override Neg/Pos (#) Punish Neg/Pos (#)	Frequency	Coaching/Supportive Dismissive/Unsupport. Dismissive/Unsupport. Dismissive/Unsupport.
Content	Per Segment of Caregiver Speech	Caregiver Content	Acknowledge (#) Argue (#) Direct to Interviewer (#)	Frequency	Coaching/Supportive Dismissive/Unsupport Dismissive/Unsupport.

Note: Pos. = Positive, Neg. = Negative, Convo. = Conversation, Unsupport. = Unsupportive

Adolescent Individual Interview Coding

Prior to coding, adolescent individual recollections were audiotaped and transcribed verbatim. All interviews were then broken down into propositional units for coding. A propositional unit was defined as a sentence (i.e., a subject and verb pair) containing information about the tornado (Sales & Fivush, 2005). Single word answers, such as “Yes,” “No,” or “Nothing,” were not considered to be a propositional unit. Additionally, if adolescents indicated that nothing happened to them or their family, this was not included in the propositional unit count because it was not considered to have codeable content (e.g., “Nothing happened to me or my family.” “Nothing negative or positive happened.” “Nothing has changed.”). The transcribed content was coded using the protocol outlined in the following sections. Table 2 (pg. 22) indicates interview qualities comprising each dimension coded for in the adolescent recollections, and Appendix D (pg. 74) contains the coding protocol. A master coder coded each transcript and 20% of transcripts were coded by a reliability coder who was masked to the codes assigned by the master coder.

Elaborativeness. Two variables to represent elaborativeness were calculated for the entire recollection. One variable indicated how often the adolescent mentioned details about the *Central Event* (the tornado) in their recollections. In order to code Central Event, the transcripts were segmented into propositional units and a count variable was generated for how many units contained a reference to tornado-related content. Inter-rater reliability for Central Event was calculated using the kappa statistic and was $\kappa = .84$. Total *Word Count* for the adolescent individual interviews was obtained via analysis with the Linguistic Inquiry and Word Count Program, 2015 Edition (LIWC2015).

Table 2

Variables Coded: Adolescent Individual Interviews

Coding Dimension	Unit of Analysis	Codes	Resulting Interview Variables
Elaborativeness	Per Segment of Adolescent Speech	Central Event	Total Count
	Whole Interview	Word Count	Word Count
Coherence	Per Prompt	Chronology (0-3) Context (0-3) Theme (0-3)	Chronology Scores Context Scores Theme Scores
Internal States Language	Whole Interview	emotion (#/word count) cognition (#/word count) perception (#/word count) physiology (#/word count)	Proportion of Internal States Language to Word Count
Meaning	Whole Interview	Resolution (#) Impact Pos or Neg (#) Instrumental Change Pos or Neg (#) Lessons (#)	Frequency Individual Statements

Coherence. The *Coherence* of transcripts for the child individual interviews was coded using a scheme developed by Baker-Ward and colleagues (2007). Three dimensions of Coherence were analyzed on a scale of 0 (completely absent) to 3 (fully present) per prompt: *Context*, *Chronology*, and *Theme*. Coherence variables were coded per prompt because each prompt encouraged adolescents to switch topics and share a different part of their story (Hambrick, 2014). Context referred to the adolescent being able to place the event in a specific time and place, Chronology referred to the temporal organization of the story, and Theme referred to creating a logical story with links to autobiographical memory. Context, Chronology, and Theme are the three dimensions that are considered to be essential and independent aspects

of coherence in personal recollections (Reese, Haden, Baker-Ward, Bauer, Fivush, & Ornstein, 2011). Intra-class correlations used to determine inter-rater reliability for Coherence were .90 for Context, .86 for Chronology, and .88 for Theme.

Internal states language. The standard dictionary for Linguistic Inquiry and Word Count Program, 2015 Edition (LIWC 2015) was used to analyze the text of adolescent individual interviews for the presence of internal states language. Internal states terms were coded as belonging to one of four categories (a) *emotion* (e.g., sad, scared), (b) *cognition* (e.g., thinking, wondering), (c) *perception* (e.g., see, hear), and (d) *physiological* (e.g., hungry, thirsty). These categories are consistent with those used in previous research examining internal states language use in child individual interviews (Legerski, Greenhoot, Vernberg, La Greca, & Silverman, 2015) and caregiver-child conversations about natural disasters (Bauer et al., 2005). Prior to analysis with LIWC, transcripts were prepared according to published guidelines: interviewer speech and transcription notes were deleted, misspellings were corrected, and filler terms, such as *I mean, like, you know, and well* (when used as filler terms) were manually tagged to prevent misidentification by LIWC (Pennebaker, Booth, & Francis, 2007).

Meaning. Several dimensions of meaning were coded. The coding scheme for *Resolutions* and *Personal Impact* were coded based off of the scheme used by Greenhoot and colleagues (2013) and *Lessons Learned/Insights Gained* were coded based on the scheme developed by McLean and Pratt (2006). *Instrumental Change* coding was based on the scheme used by Hambrick (2014). The entirety of each transcript was coded for elements of meaning. Count variables were generated for number of Resolutions, Personal Impacts, Instrumental Changes, and Lessons/Insights Gained. Personal Impacts and Instrumental Changes were coded separately for whether the content was positive (a change or impact perceived as good or

beneficial) or negative (a change or impact perceived as bad, harmful, or distressing). Only two adolescent transcripts contained an Insight Gained, so analyses were conducted using a count variable for Lessons. Intra-class correlations between two raters were .83 for Resolution, .95 for Lessons, .82 for Positive Instrumental Change, .84 for Negative Instrumental Change, .88 for Positive Personal Impact, and .94 for Negative Personal Impact.

Results

Preliminary Analyses

Prior to performing analyses related to the primary study aims, several preliminary analyses were conducted in order to examine the fidelity of the caregiver-adolescent conversation interview administration. As explained in the Methods section of this manuscript, multiple interviewers were involved in data collection, and a considerable amount of variability was observed in the presentation of the interview task. The interview protocol was revised prior to the 2015 data collection and interviewers participated in additional training. The following comparisons were conducted using independent samples t-tests.

First, caregiver-adolescent interviews conducted in 2014 were compared to those conducted in 2015 to test for differences in terms of interview length (Word Count) and ES variables. Interviews conducted in 2015 had greater Word Count, and had higher levels of Structure, Reward Negative, and Acknowledge compared to interviews conducted in 2014.

Second, in order to examine whether differences between caregiver-adolescent interviews conducted in 2014 and 2015 could be accounted for by interviewer effects, interviews in which participants were instructed to talk with each other were compared to those in which participants were instructed to talk to the interviewer; significant differences were found. Specifically, when interviewers instructed caregivers and adolescents to “talk with each other” at the beginning of

the interview, interviews were significantly longer (had higher caregiver and adolescent Word Count), and had significantly higher scores of Structure, Reward Negative, and Acknowledge (Please see Table 3, pg. 26).

Given these differences, interviews in which adolescents and caregivers were instructed to talk to the interviewer were removed from further analyses ($N = 72$); the majority of these interviews were conducted in 2014 ($N = 66$). A total of 21 interviews from 2014 and 119 interviews from 2015 ($N = 140$) remained (Figure 1, pg. 61).

Finally, the 21 interviews from 2014 were compared to the 119 interviews from 2015, and no significant differences in ES qualities were discovered. The interviews were comparable in terms of Word Count, as well as Global, Emotion, and Content codes. Therefore, the total 140 participants were used in subsequent analyses addressing the primary aims of this paper.

Chi-square tests and t-tests were conducted to compare ethnicity, sex, age, and income of the 140 participants used in the current sample to individuals who participated in the tornado interview data collection, but whose data were not included in further analyses ($N = 84$). Differences were not found for sex, race, or family income. However, differences were found for age. Adolescents whose data were used in the current study had a slightly higher mean age ($M = 14.72$, $SD = 1.13$) than adolescents who participated in the tornado interview, but whose data were excluded from analyses ($M = 14.04$, $SD = 1.07$). This difference is likely due to the fact that most of the excluded interviews were conducted in 2014 when participants were younger.

Table 3

Independent Samples T-tests: Combined Caregiver-Adolescent Interview Prompting Comparisons

Quality	Mean – “Talk to Me” Prompt	Mean – “Talk to Each Other” Prompt	t	df	Sig.
Egocentrism	2.42	2.59	-.93	81.37	.354
Structure	2.51	3.04	-4.08	90.41	.000**
Rew. Neg. Emo.	.18	.71	-3.72	208.61	.000**
Acknowledge	1.35	2.99	-6.18	155.40	.000**
Argue	.15	.26	-1.19	182.38	.234
Direct to Interviewer	.78	.89	-.54	210.00	.592
WC Caregiver	145.10	236.16	-3.10	210.00	.002**
WC Adol.	40.32	71.33	-3.64	200.56	.000**
WC Total	185.42	307.24	-3.46	210.00	.001**

Note: WC = Word Count. Adol. = Adolescent. Rew = Reward. Neg = Negative.

Emo = Emotion. ** = $p < .01$

Aim 1: Measuring Caregiver Emotion Socialization Behaviors

The first aim of the study was to adapt a coding scheme used in previous ES research to examine whether similar ES constructs could be captured and reliably measured, and if caregivers exhibited similar patterns of ES behaviors (compared to prior ES studies) in a co-reminiscing task in which caregivers were asked to talk about with their adolescent about their tornado-related experiences. Data analysis for Aim 1 began with examining inter-rater reliability of the ES coding scheme. Intra-class correlations were generated for Global codes and kappa values were generated for Emotion and Content codes. Descriptive statistics were also generated in order to examine the distribution and frequency of the variables. Any variables that could not

be coded reliably, or were determined to have inadequate distribution, were excluded from further analyses. Finally, correlations among the remaining ES qualities were calculated to examine relations among the variables.

Psychometric properties of emotion socialization variables. Inter-rater reliability for Global codes was calculated using a two-way mixed effects model for intra-class correlation coefficients (ICC). The ICCs for Egocentrism and Structure were .82 and .63, respectively. The value for Egocentrism was considered to be in the “almost perfect” range and the value for Structure was considered to be in the “fair” range (Fleiss, 1986). Therefore, codes for both Egocentrism and Structure were used in subsequent analyses.

Cohen’s kappa was calculated and evaluated to assess the inter-rater reliability for Emotion and Content codes (Landis & Koch, 1997). Inter-rater reliability for the Emotion code of Reward Negative was within the “moderate” range ($\kappa = .78$). Inter-rater reliabilities for the Emotion codes of Reward Positive ($\kappa = .55$), Magnify Positive ($\kappa = .54$), and Magnify Negative ($\kappa = .18$) were considered to be in the “weak to minimal” range. Override Positive, Override Negative, Punish Positive, and Punish Negative occurred too few times for kappa coefficients to be reliably calculated (i.e., these qualities were coded as present 5 times or less in all segments coded for inter-rater reliability). Inter-rater reliability for the Content codes of Acknowledge ($\kappa = .64$) and Argue ($\kappa = .65$) were considered to be “moderate.” Inter-rater reliability for the Content code of Direct to Interviewer ($\kappa = .90$) was considered to be “strong.” The Emotion code of Reward Negative and the Content codes of Acknowledge, Argue, and Direct to Interviewer were included in subsequent analyses.

Inspection of the distribution of the remaining ES variables indicated that Acknowledge, Reward Negative, Direct to Interviewer, and Argue had several outliers; these variables were

recoded to decrease their skewness. Reward Negative and Direct to Interviewer were recoded on a scale of 0 to 5 (or more). Acknowledge was recoded by examining the distribution of raw scores and assigning new values in order to approximate a normal distribution. The recoded variable was based on number of acknowledgements (0 = 0, 1 = 1 to 3, 2 = 4 to 6, 3 = 7 to 10, 4 = 11 to 20, and 5 = 21 or more). The new variable for Acknowledge was distributed as follows (0 = 15.7%, 1 = 36.4%, 2 = 22.9%, 3 = 10.7%, 4 = 9.3%, 5 = 5%). Argue was recoded on a scale of 0 to 3 (or more). Reward Negative and Argue both had a significant positive skew, and the Logarithmic transformation was used to standardize these variables (Tabachnick & Fidell, 2007). Egocentrism, Structure, Acknowledge, and Direct to Interviewer were not standardized because the variables were considered to have adequately normal distributions based on their skewness and kurtosis. Please refer to Table 4 (pg.29) for descriptive statistics of ES variables used in the study. The means for Egocentrism ($M = 2.59$) and Structure ($M = 3.04$) in this study are similar to the means of Egocentrism ($M = 2.37$) and Structure ($M = 3.68$) found in other ES studies with community samples of predominantly middle-class European American caregiver-adolescent dyads (Brand et al., 2005).

Correlations among qualities of caregiver-adolescent interviews. Table 5 (pg. 30) shows bivariate correlations among qualities of caregiver-adolescent interviews. Egocentrism and Structure were moderately positively correlated with one another. Egocentrism and Structure were both positively correlated with Direct to Interviewer. Egocentrism was also moderately positively correlated with Argue. These relations were expected because they were thought to represent unsupportive/dismissing caregiver ES behaviors (Brand et al., 2005). Reward Negative and Acknowledge were positively correlated, which was expected because they were both

considered to represent elements of supportive/emotion-coaching responses. Surprisingly, several emotion-dismissing/unsupported ES behaviors (Egocentrism, Structure, and Direct to Interviewer) were also positively correlated with Acknowledge. Structure was also, surprisingly, positively correlated with Reward Negative.

Table 4

Descriptives: Qualities of Caregiver-Adolescent Conversations

Quality	Mean	SD	Range	# With Any	Skewness	Kurtosis
Reward Negative	.71	1.40	0-5	40	2.10	3.32
Acknowledge	1.76	1.37	0-5	118	.76	.18
Argue	.26	.76	0-3	17	2.84	6.80
Direct to Interviewer	.89	1.54	0-5	51	1.79	2.04
Structure	3.04	.62	0-5	137	-.95	5.40
Egocentrism	2.59	.98	0-5	135	-.01	-.01
Parent Word Count	236.16	206.55	5-1097	140	1.83	3.95
Adolescent Word Count	71.33	88.14	0-760	139	4.57	29.40
Total WC	307.27	259.24	7-1772	140	2.20	7.73

Table 5

Correlations among Qualities of Parent-Adolescent Conversations

	Ego	Structure	Rew Neg	Acknow.	Argue
1. Egocentrism	--				
2. Structure	.64**	--			
3. Reward Negative	.14	.24**	--		
4. Acknowledge	.45**	.34**	.24**	--	
5. Argue	.37**	.08	.05	.11	--
6. Direct to Interviewer	.24**	.21**	-.02	.19*	.06

Note: *p< .05, **p<.01

Aim 2: Caregiver Emotion Socialization and Adolescent Individual Interview Qualities

The purpose of the second aim of the study was to examine how indicators of ES practices relate to how adolescents talk about their tornado-related experiences during their individual interviews. Data analysis for aim 2 began by calculating correlations and internal consistency coefficients among the variables that comprised Coherence (Context, Chronology, Theme) in order to evaluate the measurement properties of potential composite variables. The second step of this aim was to generate descriptive statistics in order to examine the distribution and frequency of variables and then conduct zero-order correlations among adolescent individual recollection qualities in each dimension (Elaborativeness, Coherence, Internal States Language, and Meaning). The third step was to conduct zero-order correlations among adolescent individual recollection qualities and potential covariates (age, sex, tornado-related exposure and distress). The fourth and final step of this aim was to conduct regression analyses, based on which variables had significant zero-order correlations, between ES variables and individual recollection qualities, controlling for covariates. Results for each step are presented below.

Internal consistency coefficients of variables related to coherence. Context, Chronology, and Theme ratings were often minimally to moderately positively correlated ($r = .18$ to $.56$) both within prompt and between prompts. Internal consistency was not considered to be acceptable when grouping Context, Chronology, or Theme *across* all 5 prompts ($\alpha < .60$). However, a composite scale based on Context, Chronology, and Theme had acceptable internal consistency *within* prompts for Prompt 1 ($\alpha = .75$), Prompt 2 ($\alpha = .71$), and Prompt 4 ($\alpha = .64$). Therefore, Context, Chronology, and Theme were standardized and averaged *within* prompt for Prompts 1, Prompt 2, and Prompt 4 to represent Coherence in further analyses.

Descriptives and correlations among adolescent individual recollection constructs.

Please see Table 6 (pg. 32) for measures of central tendency and variability. All variables (except Coherence variables) were transformed using the Logarithmic transformation in order to improve their distribution. Word Count was moderately positively correlated with Coherence for Prompts 1, 2, and 4. Coherence has been found to be positively correlated with Word Count in other studies (Hambrick, 2014). Word Count was moderately correlated with all Meaning variables, as well as Positive Emotion terms, Perceptual terms, and Physiological terms, but not above $r = .55$. Negative Emotion terms were positively correlated with Perception terms ($r = .21, p < .01$), but no other Internal States Language categories were correlated with one another. Several Meaning variables were positively correlated with one another, but correlations were weak to moderate ($r = .18$ to $.41$). The correlations indicate that the adolescent recollection qualities were not highly correlated with one another and could be examined as separate variables in further analyses.

Table 6

Descriptives: Qualities in Adolescent Individual Interviews

Quality	Mean	SD	Range	# With Any	Skewness	Kurtosis
Central Event	.79	2.20	0-18	43	5.33	33.74
WC	95.14	99.22	8-939	140	4.86	37.24
Coherence PR 1	2.10	1.95	0 – 7	105	.885	-.04
Coherence PR 2	1.01	1.45	0 – 8	75	1.90	4.80
Coherence PR 4	1.09	1.39	0 - 6	79	1.67	2.66
Pos Emo	1.83	2.35	0 – 17.65	87	2.89	14.61
Neg Emo	1.54	1.89	0 – 9.52	86	1.64	2.92
Cog Proc	15.91	10.03	0-63.64	139	2.03	6.77
Perception	1.41	1.72	0-7.14	80	1.32	1.19
Physiology	.83	1.27	0-7.69	61	2.22	6.84
Lessons	.16	.52	0-4	17	4.32	23.85
Resolution	.15	.65	0-6	13	6.41	50.23
Pos IC	.60	1.17	0-8	42	2.85	11.53
Neg IC	1.12	1.46	0-6	72	1.36	1.22
Pos PI	.96	1.41	0-10	72	2.78	12.24
Neg PI	.85	1.48	0-9	57	2.70	9.12

Note: WC = Word Count. PR = Prompt. Pos = Positive. Neg = Negative. Emo = Emotion. IC = Instrumental Change. PI = Impact. Prompt 1 = Tell me some things that happened to you and your family because of the tornado; Prompt 2 = Tell me some challenging things; Prompt 3 = Tell me some positive things; Prompt 4 = How have things been different? Prompt 5 = Is there anything else you'd like to say about the tornado?

Correlations among ES variables, individual recollection qualities, and covariates.

In order to reduce the number of regression analyses and to identify potential covariates to use in regression analyses, zero-order correlations were conducted among ES variables, adolescent individual recollections qualities, and potential covariates (age, sex, tornado-related exposure and distress). ES and potential covariates were included in regression models only if they correlated significantly or at trend-level with adolescent individual interview qualities. Results per dimension are summarized below.

Elaborativeness. Central Event was positively correlated with tornado-related distress ($r = .30, p < .01$) and Reward Negative at the trend-level ($r = .16, p = .06$) but was unrelated to tornado-related exposure or adolescent age or sex. Word Count was positively correlated with Egocentrism ($r = .23, p < .01$), Structure ($r = .21, p < .05$), and Acknowledge ($r = .22, p < .01$). No significant correlations were found between Word Count and age, sex, or tornado-related exposure or distress.

Coherence. Coherence for Prompt 1 was positively correlated with Egocentrism ($r = .27, p < .01$), Structure ($r = .18, p < .05$), Acknowledge ($r = .24, p < .01$), and tornado-related distress ($r = .22, p < .05$). Coherence for Prompt 2 was not related to any ES variables. Coherence for Prompt 4 was negatively related to Reward Negative ($r = -.18, p < .05$). No significant correlations were found between Coherence and age or sex.

Internal states language. Frequency of Positive Emotion terms was negatively related to Reward Negative ($r = -.27, p < .01$). Use of Negative Emotion terms was positively correlated with Egocentrism ($r = .19, p < .05$). Disaster-related objective exposure was negatively related to Cognitive Processing terms ($r = -.26, p < .01$). No other correlations between Internal States Language and age, sex, or tornado-related exposure or distress were significant.

Meaning. Positive Instrumental Change was unrelated to ES variables, but was positively related to tornado-related distress ($r = .27, p < .01$) and exposure ($r = .28, p < .01$). Negative Instrumental Change was positively correlated with Egocentrism ($r = .28, p < .01$), Structure ($r = .25, p < .01$), and Acknowledge ($r = .34, p < .01$). Negative Instrumental Change was also positively correlated with tornado-related objective exposure ($r = .24, p < .05$) and distress ($r = .22, p < .05$). Positive Personal Impact was positively correlated with Egocentrism ($r = .19, p < .05$) and Structure ($r = .24, p < .01$) and negatively correlated with Reward Negative at the trend level ($r = -.15, p = .09$). Positive Personal Impact was positively correlated with tornado-related distress ($r = .17, p < .05$) and adolescent age ($r = .18, p < .05$). Negative Personal Impact was positively related to Egocentrism, ($r = .21, p < .05$), Structure ($r = .21, p < .05$), and Acknowledge at the trend-level ($r = .15, p = .09$). Surprisingly, Lessons and Resolutions were unrelated to ES variables. No other meaning variables were correlated with sex or age.

Regression models. For the final step in aim 2 analyses, regressions were conducted to assess whether ES variables (Egocentrism, Structure, Acknowledge, Reward Negative) predicted Adolescent Recollection Qualities (Elaborativeness, Coherence, Internal States Language, Meaning), controlling for (when indicated) age, and tornado-related distress and exposure. The following regression models are based on significant or trend-level correlations found in the previous analytic step of this aim.

Elaborativeness. A linear regression was conducted to examine the relation between Reward Negative and Central Event, controlling for tornado-related distress (Table 7, pg. 35; $R^2 = .12, F(2, 125) = 9.865, p < .001$). Reward Negative remained a significant predictor of Central Event after controlling for tornado-related distress ($\beta = .22, p = .01$). Thus, female caregivers who rewarded the expression of negative emotion had adolescents who mentioned more central

events in their individual interviews, over and above the amount of distress adolescents experienced during the tornado.

Table 7

Linear Regression of Central Event and Reward Negative Controlling for Tornado-Related Distress

Variable	B	SE (B)	β	t	Sig. (p)	R ²
						.123***
Tornado-Related Distress	.045	.012	.311	3.736	.000***	
Reward Negative	.216	.082	.219	2.625	.010**	

Note. ** $p < .01$, *** $p < .001$

A multiple linear regression analysis was conducted to test how much variance in Word Count was predicted by Egocentrism, Structure, and Acknowledge (Table 8). The results of the regression indicate that the three ES predictors explained 5% of the variance ($R^2 = .05$, F (3, 134) = 3.38, $p < .05$). Higher levels of Egocentrism, Structure, and Acknowledge were associated with longer adolescent individual interviews. However, none of the variables were significant unique predictors of Word Count.

Table 8

Multiple Regression of Word Count on Egocentrism, Structure, and Acknowledge

Variable	B	SE (B)	β	t	Sig. (p)	R ²
						.050*
Egocentrism	.049	.041	.132	1.201	.232	
Structure	.050	.065	.085	.772	.441	
Acknowledge	.022	.017	.114	1.254	.212	

Note. * $p < .05$

Coherence. A hierarchical multiple linear regression analysis was conducted to test how much variance in Prompt 1 Coherence was predicted by Egocentrism, Structure, and Acknowledge, controlling for tornado-related distress (Table 9, pg. 36). The results of the

regression indicate that the total model accounted for 16% of the variance, and the three ES predictors

Table 9

Hierarchical Multiple Regression of Coherence Prompt 1 on Egocentrism, Structure, and Acknowledge Controlling for Tornado-Related Distress

Variable	B	SE (B)	β	t	Sig. (p)	ΔR^2
Step 1						.045**
Tornado-Related Distress	.110	.042	.229	2.614	.010**	
Step 2						.114***
Tornado-Related Distress	.116	.040	.241	2.897	.004**	
Egocentrism	.203	.088	.249	2.303	.023*	
Structure	-.049	.140	-.038	-.351	.726	
Acknowledge	.092	.037	.221	2.480	.015*	

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

explained 11% of the variance ($R^2 = .16$, $\Delta R^2 = .114$, $F(4, 121) = 3.62$, $p < .001$). Tornado-related distress ($\beta = .24$, $p < .01$), Egocentrism ($\beta = .25$, $p < .05$) and Acknowledge ($\beta = .22$, $p < .05$) remained significant unique positive predictors of Coherence for Prompt 1. When entered in the model, Structure was no longer a unique predictor ($\beta = -.05$, $p = .73$).

Meaning. A hierarchical multiple linear regression analysis was conducted to test how much variance in Negative Instrumental Change was predicted by Egocentrism, Structure, and Acknowledge, after controlling for tornado-related objective exposure and distress (Table 10, pg. 37). The results of the regression indicate that the model explained 18% of the variance, with the three ES variables explaining 10% of the total variance ($R^2 = .18$, $\Delta R^2 = .104$, $F(5, 120) = 6.45$, $p < .001$). Higher levels of tornado-related objective exposure, distress, Egocentrism, Structure, and Acknowledge were all associated with more mentions of Negative Instrumental Change. Tornado-related objective exposure ($\beta = .18$, $p < .05$) and Acknowledge ($\beta = .26$, $p < .01$) remained significant unique predictors of Negative Instrumental Change.

Table 10

Hierarchical Multiple Regression of Negative Instrumental Change on Egocentrism, Structure, and Acknowledge, Controlling for Tornado-Related Exposure and Distress

Variable	B	SE (B)	β	t	Sig. (p)	ΔR^2
Step 1						.075**
Tornado-Related Distress	.021	.016	.130	1.344	.181	
Tornado Obj. Exposure	.201	.090	.216	2.230	.028*	
Step 2						.104***
Tornado-Related Distress	.024	.015	.147	1.589	.115	
Tornado Obj. Exposure	.170	.085	.183	1.993	.048*	
Egocentrism	.030	.029	.111	1.038	.301	
Structure	.026	.046	.060	.558	.578	
Acknowledge	.036	.012	.260	2.956	.004**	

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

A hierarchical multiple linear regression analysis was conducted to test how much variance for Positive Personal Impact was predicted by Egocentrism, Structure, and Reward Negative, after controlling for tornado-related distress and age (Table 11, pg. 38). The results of the regression indicate that the model explained 15% of the variance, with the three ES variables explaining about 7% of the variance ($R^2 = .15$, $\Delta R^2 = .071$, $F(5, 120) = 5.51$, $p < .001$). Tornado-related distress ($\beta = .18$, $p < .05$), age ($\beta = .24$, $p < .01$), and Structure ($\beta = .23$, $p < .05$) remained unique positive predictors and were therefore related to greater levels of Positive Personal Impact. Reward Negative ($\beta = -.21$, $p < .05$) remained a unique negative predictor and was related to fewer mentions of Positive Personal Impact in adolescent interviews.

Table 11

Hierarchical Multiple Regression of Positive Personal Impact on Egocentrism, Structure, and Reward Negative, Controlling for Tornado-Related Distress and Adolescent Age

Variable	B	SE (B)	β	t	Sig. (p)	ΔR^2
Step 1						.082**
Tornado-Related Distress	.034	.013	.223	2.580	.011*	
Adolescent Age	.055	.019	.249	2.877	.005**	
Step 2						.071**
Tornado-Related Distress	.028	.013	.183	2.157	.033*	
Adolescent Age	.053	.018	.242	2.907	.004**	
Egocentrism	.016	.027	.064	.596	.552	
Structure	.092	.044	.227	2.068	.041*	
Reward Negative	-.208	.086	-.205	-2.411	.017*	

Note. * $p < .05$, ** $p < .01$

A multiple linear regression analysis was conducted to test how much variance in Negative Personal Impact was accounted for by Egocentrism, Structure, and Acknowledge (Table 12). The results of the regression indicated that the three ES predictors explained about 4% of the variance ($R^2 = .04$, $F(3, 134) = 2.79$, $p < .05$). Higher levels of Egocentrism, Structure, and Acknowledge were associated with more mentions to Negative Personal Impact in adolescent interviews. However, none of the variables were significant unique predictors.

Table 12

Multiple Regression of Negative Personal Impact on Egocentrism, Structure, and Acknowledge

Variable	B	SE (B)	β	t	Sig. (p)	R^2
Step 1						.036*
Egocentrism	.029	.028	.112	1.011	.314	
Structure	.049	.044	.123	1.110	.269	
Acknowledge	.007	.012	.054	.590	.556	

Note. * $p < .05$, ** $p < .01$

Discussion

The overarching goal of the current study was to provide a greater understanding of the ES processes caregivers use while co-reminiscing with their adolescent about a stressful or traumatic event and how these ES processes are linked to adolescent recollection qualities. These recollection qualities can provide a window into how adolescents are processing emotional and cognitive reactions and attempting to make meaning out of the event. Drawing from theory and research on caregiver roles in both the socialization of emotion regulation and memory development, the author posited that caregivers would attempt to socialize emotions during trauma co-recollections, and the degree and style (supportive/coaching or unsupportive/dismissing) with which caregivers attempted to socialize emotions would be similar to previous ES studies and related to qualities of adolescent reminiscing (elaborativeness, coherence, internal states language, meaning). This study also explored whether ES was uniquely related to adolescent recollection qualities, above and beyond the tornado-related distress and exposure adolescents reported experiencing years prior to the tornado interviews. This study is among the first to investigate and find initial support for the notion that caregivers engage in ES behaviors during co-reminiscing about a shared stressful event and that caregiver ES behaviors are related to how adolescents are processing emotions and cognitions related to the event and recollecting events on their own. Most ES and memory research has been conducted with middle-class, European American families, and the current sample for this study was comprised predominantly of low-income, African American youth who were identified as at-risk for aggression at an early age. Therefore, this study also allowed the unique opportunity to examine the relation between caregiver ES and adolescent narrative recollections in a population that is often neglected in both the ES and trauma recollection literature. The current study addressed two research questions and

the findings are discussed below along with implications for the measurement of ES in relation to adolescent recollection qualities. The discussion of research questions and findings is followed by a review of study strengths, limitations, implications, and suggestions for future research directions.

Measuring Caregiver Emotion Socialization during Recollections with Their Adolescent

The first aim of the current study was to examine whether constructs derived from previous research and theory on ES could be observed and measured in caregiver-adolescent conversations about a natural disaster within a population of predominantly low-income, African American, at-risk adolescents. To this end, the author evaluated the basic psychometric properties of an ES coding scheme adapted from existing research on caregiver ES during conversations about events that made youth feel sad, worried, afraid, mad, or happy (Dunsmore et al., 2013; Dunsmore et al., 2015; Hastings et al., 2014). The caregiver-adolescent conversation used in the current study differed from tasks used in previous ES studies because caregiver-adolescent dyads were prompted to talk about a shared traumatic event (i.e., the tornado), rather than focus on events in which the adolescent experienced a specific emotion. Further, the current study task was adapted from research on reminiscing about a natural disaster and dyads were not specifically asked to talk about emotional content (Bauer et al., 2007; Hambrick, 2014), whereas previous ES studies have instructed families to talk about discrete emotions. The Global and Emotion codes were adapted from the Emotion Discussion Coding System (EDCS; Hastings et al., 2014). The Content codes of Acknowledge and Argue were adapted from a coding scheme used by Dunsmore and colleagues (2013, 2015). Direct to Interviewer was developed during the coding phase of the current study in response to observations that several caregivers would talk to the interviewer about the adolescent as if the adolescent were not present.

It was hypothesized that the ES qualities would be present within the conversations to a similar degree observed in previous ES research with different tasks, caregivers would vary in the ES practices they used with their adolescents, and ES constructs could be reliably coded. Overall, results indicated that some constructs identified in previous ES research were present, could be reliably coded, and appeared to vary in caregiver-adolescent conversations about their experiences during and after the tornado. Some ES constructs were found to be present to a similar degree in the caregiver-adolescent recollections compared to previous ES research, while others were observed to be present to a much lower degree compared to prior ES research.

Global codes (Egocentrism and Structure), Content codes (Acknowledge, Argue, Direct to Interviewer), and one Emotion code (Reward Negative) demonstrating adequate variability and could be reliably coded, and were therefore included in further analyses. The Global codes of Egocentrism and Structure were meant to capture a caregiver's overall pattern of behavior throughout the conversation. These Global codes were scored on a Likert-type scale and the coding scheme set clear criteria for differentiating among different levels of Egocentrism and Structure. Content codes focused on very concrete caregiver behaviors that were relatively easy to observe in the conversations and Acknowledge and Argue were used in this study specifically because the prompts used in the tornado interview were thought to pull for more factual information. Instances of Reward Negative tended to be easily discernable in caregiver-adolescent dialogue because the coding scheme required the caregiver to label or ask questions about a specific emotion (e.g., "Were you scared?" "It was sad when that happened.") or ask questions directed towards helping the adolescent expand on discrete emotions (Adolescent: "I was scared." Caregiver: "What scared you?"). Additionally, the tornado interview required the

caregiver-adolescent dyad to talk about a potentially stressful or traumatic event, which is more likely to pull for discussion around negative, rather than positive, emotions.

Emotion codes of Reward Positive and Match/Magnify could not be reliably coded within the conversations, although they appeared to be present and vary to some degree. Reward Positive may have been difficult to capture reliably in this study for a couple of reasons: adolescent references to positive emotion were relatively rare and when caregivers did ask questions about positive emotions they tended to be vague (e.g., Caregiver: "How did you feel about that?" Adolescent: "Good."). In regard to Match/Magnify, other researchers have found this construct to be difficult to measure reliably in an observational format (R. Miller, personal communication, April 22, 2015). This is potentially because Match/Magnify can look very different depending upon the emotion (i.e., sadness, fear, anger, happiness), can sometimes be very subtle, and may overlap with empathizing (which is coded as Reward).

Emotion Codes of Override and Punish did not exhibit adequate variability. These elements of caregiver ES either were not present or were especially difficult to capture reliably within the context of the tornado interview used in the current study. Similar findings have been reported in previous ES research in that Override and Punish were used by caregivers less often during observational tasks than Reward or Match/Magnify (Brand et al., 2005). Prompts for the tornado interview used in the current study did not pull for emotion talk, which may have further reduced the likelihood of caregivers using specific emotion-dismissing behaviors.

Constructs that were thought to measure unsupportive/dismissive caregiver ES behaviors (i.e., Egocentrism, Structure, Argue, and Direct to Interviewer) were all positively correlated. These findings are consistent with previous research, which found that the more caregivers attempted to Structure discussions, the more they displayed Egocentrism, as well as anger and

hostility (Brand et al., 2005). As expected, and consistent with previous research, constructs related to supportive/coaching caregiver ES practices, Reward Negative and Acknowledge, were positively correlated (Dunsmore et al., 2013; Dunsmore et al., 2015). Unexpectedly, Acknowledge was also positively correlated with Egocentrism, Structure, and Direct to Interviewer and Reward Negative was positively correlated with Structure. These findings suggest that caregiver behaviors coded as Acknowledge in the current study may represent a more basic skill of reflecting on or conceding to factual content in the adolescent's contributions to the conversation, which can co-occur with both more supportive (Reward) or more unsupportive (Egocentrism, Structure, Direct to Interviewer) caregiver behaviors. Another unexpected finding was that no directional relation was found between Egocentrism and Reward Negative, even though these constructs have been found to be moderately negatively correlated in previous studies (Brand et al., 2005). Further, although caregivers showed similar levels of Egocentrism and Structure in this study compared to other studies on ES, the frequency of rewarding negative emotions was lower in the current study (Brand et al., 2005).

The relations among constructs found in the current study may demonstrate that these constructs operate differently depending upon what caregivers and adolescents are asked to discuss (talking about the tornado versus focusing on a problem or discreet emotions). Other studies have found that the explicit goal of caregiver-adolescent interactions (emotion-focused versus fact-focused) can influence the content caregivers contribute to the conversation (Sun, Greenhoot, & Kelton, 2016). Therefore, the task demands of the current study may have reduced the likelihood of caregivers intentionally focusing on socialization of emotions with their adolescent during the tornado conversation.

Another potential explanation for the current findings for ES may have to do with the cultural context of the sample in the current study. African American families report less expression of negative affect compared to European Americans families (Consedine & Magai, 2002). Low-income African American families may focus less on coaching and supporting their children in the expression of emotions, and may place more of an emphasis on controlling negative emotional displays in order to reduce discrimination and help their children interact successfully with the majority culture (Nelson, Leerkes, O'Brien, Calkins, & Marcovitch, 2012). Although emotion coaching around negative emotions has been linked to similar socioemotional outcomes for low-income African American children compared to middle and upper-class European American children (Bowie et al., 2013; Cunningham, Kliewer, & Garner, 2009), other studies have found that expressive encouragement in African American households may actually be detrimental to certain aspects of children's socioemotional development (Nelson, Leerkes, Perry, O'Brien, & Calkins, 2013). Similarly, research conducted with low-income samples have found caregivers to be less supportive and more punitive in response to adolescent displays of anxiety or sadness, presumably because caregivers are trying to prepare youth to survive in tough neighborhoods where displays of sadness or anxiety would be considered a weakness or liability (Izard & Ackerman, 2000). Taken together, this research on the cultural context of ES may help explain the comparatively lower frequency of ES behaviors found in the current study. Although dismissive ES behaviors were relatively rare, these codes were dependent upon adolescents' displays of emotions. These findings may reflect how low-income and African American youth have been socialized to avoid expression of negative emotions.

Caregiver Emotion Socialization and Adolescent Individual Interview Qualities

The second aim of the current study was to evaluate the relation between ES variables and qualities of adolescent individual interviews. It was hypothesized that caregiver ES variables would be related to adolescent recollection qualities, above and beyond the exposure and distress adolescents experienced during the tornado. These hypotheses were partially supported in that some aspects of how the adolescent remembered the tornado were related to their caregivers' ES behaviors during co-reminiscing about the tornado. Findings and interpretations for this aim are presented in more detail below.

Research on parent-child recollections has found support for the notion that caregivers influence their children and adolescent's narrative skills and memory for events (Bauer et al., 2007; Fivush, 2009). However, there is still much to discover about the processes by which caregivers shape their children's narrative skills and memory development. This study provides evidence that caregiver ES behaviors (Egocentrism, Structure, Acknowledge, Reward Negative) during co-reminiscing with their adolescents is related to how adolescents reflect on and recollect the same stressful and traumatic event on their own.

Egocentrism, Structure, and Acknowledge were related to higher Word Count and more mentions of Negative Personal Impact, Egocentrism was related to greater use of negative emotion terms, and Reward Negative was related to less use of positive emotion terms and less Coherence for Prompt 4 ("Tell me how, compared to your life before the tornado, things are different for you or your family now.") in adolescent individual narratives. However, these recollection qualities were not related to the amount of tornado-related distress or exposure adolescents reported experiencing years prior to their tornado narrative.

Several adolescent recollection qualities (Central Event, Coherence for Prompt 1, Positive Instrumental Change, Negative Instrumental Change, Positive Personal Impact, and Negative Personal Impact) were related to the amount of self-reported tornado-related distress or exposure experienced years prior to the tornado interview. These findings are in line with previous theory and research stating that greater trauma exposure and distress prompts efforts to process emotions and cognitions related to the event in order to make sense out of and derive meaning from the trauma (Fivush, Sales, & Bohanek, 2008; Greenhoot, Sun, Bunnell, & Lindboe, 2013). With the exception of Positive Instrumental Change, which was not related to ES variables, caregiver ES behaviors accounted for significant additional variance in the other five adolescent recollection qualities, even after controlling for tornado-related exposure and distress and age (for Positive Personal Impact).

The findings for this aim provide support for the notion that caregiver ES behaviors during co-recollections are related to how youth process emotions and cognitions related to stressful events, and may contribute to how adolescents are recalling events as well as to the nature and extent of adolescents' meaning making efforts. Caregivers who engage in ES behaviors that are perceived as supportive may help their adolescent feel safe, heard, and like their emotional needs are being met (Laible, 2004). Additionally, when caregivers engage their adolescents in a more elaborative, emotion-focused manner, it may help adolescents to not avoid thinking about some of the most distressing aspects of the event and promote "emotional self-concept" (the ability to talk about negative emotions with others in a way that promotes coping; Fivush et al., 2003).

Lessons and Resolutions mentioned in adolescents' individual interviews were relatively rare and unrelated to caregiver ES practices. Only two adolescents mentioned an insight in their

interview. The Lessons and Resolutions expressed in the interviews were generally concrete and simple (e.g., “I learned to watch the t.v. when there is bad weather” for Lesson or “Things are good now” for Resolution). Prior studies have found that adolescents rarely provide abstract references toward meaning in trauma recollections (McLean & Pratt, 2006). Participants in the current study may not have internalized the ability to make more personal and abstract links between their current selves and the natural disaster that happened several years prior.

Study Strengths and Limitations

Strengths. This study also contains some unique advantages compared to other studies examining caregiver socialization practices and caregiver-adolescent co-reminiscing. First, the current study extended the current body of literature on caregiver ES and bridged the gap between the ES literature and trauma recollection literature by adapting an ES coding scheme to measure ES qualities during caregiver-adolescent co-recollections about a devastating tornado. Second, in contrast to previous research, this study compared caregiver ES behaviors during caregiver-adolescent conversations to independent qualities of adolescent recollections in the absence of direct caregiver influence. Thus, this study was able to demonstrate that caregiver ES behaviors measured during a caregiver-adolescent conversation do have relevance to how adolescents recall, process trauma-related emotions and cognitions, and engage in meaning making around the event on their own. Third, the current sample was predominantly African American and low-income, and there is limited information about the ES practices of ethnically diverse and low-income families. Most of the research on ES practices has been conducted with predominantly European American, middle and upper-class families. Fourth, the current study incorporated a measure of interviewer fidelity and was able to examine differences in interview content based on how interviewers administered the prompts. Finally, because participants were

not instructed to specifically talk about discrete emotions, current findings may represent a more naturalistic measure of how caregivers approach talking about emotions with their youth around natural disasters.

Limitations. The current study also had several methodological limitations. Although the study was able to examine adolescent tornado-related distress and exposure years prior to collecting adolescent narratives, data investigating caregiver ES and adolescent recollection qualities were collected at the same time point. Therefore, the cross-sectional nature of the study design precludes drawing causal implications for the relation between caregiver ES and adolescent reminiscing qualities. Adolescents can also influence caregiver ES behaviors. Especially when adolescents are less emotionally expressive or have problems with aggression or disruptive behaviors, caregivers may struggle with how to engage their adolescents in healthy and productive conversations around stressful topics.

Observational measures tend to be viewed as the “gold standard” for capturing elements of caregiver-child interactions, both in the emotion socialization literature and the recollection literature. The caregiver-child relationship is a system, and introducing a third person (i.e., an adult interviewer) into the system may have substantially altered how the caregiver and adolescent interacted with one another. Interviewers in the current study did not leave the room during interviews and therefore may have introduced “noise” into the data that could not be systematically accounted for in coding procedures. The current study also utilized transcribed verbatim scripts paired with audio recordings to code caregiver behaviors. Previous studies coding ES have video-taped interactions for coding. The coding procedures used in the current study may have made it more difficult to catch subtler caregiver behaviors that contribute to ES.

Finally, the sample used in the current study was predominantly low-income, African American, and identified as at-risk for aggression at a young age. Although there is little ES and reminiscing research which focuses on this particular demographic, it does raise questions about the generalization of study results to other cultural groups and socioeconomic classes.

Study Implications and Future Directions

The results of the current study contribute to the literature by (1) demonstrating that some aspects of caregiver ES can be measured reliably during a caregiver-adolescent conversation about a tornado with a group of at-risk, predominantly African American, low-income youth and their female caregivers, and (2) providing evidence to support a link between caregiver ES behaviors and how adolescents reflect on, recall, and attempt to make meaning out of the same stressful event on their own. Results of the study suggest that it is beneficial to consider the role of caregiver ES processes in how adolescents remember, process emotions and cognitions related to, and make meaning out of traumatic events, such as natural disasters.

Adult contributions to how adolescents remember and learn how to talk about traumatic and stressful events in adaptive ways, such as during the therapeutic process, are poorly understood. Caregiver supportive ES factors during conversations about recent emotionally-laden events have been found to influence therapeutic outcomes for youth with externalizing behavior problems and have led to the creation of emotion-coaching caregiver interventions (Dunsmore et al., 2013; Dunsmore et al., 2015). Results from the current study demonstrate that ES behaviors may operate to influence the ways in which adolescents reflect on and remember traumatic and stressful events. Trauma-Focused Cognitive Behavioral Therapy (TFCBT; Cohen, Mannarino, & Deblinger, 2006) is an empirically-supported treatment for children and adolescents who are experiencing post-traumatic stress reactions. This treatment entails the

therapist-guided creation of a trauma narrative and often involves the caregiver in listening to and talking with the child or adolescent about their trauma narrative. Given that the current study demonstrates a significant relation between caregiver ES and adolescent memory and reminiscing style, more studies are needed to understand how caregiver ES contributes longitudinally to adolescents' memory and the meaning they derive from traumatic and stressful events, as well as how caregiver ES contributes to adolescent well-being in relation to trauma experiences.

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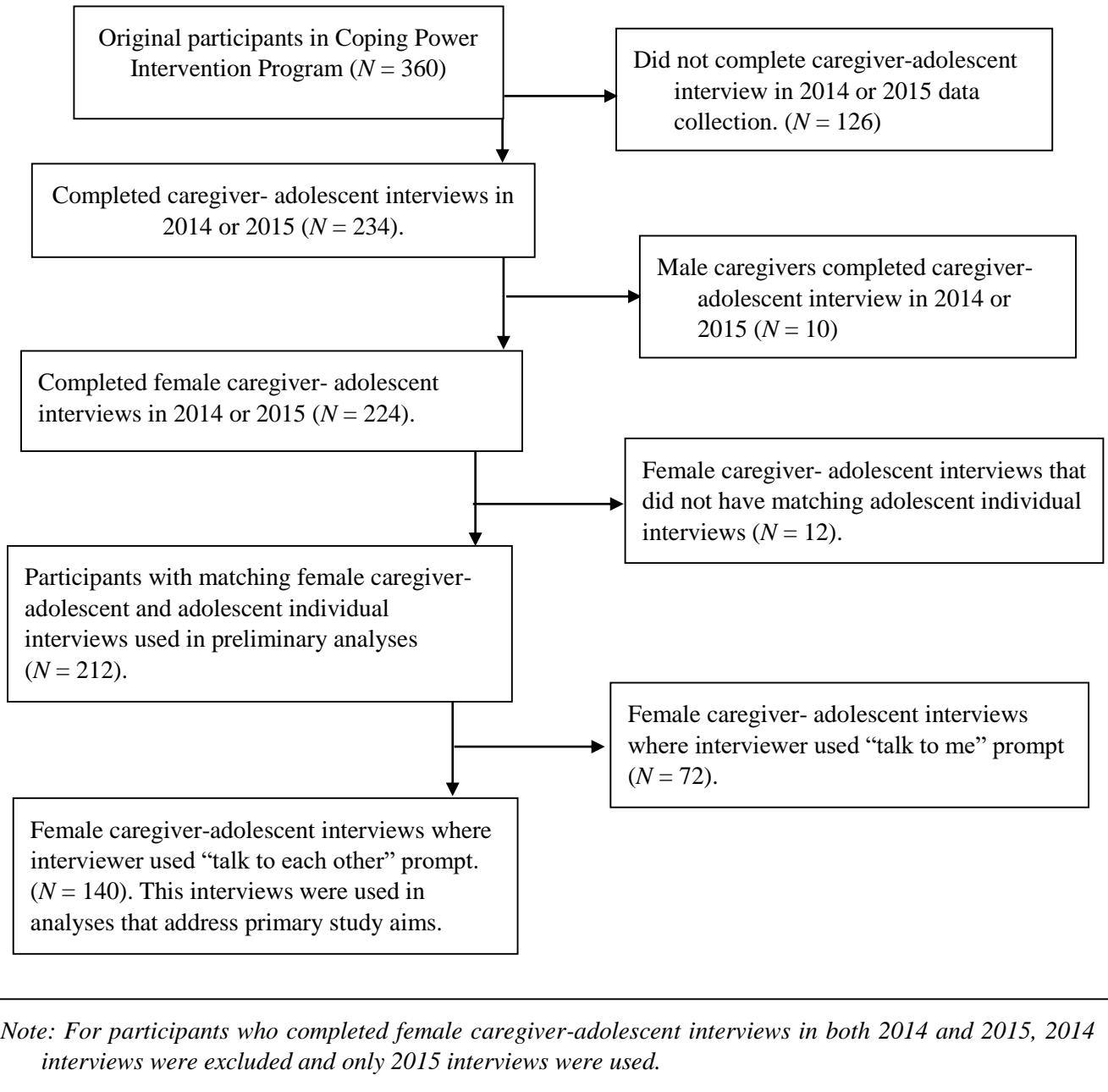
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Figure 1

Model of Participant Inclusion Criteria

Appendix A

Updated Interview Protocol used in 2015 Data Collection

Vernberg Individual Interview with Adolescent

1. Set up audio recording equipment.
2. **State participant's ID number/Date & Time/ Adolescent Interview**
3. Introduce the rationale for obtaining open-ended information by saying:

“I am going to ask you some questions about your thoughts, feelings, and experiences during and after the tornado. We want to know about some of the challenges you have faced because of the tornado and if anything positive has come from the tornado. Some people find these questions difficult to answer, and that’s okay – just try to do your best.”

4. Ask the adolescent the following prompts. Be sure to **pause** after reading each prompt to allow the adolescent time to think and respond.

Prompt 1. “*Tell me about some of the things that happened to you or your family because of the tornado.*”

- i. Before moving on, ask “*is there anything else you want to tell me about that?*”

Prompt 2. “*Describe some challenging or difficult things that happened to you or your family because of the tornado.*”

- ii. Before moving on, ask “*Is there anything else you want to tell me about challenging or difficult things?*”

Prompt 3. “*What positive things, if any, happened to you or your family as a result of the tornado?*”

- iii. Before moving on, ask “*Is there anything else you want to tell me about positive things?*”

Prompt 4. “*Compared to your life before the tornado, how are things different for you or your family now?*”

- iv. Before moving on, ask “*Is there anything else you want to tell me about how things are different?*”

Prompt 5. “*Is there anything else you would like to tell me about the tornado?*”

Vernberg Parent-Adolescent Conversation

1. **Make sure recorder is turned on. State participant's ID number/Date & Time/
*Combined Interview***

2. Provide a rationale for the task by saying:

You've shared your experiences about the tornado with us separately, and now we want to give you a chance to talk with each other about what happened. We would like to know more about how families talk with each other about things that happen during and after tornadoes. I will read each question aloud and then turn away while you talk so you can have some privacy. Just pretend like I'm not here. I will let you know when to change topics.

3. Be sure to physically turn yourself so you are not facing the family and look down\ work on paperwork. If you notice the parent or adolescent trying to talk to you, rather than to each other, say. ***Oh, I didn't do a good job of explaining this task. I really want you both to talk with each other instead of me for this one. Please just pretend like I'm not here.***
4. Say the following prompts. After saying a prompt, turn so you are not facing the family and time for 1 minute. If the family is still talking after 1 minute, allow them time to finish their conversation before moving on to the next prompt. If the family is done talking after 1 minute, move on to the next prompt.

Prompt 1. *"Talk with each other about some of the things that happened to you or your family because of the tornado."*

Prompt 2. *"Talk with each other about some challenging or difficult things that happened to you or your family because of the tornado."*

Prompt 3. *"Talk with each other about what positive things, if any, happened to you or your family as a result of the tornado."*

Prompt 4. *"Talk with each other about how, compared to your life before the tornado, things are different for you or your family now."*

Prompt 5. *"Is there anything else you would like to tell each other about the tornado?"*

Be sure to thank the family after they are done with the interviews by saying. "You're all done. Thank you for your time and for talking with us today."

Appendix B

Tornado Related Traumatic Experiences Scale (Child Version)

1. Where were you during the tornado? (You can check more than once.)
- In my home
 In a friend's or relative's home
 In a shelter
 Out of town
 In a closet
 In a bathroom
 In a hallway
 In a car
 Other (describe) _____
2. Did windows or doors break in the place you stayed during the tornado? yes
3. Did you get hurt during the tornado? yes
4. At any time during the tornado, did you think you might die? yes
5. Did you see anyone else get hurt badly during the tornado? yes
6. Did a pet you liked get hurt or die during the tornado? yes
7. Did you get hit by anything falling or flying during the tornado? yes
8. Was your mother or father with you during the tornado? yes
9. Overall, how scared or upset were you during the tornado? not at all a little a lot a whole lot

What Happened To You after the Tornado

1. Was your home damaged badly or destroyed by the tornado? yes

- | | | |
|-----|---|--|
| 2. | Did you have to go to a new school because of the tornado? | yes |
| 3. | Did you move to a new place because of the tornado? | yes |
| 4. | Did one of your caregivers lose his or her job because of the tornado? | yes |
| 5. | Has it been hard to see your friends since the tornado because they moved or you moved? | yes |
| 6. | Did your family have trouble getting enough food and water after the tornado? | yes |
| 7. | Were your clothes or toys ruined by the tornado? | yes |
| 8. | Did your pet run away or have to be given away because of the tornado? | yes |
| 9. | Has anyone stolen anything from your home since the tornado? | yes |
| 10. | Did you have to live away from your caregivers for a week or more because of the tornado? | yes |
| 11. | Overall, how upset about things have you been since the tornado? | not at all a little a lot a whole lot |

Appendix C

Caregiver- Adolescent Recollections Emotion Socialization Coding Protocol

General Guidelines for Coding

1. Code for **Interviewer Prompting**
2. *Before* attempting to code anything else, listen to ENTIRE interview first.
3. Always listen to the audio and follow along with transcript.
4. Listen to entire interview all the way through for a second time and code for **Global Codes**.
5. Make comments in document to justify **Global codes**.

CODE FOR INTERVIEWER PROMPTING

- 0- Uses “tell me” or “tell us” prompt at beginning of interview
- 1- Uses “Tell each other” prompt consistently throughout interview
- 2- Uses “tell each other” prompt at beginning of interview, but does not specify “tell each other” during other prompts
- 3- Uses other prompting pattern

Additional Code For W5 Interviews (put in parentheses on the same line as other interviewer prompting code)

Specify whether the interviewers read some version of the following introduction to the task:

“You’ve shared your experiences about the tornado with us separately, and now we want to give you a chance to talk with each other about what happened. We would like to know more about how families talk with each other about things that happen during and after tornadoes. I will read each question aloud and then turn away while you talk so you can have some privacy. Just pretend like I’m not here. I will let you know when to change topics.”

- 0 – Does not give an introduction
- 1- Introduction includes some elements of the script, but leaves out an essential instruction (i.e., tells family that we want them to talk to each other, but does not indicate that the interviewer will turn away OR indicates that the interviewer will turn away, but does not instruct parent-adolescent to talk to each other).
- 2- Includes all essential elements of the script

GLOBAL CODING DEFINITIONS

Structure

Caregiver takes initiative to structure the discussion, direct the course of the discussion by asking questions and making statements.

0. Parent says nothing during entire interview.
1. Very low, or no Structure. Either allowing the other adolescent to manage/structure (or is being overrun by the other adolescent), or allowing the conversation to flow freely within the dyad with no particular structure or limits. (e.g. caregiver who lets adolescent talk the entire time, or appears so depressed that they say almost nothing during the conversation).
2. Low Structure, but asks a few questions or makes a few comments. Does not direct the conversation.
3. Provides structure throughout the conversation in the form of questions, reflections, and statements but DOES NOT lead the discussion in any particular direction – more like Structure the discussion down the path it is naturally taking. (therapist caregiver)
4. Provides structure in the form of questions, reflections, and statements. Leads the discussion in certain directions (at the expense of other directions) but not exclusively, does not have to be good at Structure.
5. High level of Structure, exerts a high level of control over the conversation. Not responsive to adolescent's attempts to structure conversation or to adolescent's suggestions. Leads the discussion in exclusive, specific directions at the expense of other directions, even to the point of ignoring directions the adolescent of the dyad is attempting to take.

Egocentrism

This is a rating of how much the caregiver centers (or attempts to center) the conversation around herself or around her own thoughts, feelings, or experiences, even at the expense of the adolescent and what he or she is trying to convey. ***The context is important:*** A caregiver speaking about his or her own emotions is not necessarily exhibiting egocentrism, for example, a caregiver may *mention* her own feelings about a jointly experienced event to either bring about a discussion of the adolescent's feelings or reflect the adolescent's own feelings with hers. ***Things to look for that indicate egocentrism:*** Caregiver redirecting conversation away from things the youth wants to talk about and toward self and topics about self and own emotions. Caregiver is dismissive of youth's expression or experience of emotion. Caregiver attributes feeling onto the adolescent that they deny, or are not able to confirm or deny (e.g., such as when caregiver talks to interviewer about adolescent's feelings and experiences around the tornado).

0. Parent says nothing during entire interview.
1. Little or no egocentrism. Caregiver may speak about own emotions, but only to reflect/probe adolescent's emotions. Caregiver's discussion of own emotions are in an effort to connect, not to override or deny subject's emotions. Caregiver concerned with adolescent's feelings, adolescent's experience of event. Allows youth to focus on own feelings.
2. Caregiver mentions his or own feelings in a manner that does not seem to be reflecting or probing for adolescent's emotions, but does not focus on it. Caregiver includes own perceptions or feelings about the situation, not an observation or reflection (e.g., parent who mentions their feelings about the tornado, but does not become overly distressed or go into a lot of detail).

3. Some self-focus, but also attention to adolescent's feelings. May do some of the things from bottom two categories, but balances with attention to adolescent's experience.
4. High degree of self-focus and little attention to adolescent's feelings/experiences. Caregiver is clearly distracted by his/her own feelings on the event. The majority of the discussion centers on the caregiver's experience, or the caregiver's thoughts or actions surrounding the event – what he or she thought, felt, and did in response to the event. Very minimal focus on adolescent's actual thoughts, feelings, or actions during the event. Caregiver acknowledges or asks about youth's experience and emotion but conversation is mostly focused on caregiver's experience of the situation. Caregiver may attribute some feelings and experiences to adolescent through talking to the interviewer.
5. Caregiver focuses almost completely on his/her own feelings and experience of the situation. Forcing feelings onto adolescent (attributing feelings onto the adolescent that the adolescent denies) is also considered egocentric.

General Guidelines for Coding

1. *Before* attempting to code, listen to ENTIRE interview first!
2. Always listen to the audio and follow along with transcript.
3. Listen to entire interview as many time as needed, pausing and rewinding when necessary, to code segments for **Emotion Socialization Codes**.

EMOTION CODES

1. Reward (**label as REWPOS or REWNEG**)

Caregiver responses to adolescent's emotion (or references to/ questions about emotions) that encourage the expression of emotion **where the focus is on the adolescent and helping them understand their own emotional experience**. This includes the caregiver's expressions of sympathy for the adolescent's feelings and experiences, her provision of comfort, affection, and support to the adolescent, or her empathizing with adolescent's emotion. It also includes asking questions about the adolescent's emotional experience. The caregiver is essentially showing that they are taking the adolescent's emotion seriously.

Code for positive and negative emotion separately.

- Reflection of emotion, what youth says (e.g. Yeah, you looked pretty shook up)
- Indication of understanding of emotion stated ('yeah, wow, I know; I can understand)
- Validation (e.g., Yeah, it was scary. We were all scared.)
- Asking questions about emotional state (e.g. How did that make you feel? Did it make you worried or sad or scared? Because you were scared? Do you worry about the weather now?)

- Takes times to help them deal with what makes them feel sad/angry/etc. (problem-solving)

Other Examples:

- Examples for positive emotions:
 - “You were happy to make some new friends.”
 - “Yes, you were really proud of yourself for helping your sister during the storm.”
 - “You felt really happy about that, didn’t you?”
 - “I understand why you were so proud of yourself. I would be, too.”
 - After the adolescent expresses positive emotion: “I can see why you feel that way.”
- Examples for negative emotions:
 - “You felt sad when your friend died.”
 - “It was very scary, wasn’t it?”
 - Adolescent talks about being sad and parent says ‘I know you were sad.’
 - A: “We were pretty scared.” P: “It was kind of freaky.”
 - “Did you feel sad when your friend died?”
 - “How did you feel when you saw the tornado?”
 - “How did you feel when that happened?”
 - After the child expresses negative emotion: “I can see why you feel that way.”
 - “Why did it make you mad/sad/scared?”
 - “Do you think it would help you feel less lonely if we called your friend more?” (problem-solving)

Note: In order to code for Reward, what the caregiver says has to be directly related to what the adolescent says. Watch for the parent changing topic or directing attention away from what the adolescent says.

2. Magnify (label as MAGPOS or MAGNEG)

Matching/magnifying refers to caregiver responses that encourage the expression of emotion through matching, escalation of emotion, or expanding on expressed emotion. **This differs from Reward because, rather than focusing on the adolescent’s experience, the caregiver is expressing their own emotions or adding additional emotional content.** The caregiver response to emotion must match the emotion expressed by the youth (e.g., sadness in respond to sadness). If caregiver responds to adolescent’s emotion with a different emotion, consider assigning one of the other socialization codes (e.g., caregiver concern in response to adolescent sadness would be coded as Reward; caregiver anger in response to adolescent fear would be coded as Punish). **Magnify can be coded if adolescent brings up an event and caregiver expands on the event in an emotional way.**

- Examples for negative emotions:
 - Caregiver crying during discussion

- Expression of emotion that includes “we” and is not following a statement of validation and is not directed to the adolescent (e.g., We get really nervous when we hear about bad weather.)
- Expression of emotion by caregiver verbally (e.g., That made me so sad. I am sad too. It’s been very stressful for me. I was scared too).
- Expanding on the topic with details that exacerbate the emotion (e.g., And then we went outside and it was just like a scary movie.. cause no one was out there.; His whole left side of his arm was like all the skin was torn off of it.)
- If the adolescent talks about not being or not feeling safe and the caregiver agrees and gives reasons for why the adolescent is not safe. (e.g., Adolescent: “If the tornado is in my home, it’s going to hit the whole house.” Caregiver: “There are so many windows, and if it’s a mile wide, there’s not really a safe place in our house to go.”)
- Inappropriate sharing of emotion (e.g, “I still have nightmares about all the dead bodies.”)
- Example for positive emotions:
 - Caregiver laughing after an adolescent brings up positive experiences
 - Expression of emotion by caregiver verbally (e.g., I was happy about that too. I felt grateful too.”)
 - Expanding on topic with details that exacerbate the emotion (e.g., It was so wonderful and amazing to see people come together like that.”)

3. Override (**label as OVERPOS or OVERNEG**)

Caregiver responses to emotion that discourage the expression of emotion through minimizing or distracting from emotion or emotional content. **Code for negative and positive emotions separately.**

- Minimize situation (e.g. Things aren’t so bad.)
- Distracting (joking about the situation, abruptly changing topic)
- Verbal directives (e.g. Don’t worry. No need to be scared.)
- Emotion is acknowledged by caregiver but effort made to regulate the emotion.
- Caregiver may disregard the adolescent trying to positively reframe events (e.g., Tornados are worse than hurricanes!)

Other Examples:

- Examples for positive emotions
 - Child brings up positive event, and caregiver immediately discounts it.
 - Caregiver says something like “That wasn’t really positive, that was pretty terrible.”
 - Caregiver says something like “Yeah, but what about all of the horrible things that happened?”
- Examples for negative emotions

- Yeah, but everything is fine now.
- Saying something like “Cheer up!” or “It could be worse!”
- Telling the adolescent that “Things aren’t so bad.”
- Immediate positive reframe in response to the child talking about something upsetting.

4. Punish (**Label as PUNPOS and PUNNEG**)

Caregiver responses to emotion that discourage the expression of emotion by punishing or expressing disapproval of emotion. **Code for negative and positive emotion separately.**

- Making fun of feelings or teasing
- ‘Grow up’ ‘Stop crying’ context may be important
- Expressed disapproval of feelings (e.g. You should be ashamed)
- Discounting/dismissing youth’s emotion when stated (e.g. You weren’t angry, you were worried)
- Arguing with adolescent about what emotion they were feeling
- Saying something like “You’re lying, you don’t feel that way.”

General Guidelines for Coding

1. *Before* attempting to code, listen to ENTIRE interview first!
2. Always listen to the audio and follow along with transcript.
3. Listen to entire interview for a second time, pausing and rewinding when necessary, to code segments for **Content Codes**.

CONTENT CODES

1. Acknowledge Adolescent’s Perception of Events (**ACK**)

Adolescent brings up specific content and the parent **acknowledges the facts of the event** with the adolescent.

- This is more than just saying “okay” and moving on
- It’s **not** considered acknowledgement when answering “yes/no” to a question
- Reiterating something the child said *may* be acknowledgement, depending on tone of voice. For example, if the adolescent says “I was with a friend,” and the parent says “Mhm, you were with a friend” in an approving or neutral tone of voice, that would count as acknowledgement of the adolescent’s perspective on the facts. The same statement in a questioning or skeptical or questioning tone of voice, however, would be dismissing or arguing the event.
- Examples:
 - “Some stuff did get stolen.”
 - “Oh, now I remember that.”
 - “It did shake the house.”

2. Argues, Challenges, or Dismisses the Adolescent’s Perception of Events (**ARG**)

Adolescent brings up specific content and the parent **argues/challenges the events/facts or dismisses the event.** ***Tone is important here.** Gentle corrections (I remember it differently. I think you might be forgetting about _____.) or questions (But what about _____?; Do you remember when _____ happened?; Are you sure it happened like that?) to help the adolescent rethink their perception of events are **not** considered as challenging.

- This is more than just moving on rapidly
- Examples:
 - “That didn’t happen” or “It didn’t happen like that”
 - “Whatever,” making a rude noise, changing topic abruptly (**note: these could be examples of override or punishment if they follow the adolescent’s expression of emotion**)
 - A: “We lost our house.” P: “We didn’t lose our home.”
 - “I didn’t do that.”
 - “What school you went to that was different?” (Said in critical tone of voice)
 - Example for dismissing: C: Grandpa did, but I didn’t. P: Well, you were in the closet (said in critical tone of voice).

3. Parent Talks about Adolescent to Interviewer (2INTER)

This code is for interview content where caregiver clearly is directing their speech to the interviewer, but are talking about the adolescent. Typically it will come across as caregiver talking about the adolescent as if they are not in the room or are “putting words in the adolescent’s mouth.” **Hint: Look for caregiver using “they” or “he/she” or adolescent’s name.**

Examples:

- “I guess kids forget out it and they let it go quicker than… a grown up.”
- “So they can have, like, more fun and just escape the situation for a minute.
- “ Like, he thinks it’s sad and he wants to be sure he can help people if they can.”

Appendix D

Adolescent Recollections Coding Protocol

I. Elaborativeness.

- **Central Event:** We divided up the transcripts into separate utterances. A count variable was generated for how many statements include relevant tornado-related content. Central Event was scored if the adolescent mentions events that happened *to themselves, during the tornado*. The statement will not be included in the count if the adolescent mentions the day of the tornado or before or after the tornado without mention of Central Events during the tornado. In previous projects using similar coding, use of personal pronouns such as “I” and “we” typically accompanied statements that indicated that the adolescent was discussing events that occurred during the storm.
- **Word Count:** We created a total word count variable. We used the total word counts for prompts 1-5.
 - Prompt 1: Tell me about some things that happened to you because of the tornado
 - Prompt 2: Tell me some challenging or difficult things that happened to you because of the tornado
 - Prompt 3: Tell me some positive or good things that happened to you because of the tornado
 - Prompt 4: How have things been different for you and your family since the tornado?
 - Prompt 5: Is there anything else you’d like to tell me about your experience with the tornado?

II. Coherence. The coherence of the adolescent interviews was evaluated with a coding scheme developed by Baker-Ward and colleagues (2007) and used in other research on children’s memory narratives (e.g., Fivush, Sales, & Bohanek, 2008). Thus, we analyzed three dimensions of coherence on a scale of 0 (complete absence of the dimension) to 3 (fully coherent use of the dimension). We coded all three dimensions of coherence *per prompt*, meaning that there will be five sets of coherence codes per adolescent interview.

- **Context** places the event in time and place. For this project, time will be implied to a certain degree because we told participants which life-event to talk about. So, participants might not have felt as compelled to describe exactly when events happened. That said, it could be meaningful when some children do mention time – e.g., “a few days after the tornado” or “the day of the tornado” etc; therefore, we also coded for specific mentions of time as a part of our coding for coherence.
 - 0 No mention of time or place
 - 1 General mention of either time (e.g., after the tornado, since the tornado, lately, recently) or place (e.g., at school, at work, at home, in Joplin, we were another town over) – aka, the child mentioned where they were but not specifically enough that you, as an outside observer, could go and find that place

Boundary conditions:

- “... in Missouri...” is a general mention of place
 - “... at the store...” is a general mention of place
2. Specific mention of time (e.g., yesterday, last week, last August, the day of the tornado, or any other reference where you could pinpoint the exact day or week given the information present) or place (e.g., in our basement, in our car, in my bedroom, or any other situation where you could located the exact location of the child)

Boundary conditions:

- “... in the front gall closet...” is a specific mention of place
- “on the anniversary of the tornado” is a specific mention of time
- Mention of another city in which specific proper name is given would be a specific mention of place. (i.e., We left and went to Springville)

3 Specific mention of both

- **Chronology** refers to the degree to which the interview is temporally organized. Evaluations (e.g., “at 4:00 we heard the tornado sirens. It was really scary when that happened”) or elaborations (e.g., “Then, we all went into my basement; well, I mean, almost all of us; my dad stayed upstairs to watch the news”) that were present between the ordering of events that did not obscure the sequencing of events will not affect the chronology score:
 - 0 Provision of no temporal sequencing information (an unordered collection of statements about the event or only one action mentioned in the interview)
 - 1 A minority of statements were in an identifiable sequence
 - 2 About half of the statements were in an identifiable sequence
 - 3 A majority of the statements were in a comprehensible sequence
- **Theme** assesses the clarity of topic in the interview. This includes how explanatory or interpretive the interview is – or, do we know why things happened, what the results were, etc?
 - 0 No caregiver topic or substantially off topic (e.g., “I don’t know,” “I got a new bike this summer”)
 - 1 Staying mostly on topic but minimally developed (i.e., few causal connections or elaborations – a score of 1 was given to interviews that had only one statement if the statement was related to the prompt, such as “The tornado smashed a lot of buildings”)
 - 2 Substantially developed with elaborations, interpretations or causal links (even if elaboration was present, *substantial development* was required)
 - Should include mention of emotion or insight. Can include reference to others’ emotions.
 - 3 Substantially developed, with elaborations, interpretations or causal links, AND with links to autobiographical knowledge or self-concept OR a resolution (again, even if elaboration was present, substantial development was required)

III. Internal State Language. The Linguistic Inquiry and Word Count, 2015 Edition

(LIWC2015) program was used to analyze the text of verbatim transcripts of the adolescent individual interviews for the presence of emotion terms (positive and negative), cognitive terms (e.g., thinking, wondering), perception (e.g., see, hear) and physiological (e.g., tired, hungry). The program provides a frequency count of the amount of words per adolescent interviews that expressed any of the categories related to internal state language.

IV. Meaning. We coded for several dimensions of Meaning, including Resolutions and Personal Impact based off of a coding scheme developed by Greenhoot et al. (2013), Instrumental Change based on a coding scheme developed by Hambrick (2014), and for Lessons Learned/Insights Gained based on a coding scheme developed by McLean and Pratt (2006).

- ***Resolution*** (0,1, or more) We coded the interviews for frequency of references toward the main character's problems resolving in the interviews. In this study, it will be implicitly assumed that the tornado was the “problem,” and resolution was scored if the child made reference to having resolved how they felt about tornado-related events. Resolution was coded for all five prompts. Resolution was only coded for if there was some mention of difficulty or struggle and then things getting better. For instance, if a participant says things have not changed or have stayed the same since the tornado, this would not count as a resolution.
- ***Instrumental Change.*** (0, 1, or more) We coded the interviews for frequency of references toward instrumental change by using the coding scheme used by Greenhoot et al. (2013). Individual statements from the entire interview were used to code instrumental change. The participant had to make an explicit reference to a change; change could not be inferred by the coder. Instrumental change was coded if the adolescent stated some specific instrumental/practical change (benefit or negative effect) of the event on their life, environment, or on the life of someone else. We did not code Instrumental Change for things that propelled action; instead, we will code *consequences* of the event. Sometimes the adolescent may mention the same instrumental change twice; in this case, it will only be coded once.
 - INST – PN (0, 1, or more): “We got to move into a new house.” “People sent us presents.”
 - INST – NEG (0, 1, or more): “My house got blown down.” “All the houses in Joplin were smashed.” “Peoples’ animals died.”
- ***Personal Impact POS or NEG*** (0, 1, or more). We coded the interviews for frequency of references toward personal impact by using the coding scheme used by Greenhoot et al. (2013). Individual statements from the entire interview were used to code personal impact. Personal impact was coded when there were references to the *psychological* or *relational* impact of the event on the narrator, for better (or neutral; PN) or for worse (NEG). We did not code personal impact for things that propelled action in the event itself. Rather, we coded consequences of the event that lasted longer than the event itself (although they didn’t have to be permanent). Personal Impact includes references to the effect the memory has on the subject (e.g., “thinking about this makes me feel bad.”) Again, we did not code references toward the same personal impact twice. **Note: References to people dying or**

being injured in the tornado counted as PI-NEG, likewise, people *not* dying or being injured should be counted as PI-POS. This was the case even if there was not a specific relationship described between the narrator and the deceased/ injured person(s). For instance , “there was a lot of people didn’t survive” would be coded as PI-NEG and “some people lived” would be coded as PI-POS.

- PIImpact – Neg (0, 1, or more): “We got lazier.” “My friend died.” “My cat died.” “People died.” “I lost my faith in God.” “This memory makes me feel bad.”
- PIImpact – PN (0, 1, or more): “I got some new neighbors.” “I get to see my dad more.” “I made new friends at my new school.” “I like helping people in need now.” *Statements that were coded as PIImpact – PN were NOT also coded as Lessons or Insights.*

- **Lessons (0, 1, or more):** We coded the entire interview for frequency of mentions of lessons learned using a modification of the coding scheme created by McLean and Pratt (2006). Lessons were coded when the adolescent reported either behavioral messages (e.g., “I learned to watch the weather more closely during tornado season.”) or vague meaning (e.g., “We learned how strong our family is”). In previous studies, this variable has also included mentions of insights gained “meanings that extend beyond the specific event to explicit transformations in one’s understanding of oneself, the world, or relationships” (p. 717). However, insights were so rare in the current study ($N= 2$), they were not included in the final analyses.