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Co-constructing the Past: Examining Mother- and Father-Child Narratives About Past Events Involving Pain versus Sadness

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Co-constructing the Past: Examining Mother- and Father-Child Narratives About Past Events

Involving Pain versus Sadness

by

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A THESIS

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Abstract

Background. Parent-child reminiscing about past events creates an influential socio-linguistic context within which children's development occurs. Parents differ dramatically in their reminiscing styles, whereas some parents are highly elaborative (i.e., they use open-ended detailed questions) and focus on talking about emotions, other parents are repetitive and emphasize factual information. Elaborative reminiscing has been linked to more optimal developmental outcomes. No studies have examined how parent-children reminiscing about past pain compares to other stressful experiences (i.e., sadness, fear), and how parent-children reminiscing about past pain might be linked to children's socio-emotional skills. This study was the first to examine the association between parent-child reminiscing about past pain and children's prosocial acts to pain-related distress in others as well as overall children's socio-emotional functioning. **Methods.** One hundred and sixteen 4-year old children (54% girls) and their parents (49% mothers) completed a structured narrative elicitation task wherein they reminisced about a unique past event involving pain, fear, and sadness. Children then witnessed a confederate pretending to be in pain (i.e., hurt fingers and a knee). Children's prosocial responses and parent-child narratives about past pain were coded using established coding schemes based on the developmental psychology literature. **Results.** Parent-children narratives about pain were characterized by less emotion-laden and more coping and pain-related words as compared to sadness or fearful narratives. Parents, who used open-ended questions, provided new information, and talked about emotions and coping when talking about past events involving pain, had children who exhibited more prosocial acts and concern in response to other's pain and had higher parent-reported levels of empathy. **Discussion.** Parent-children reminiscing about past pain differs from reminiscing about other types of distressing events (e.g.,

involving sadness or fear) and is linked to children's socio-emotional skills. This highlights a possibility of differential socialization of pain. Parent-child reminiscing is amenable to intervention and offers a promising avenue for pediatric pain management interventions.

Keywords: *Pain, sadness, fear, children, parents, reminiscing, prosocial behaviour, empathy*

Preface

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Chapter 1: Introduction

The first five years of a child's life are formative for subsequent development. While numerous factors influence developmental trajectories, how young children and parents talk about past autobiographical events (i.e., reminiscing) creates a unique and influential social context that has been shown to robustly predict cognitive, emotional, and social aspects of children's development (Salmon & Reese, 2016; Wareham & Salmon, 2006). Reminiscing helps children construct coherent autobiographical memories and provides a deeper understanding of past events and associated emotions, thus, creating meaning and shaping one's identity (McAdams, 2001). Stories about past autobiographical events appear in child-parent daily narratives starting from early childhood. With rapid gains in language, communication, and social skills, children begin to actively co-construct narratives about the past with their parents.

Reminiscing styles differ between parent-children dyads. Previous research has identified two distinct parent reminiscing styles. Some parents engage in an elaborative reminiscing style that is characterized by longer narratives about past events and includes elaborations (i.e., adding new details), emotion-related utterances, and use of open-ended questions. Conversely, the hallmark characteristics of the topic-switching reminiscing style are the use of closed-ended questions, repetitions of the same information, and a high level of parental control over the conversation flow. The elaborative style has been linked to more optimal developmental outcomes (Salmon & Reese, 2016). Parents who reminisce in an elaborative versus topic-switching manner have children with better-developed autobiographical memory, larger vocabularies, better understanding and regulation of emotions, and a more stable self-concept (Salmon & Reese, 2016; Wareham & Salmon, 2006).

Previous research, however, has rarely examined differences in reminiscing styles as a function of different conversation topics (e.g., discussing an emotionally positive versus negative experience) and how these differences may be linked to children's socio-emotional skills (e.g., prosocial behaviours, theory of mind, empathic responses). Further, research examining how parents and children talk about past painful events is lacking. Pain – whether as the result of minor injuries or medical procedures – is a ubiquitous experience in childhood. These early painful experiences are remembered (Noel, Palermo, Chambers, Taddio, & Hermann, 2015) and predict future pain experiences (Noel, Chambers, McGrath, Klein, & Stewart, 2012). Existing studies have investigated momentary language-based parent-child interactions *during* painful procedural experiences, yet no research is available on how parents and children reminisce about *past* painful experiences and how it is related to children's socio-emotional skills. Finally, child sex (i.e., boys versus girls) and parent role (i.e., mothers versus fathers) differences are largely missing from the existing research on parent-child narratives.

Thus, the aims of the present study are 1) to examine differences in parent-child reminiscing about past autobiographical events involving pain versus other negative experiences (i.e., involving sadness, fear) 2) to examine how parent-child reminiscing about past pain is related to children's social and emotional skills; 3) to examine differences in mother- versus father-child reminiscing styles and their relative contributions to child socio-emotional skills.

1.1 The Social Cultural Developmental Theory and Reminiscing

The social cultural developmental theory provides a conceptual framework for the present study. According to Nelson and Fivush (2004), due to rapid gains in language and communication skills throughout the preschool years, children become increasingly more active dialogue partners with their parents, which prompts an increase in parent-child reminiscing.

Reminiscing allows parents and children to develop a coherent and meaningful account of past events, associated emotions, and behaviours. Nelson and Fivush (2004) emphasize that language is a socio-cultural tool, and reminiscing is a fundamentally language-based activity embedded within societal and cultural norms and meanings. Thus, the dynamic reminiscing exchange between parents and children creates a powerful social, emotional, and cultural framework that influences children's cognitive and socio-emotional development (e.g., autobiographical memory, language, understanding of temporal connections, emotion regulation, theory of mind).

A major advantage and a unique aspect of reminiscing is its temporal remoteness from the moment when events occur. As stressful events unfold, parents and children may experience natural yet non-optimal emotions (e.g., fear, anger), thoughts (e.g., catastrophizing), or behaviours (e.g., avoidance). Reminiscing allows parents and children to reflect upon past events and emotions in a non-threatening environment. Occurring in a safe context, reminiscing also allows parents to teach children adaptive behaviours that may be used in similar situations, thus expanding children's behavioural repertoire (Salmon & Reese, 2016). For example, a parent may create a meaningful narrative about a past flu shot by acknowledging the distress, explaining why the flu shot was necessary, as well as suggesting coping strategies to manage the distress (e.g., getting lots of hugs). When getting or witnessing another flu shot, the child may draw on this narrative to regulate their own emotions and to provide comfort to the other person.

In sum, parent-child reminiscing serves as a meaning-creating socio-cultural framework that shapes children's cognitive, emotional, and social outcomes. It is particularly influential during the formative preschool years as it is coupled with rapid gains in language, communication, and socio-emotional skills.

1.2 Differences in Reminiscing Styles Between Parents and Their Relationship to Children's Socio-Emotional Functioning

Prior research has developed comprehensive coding schemes to capture the complexity of parent-child reminiscing narratives in terms of style and content (e.g., Cleveland & Reese, 2005; Sales, Fivush, & Peterson, 2003). Specifically, each conversational utterance is characterized based on its structure (i.e., whether it is a statement, an open-ended question, or a closed-ended question), degree of elaboration (i.e., whether it introduces novel versus repetitive information), and content (i.e., the information that each utterance conveys). Additionally, each parent conversational turn is coded based on the level of autonomy support that is provided for the children's role in conversation (Cleveland & Reese, 2005). Parents can be directive and controlling of the conversation flow by ignoring children's perspective and determining the conversation topic. Alternatively, parents can be supportive of the children's perspective by following in on the children's utterances, providing positive supportive feedback, and, thus, encouraging the children's involvement in the conversation (Cleveland & Reese, 2005).

Parent reminiscing styles vary considerably between parents and are associated with children's developmental outcomes. Previous studies have identified two distinct parental reminiscing styles. Elaborative reminiscing is characterized by open-ended questions (e.g., *Why? How come? What else?*) and introduction of novel details about the event that has not yet been brought up. Topic-switching reminiscing is characterized by closed-ended questions (i.e., yes-no questions) and verbatim repetitions of previously stated details. Parents also differ with regards to the content they focus on when reminiscing, such that some parents focus on emotional and/or causal aspects of past experiences, whereas other parents tend to talk about facts.

The elaborative reminiscing style has been linked to optimal cognitive and socio-emotional functioning. The findings are particularly consistent for children's autobiographical memory. For example, in a longitudinal study, children of mothers who reminisced with them elaboratively at the age of 19 months had better developed autobiographical memory by the age of 3.5 years (Farrant & Reese, 2000). Sales and colleagues (2003) arrived at similar findings: young children of elaboratively reminiscing parents recalled more unique details about past positive and negative autobiographical events. Similarly, parents' high autonomy support was linked to better developed children's autobiographical memory (Cleveland & Reese, 2005).

Talking to children about the past enhances children's language (e.g., vocabulary, and narrative skills) (Salmon & Reese, 2016). Elaborative reminiscing is particularly beneficial for language development in young children. An intervention study, wherein half of parents were trained to talk about past events for longer and use open-ended context-eliciting questions, found that after one year children in the intervention, versus control, group exhibited more notable gains in vocabulary (i.e., higher scores on the Peabody Picture Vocabulary Test) (Peterson, Jesso, & McCabe, 1999). These initial vocabulary gains coupled with parent use of explanations and references to emotions establish the basics of the academic language, which in turn robustly predicts children's academic success (Snow, 2010). In a sample of low-income families, parental training in elaborative reminiscing also enhanced children's narrative skills that predicted future reading comprehension skills, above and beyond vocabulary size (Reese, Leyva, Sparks, & Grolnick, 2010). When reminiscing about past events, parents and children must make complex temporal connections and use expanded syntax and vocabulary, which positively influences literacy skills in children (Demir, Rowe, Heller, Goldin-Meadow, & Levine, 2015).

Elaborative parent reminiscing about emotional aspects of past autobiographical events (versus talking about emotions in general) has also been found to positively related to children's socio-emotional skills and competence. Higher proportions of emotion-related words in parent-child narratives were associated with higher levels of young children's emotional understanding (Laible & Song, 2006) and greater insight into their own and other people's emotional states (Laible, 2004). Emotion-rich reminiscing teaches children to manage emotions in an optimal and socially acceptable manner which results in better emotion regulation skills (Leyva & Nolivov, 2015). In an observational study, parents, who engaged in emotion-rich reminiscing, had children who had better representations of relationships as measured by their ability to resolve relation-oriented conflicts in a behavioural puppet task (Laible & Song, 2006). In an intervention study, children with low baseline levels of expressive vocabulary, whose mothers were taught to reminisce in an elaborative manner (versus controls), developed theory of mind at the same rate as children with initially high levels of expressive vocabulary (Taumoepeau & Reese, 2013). The findings are particularly important given the key role of theory of mind in social interactions.

A series of intervention studies provided causal evidence of parent reminiscing style shaping child development. Van Bergen and colleagues (2009) taught parents from a variety of socio-economic backgrounds to use elaborative reminiscing strategies, whereas the control group received instructions on child-directed play. The intervention significantly altered parent reminiscing styles to be more elaborative and emotion-focused (Van Bergen et al., 2009). Further, children of parents in the intervention versus control group recalled more details about past events and demonstrated a better-developed understanding of emotions (Van Bergen et al., 2009). In summary, prior research has demonstrated cross-sectional and causal relationships between elaborative parent reminiscing style and children's socio-emotional functioning.

1.3 Differences in Reminiscing Styles as a Function of an Event Type

Previous research on parent-child narratives focused on examining past positive events (e.g., trip to the Zoo, special vacation) (Fivush & Fromhoff, 1988). Less is known about parent differences in reminiscing styles as a function of the event type. Fivush and colleagues (2003) examined parent reminiscing styles across several types of past negative events (i.e., sadness, fear, and anger). Fear-centered narratives were characterized by more elaborations as compared to narratives about anger and sadness. Elaborative parental reminiscing about a negative (e.g., death of a loved one), as compared to a positive (e.g., a family trip), event was associated with better-developed self-regulation skills (i.e., attention and impulse control) in a sample of 4-5-year-old children (Leyva & Nolivovs, 2015). Sales and colleagues (2003) showed that parents elaborated and explained more when talking about past negative (personal injuries requiring an Emergency Department visit) versus positive (e.g., family vacation).

To date, few studies have examined how parents and children talk about past autobiographical events involving physical pain and whether pain narratives differ from narratives about other negative events. Pain is a ubiquitous childhood experience that starts from the first days of life. Everyday minor pains (e.g., bumps and scratches), medical procedures (e.g., immunizations), and painful injuries (e.g., broken limbs) are a normative and memorable part of childhood. For example, a longitudinal investigation of children's memories for a personal injury that involved an Emergency Department visit demonstrated that children as young as 3 years accurately recalled details of the injury for up to 10 years later (Peterson, 2015). Not only are past painful experiences memorable, but they also predict how children will react during future pain experiences (Noel et al., 2012). Previous research has exclusively examined parental language occurring during painful medical procedures (e.g., McMurtry, McGrath, Asp, &

Chambers, 2007). Yet parent-child reminiscing about *past* pain may differ from the immediate discussion of *present* pain. Supporting this hypothesis is a finding that young children developed empathic behaviours to pain in others later as compared to sadness (Bandstra, Chambers, McGrath, & Moore, 2011). Parent-child reminiscing about past pain may underlie this tendency. Indeed, a recent study showed significant differences in parent-child narratives about past events involving pain (i.e., surgery) versus sadness. Parents reminisced about past pain using less elaborations, explanations, and references to negative emotions (Pavlova et al., 2019).

1.4 Differences in Father-Child and Mother-Child Narratives

A meta-analysis demonstrated key differences in how mothers and fathers talk to their children. Regardless of child sex, mothers, as compared to fathers, tended to converse more and use more supportive (e.g., approval, praise, agreement) and negative (e.g., disapproval, criticism) language (Leaper, Anderson, & Sanders, 1998). These findings suggest that fathers may differ in their reminiscing patterns as compared to mothers. Parents in one family do not tend to adopt complementary reminiscing styles, such that an elaboratively reminiscing mother may have a partner who reminisces in either a topic-switching or elaborative manner (Reese & Fivush, 1993). The few studies examining parental role differences have arrived at equivocal findings. Haden, Haine, and Fivush (1997) examined father-child and mother-child reminiscing in preschool-aged children. While father- versus mother-child and parent-daughter versus -son narratives did not significantly differ, children produced longer narratives with more references to emotions when talking to fathers, as compared to mothers. In contrast, Fivush, Brotman, Buckner, and Goodman (2000) compared father- and mother-child reminiscing about four past autobiographical events involving happiness, sadness, anger, and fear. Mothers, versus fathers, produced longer narratives and more frequently used emotion-laden words. Mixed results of

existing studies, as well as lack of comparisons between mother- versus father-child conversations about different types of past events (specifically, involving pain), constitute a notable gap in the literature.

1.5 Research Aims and Hypotheses

Aim 1. To examine differences in parent-child reminiscing styles about past autobiographical events involving pain, sadness, and fear. **Hypothesis 1.** Parents will reminisce more elaboratively (i.e., will use more open-ended questions and emotion-laden words, provide new details, and exhibit higher levels of autonomy support) when reminiscing about past autobiographical events involving sadness, as compared to pain. Parents will be more elaborative when talking about past fear, as compared to sadness or pain (Fivush et al., 2003).

Aim 2. To examine the relationship between parent reminiscing styles and children's socio-emotional skills (prosocial and empathic skills, emotion regulation). **Hypothesis 2.** Children of parents who engage in elaborative, versus topic-switching, reminiscing about pain will have higher levels of socio-emotional skills and will exhibit more prosocial and empathic behaviours toward other's pain-related distress in others.

Aim 3. To examine differences in mother-child and father-child reminiscing styles about past autobiographical events involving pain, sadness, and fear, as well as the relative influence of parent role on the socio-emotional skills. **Hypothesis 3.** Mothers, as compared to fathers, will use more elaborations, open-ended questions, explanations, and emotion-laden utterances. Mother will also exhibit higher levels of conversational autonomy support. The relative influence of parent role on the socio-emotional skills of children is an exploratory aim and does not have any a priori hypotheses.

Chapter 2: Methods

2.1 Participants

One hundred and sixteen typically developing 4-year-old children ($SD = 3.7$ months; 54% female) and one of their parents (49% mothers) were recruited from the existing participant ChILD database (see Table 1 for the sociodemographic characteristics of the sample). The ChILD database includes over 4,000 Alberta-based families who provided their contact information to be contacted for research purposes. Children and their parents were eligible to participate if 1.) the child was 4 years old; 2.) one of the parents consented to participate; 3.) both the child and parent could understand and speak English; 4) the child was exposed to English at least 80% of the time. Children were excluded from the study if they had language delay or developmental or psychiatric disorders that may interfere with their attention, memory, or ability to understand and/or complete the narrative or observational tasks (e.g., ADHD, ASD).

2.2 Procedure

The study staff contacted potential participants via the phone or email and provided information about the study (i.e., how parents and children talk about the past, and how it may be related to children's emotions and social behaviours). Interested families came to the Alberta Children's Pain Research Lab at the University of Calgary for a two-hour lab visit. After the consent procedure, the researcher prompted the parent-child dyad to elicit three past autobiographical events involving pain, sadness, and fear that had been shared by parent and child. Similar to previous research, the researcher then left the room to allow the parent-child dyad to talk as normally as they would about the four events with no time limit (Sales et al., 2003). The order of the events was counterbalanced. The narrative task was recorded for later transcription and coding. Parent-child elicited narratives were coded using an adapted scheme used in previous research on parent-child reminiscing about pain (Pavlova et al., 2019; Sales et

al., 2003). After the narrative task, parents completed measures of children's language, prosocial behaviour, emotion regulation, empathy, and social skills in a separate room. In the meantime, children completed observational (i.e., prosocial behaviours, theory of mind) tasks; the tasks' order was counterbalanced. The tasks were video-recorded for later scoring. As a token of appreciation, children received a small toy and a t-shirt. Parking costs were reimbursed.

2.3 Measures

2.3.1 Narrative elicitation task. The narrative elicitation task was based on previous research examining parent-child reminiscing (Sales et al., 2003). The researcher prompted children and parents to recall three past events that involved pain, sadness, and fear. Each event was unique and shared by the parent and child. This precluded generation of overlapping and converging memories of repeated events (e.g., children's birthday parties) and vicarious experiences where the parent was not present for the event and was told about it by someone else. Parent-child dyads were instructed to talk as long as they want and as normally as they usually do. The researcher left the room to facilitate the natural flow of the conversation.

2.3.2 Narratives coding scheme. Parent-child narratives were transcribed verbatim and broken down into utterances defined as a conversational turn. Each utterance was coded on structure, content, and autonomy support using an adapted coding scheme drawn from the developmental literature (Sales et al., 2003). To further control for the length of narratives and in line with previous research (Sales et al., 2003), proportions of each code type over the total number of codes used were calculated. The narratives were coded by a researcher who was not involved in conducting the lab visits to avoid a potential bias associated with researcher-family interactions. Twenty percent of the narratives (23) were coded by an independent reliability

coder blind to the study's hypotheses; the inter-coder reliability was $\geq .80$ (Cohen's kappa).

Means and standard deviations for the narrative code proportions are presented in Table 2.

2.3.3 Child measures.

2.3.3.1 Prosocial behaviours. To observe prosocial acts and empathic reactions, children were presented with two types of pain-related distress in another person¹ (Bandstra et al., 2011; Dunfield & Kuhlmeier, 2013). The researchers (both female) imitated two types of physical injury (a hurt knee and slammed fingers); the order of imitated injuries was counterbalanced. Immediately following each injury, the researcher first demonstrated a facial expression of pain followed by looking at the child. If the child remained unresponsive for longer than 30 seconds, the researcher verbally prompted the child ("What should we do?"). In line with previous research (Bandstra et al., 2011), children's behavioural responses were rated on multiple aspects: (1) presence or absence of prosocial acts (i.e., distraction, sharing, helping, vocal sympathy, physical comfort, verbal advice); the prosocial acts were then summed to obtain their total number, and overall prosocial response was rated on a 0-3 scale ('0' = none, '3' = prolonged assistance to the victim); (2) attempts to understand the distress, such as presence or absence of imitation and hypothesis testing ('0' = none, '3' = repeated complex attempts to understand other's distress); (3) self-distressed assessed by presence or absence of self-soothing, distress/fear reaction ('0' = none, '4' = full-blown crying), and proximity to the victim ('0' = avoiding the victim, '3' = approaches the victim); (4) unresponsive/inappropriate affect, such as child's positive affect ('0' = does not occur, '3' = broad smile and laughter) and presence or absence of attempts to ignore the victim and actively play during other's distress; (5) global

¹ Children were also presented with two types of sadness-related distress in another person cause by a torn toy and a broken block tower. The order of all four events was counterbalanced. Children's behavioural responses to other's sadness were coded using the described coding scheme and were not included in the present study's research aims or statistical analyses.

concern rated on a 0-6 scale ('0' = no concern evident, '6' = strong displays of concern combined with very helpful acts). This is a validated observational measure of children's prosocial and empathic behaviors (Dunfield & Kuhlmeier, 2013) used in the previous research with young children's behavioural reactions to other's distress (Bandstra et al., 2011). Twenty percent of the videos (23) were coded by an independent reliability coder blind to the study's hypotheses; the inter-coder reliability was $\geq .80$ (Cohen's kappa).

2.3.3.2 Theory of mind. Children also completed five short tasks constructed to measure theory of mind development (Wellman & Liu, 2004). The following aspects of theory of mind were measured: understanding of others' desires, beliefs, knowledge access, false beliefs, and emotions. The researcher used toy figurines to administer each task followed by a target question concerning the protagonist's beliefs. Answers were rated as correct ('1') or not correct ('0') and summed to obtain a total score. The scale has demonstrated excellent psychometric properties and has been used in children aged 2-6.6 years (Wellman, 2011).

2.3.4 Parent report.

2.3.4.1 Demographics. Parents reported their own and their children's age, sex, and ethnicity, their employment status, the highest level of education, marital status, family composition, and income.

2.3.4.2 The Strengths and Difficulties Questionnaire's (SDQ). The SDQ's Prosocial Behaviour subscale was used to measure children's prosocial behaviours (Goodman, 1997). Parents rated five items that describe child's tendency to be kind and considerate to other people in the past six months using a 3-point Likert scale ('not true', 'somewhat true', 'certainly true'). The ratings were summed to produce a subscale score. Higher scores reflected a stronger

tendency toward prosocial behaviours. The SDQ has been validated for 3- to 16-year-old children and has demonstrated strong psychometric qualities (Goodman, 2001).

2.3.4.3 My Child Questionnaire. The Empathic/Prosocial Response to Another's Distress subscale from My Child Questionnaire (Kochanska, Devet, Goldman, Murray, & Putnam, 1994) includes 13 items that measure children's affective and behavioural tendencies towards empathic and prosocial behaviors. Parents rated items on a 7-point Likert scale ranging from 'extremely untrue, not at all characteristic' to 'extremely true, very characteristic'. The summed items were averaged to obtain the subscale total score with higher scores representing higher levels of empathic and prosocial behaviours. The scale has demonstrated internal consistency and has been validated for use with children aged as young as 21 months (Kochanska et al., 1994).

2.3.4.4 Empathy Questionnaire (EmQue). Empathy-related behaviours were assessed using the EmQue (Rieffe, Ketelaar, & Wiefferink, 2010). Parent rated 20 items on a 3-point Likert scale ('no', 'sometimes', 'often'). The EmQue items are grouped into three subscales that map onto Hoffman's levels of empathy (Hoffman, 1987). Specifically, Emotion Contagion reflects children's tendency to attend to other's emotions, experience similar emotions, and exhibit similar behaviours. Attention to Others' Feelings assesses children's capacity to attend to others' emotional reactions while experiencing less personal distress. Prosocial Actions level of empathy reflects the children's tendency to perform prosocial actions in response to others' distress. Subscales' scores were summed to obtain total scores. Higher scores represented higher levels of empathy-related behaviours. The EmQue has demonstrated good internal consistency and construct validity (Rieffe et al., 2010).

2.3.4.5 Social Skills. The Social Skills Improvement System Rating Scales (SSIS-RS) (Gresham & Elliott, 2008) were used to assess social skills in children. The SSIS-RS includes

seven subscales (communication, cooperation, assertion, empathy, engagement, responsibility, and self-control) (Gresham, Elliott, Vance, & Cook, 2011) and comprehensively measures social skills in children aged 3 to 18 years (Crosby, 2011). Parents rated 46 items (e.g., ‘Takes responsibility for her/his own actions’) on a 4-point scale in terms of their frequency (‘never’ to ‘almost always’). The SSIS-RS has been normed in a national sample and has evidence of good internal and test-retest reliability and adequate validity (Gresham & Elliott, 2008).

2.3.4.6 Emotion Regulation. Parents reported children’s ability to regulate their emotions using a 24-item Emotion Regulation Checklist (ERC) (Shields & Cicchetti, 1997). The ERC’s two subscales assess appropriate emotional display (e.g., ‘Is a cheerful child’) and emotional dysregulation (e.g., ‘Is easily frustrated’) using a 4-point Likert scale (‘never’ to ‘almost always’). The ERC has demonstrated good psychometric qualities (Shields & Cicchetti, 1997).

2.3.4.7 Theory of Mind. Parents used the Children’s Social Understanding Scale (CSUS) to rate children’s theory of mind (Tahiroglu et al., 2014). The CSUS includes 18 items describing children’s understanding of other people’s knowledge, belief, desire, intention, perception, and emotion (Tahiroglu et al., 2014). Parents rated items on a 4-point Likert scale (‘definitely untrue’ to ‘definitely true’). The scale has been validated for use with children aged 3 to 7 years and has excellent internal consistency and test-retest reliability (Tahiroglu et al., 2014).

2.3.4.8 Language. The Children’s Communications Checklist-2 (CCC-2) (Bishop, 2006) was used to assess articulation, phonology, language structure, vocabulary, and pragmatic aspects of children’s communication skills. The CCC-2 has been validated to use in children aged 4-16 years and has evidence of excellent psychometric properties (Bishop, 2006). The items were rated on a 4-point Likert scale (‘less than once a week or never’ to ‘several times [more

than twice] a day [always]’). The general communication composite score was the primary measure of language in the analyses.

2.3.4.9 Early Childhood Emotion. Parents used the (NIH) Toolbox early childhood emotion scales to report children’s symptoms of anxiety (13 items), low levels of positive affect (7 items), anger (9 items), and social distress (9 items) (Salsman et al., 2013). The symptom frequency was rated on a 3-point Likert scale ranging from ‘never or not true’ to ‘often or very true’. The scales have demonstrated excellent psychometric properties (Salsman et al., 2013).

2.4 Statistical Analyses

Statistical analyses were performed using the Statistical Package for the Social Sciences Version 24 (IBM Corp., 2016). Frequency statistics and means and standard deviations were calculated for the key variables. To analyze the correlations and differences between the key variables as a function of children’s age and sex, Pearson’s bivariate two-tailed correlations and chi-square and *t*-tests were conducted.

To address Hypotheses 1 and 3, multivariate analyses of covariance (MANCOVA) were conducted. Type of event and utterance codes were within-subject factors; children’s communication skills (CCC-2 composite score) was a covariate. Significant MANCOVAs were followed up with omnibus analyses of variance (ANOVAs) and *t*-tests to identify differences between narrative codes. Bonferroni alpha correction was used for follow-up tests. Effect sizes were reported using eta squared (Cohen, 1988). An a priori power analysis showed that a sample of 84 parent-child dyads was required to detect a 0.14 effect size with 80% chance at .05 alpha level (G*Power; Faul, Erdfelder, Lang, & Buchner, 2007).

To address Hypothesis 2, bivariate Pearson’s correlations between parent pain narrative codes and children’s socio-emotional skills were conducted. Based on the results of the

correlational analyses, hierarchical regression models were constructed to examine unique contributions of parent pain narrative codes (above and beyond parent sadness narrative codes) to the child socio-emotional functioning. Parent role, child sex, children's communication skills, and parent sadness narratives codes were included as covariates in the models. A total sample of 68 participants was required to detect a medium 0.15 effect size with 80% chance at .05 alpha level (G*Power; Faul, Erdfelder, Lang, & Buchner, 2007).

Chapter 3: Results

Of the 395 families that were contacted, 116 families were enrolled in the study. Of the 116 parent-child dyads, 114 dyads narrated about three types of events and completed behavioural tasks; one dyad could not elicit a sadness-related narrative, and one child could not be separated from their parent due to anxiety. One to five percent of parent-reported data were missing (i.e., one to four items of one of the measures). The non-significant Little's Missing Completely at Random test indicated that data were missing at random: $\chi^2(575) = 576.34, p = .48$. Listwise deletion was used in the analyses.

3.1 Hypothesis 1: Comparison of Parent-Child Reminiscing about Different Types of Events

3.1.1 Description of events. Children and parents most frequently talked about losing or breaking something valuable, watching a scary movie, and everyday pain (e.g., scraping a knee) for the sad, fearful, and painful events, respectively. Types of events are summarized in Table 3. Children recalled the following mean levels of affect/pain for each type of event: being 1.85/7 ($SD = 1.42$) sad ('1' = sad, '7' = happy), being 2.86/4 ($SD = 1.40$) scared, and feeling 6.66/10 ($SD = 3.67$) pain. On average, the events occurred 5.54 ($SD = 7.63$) months ago. There were no significant differences between when the three types of events took place or how much parents

and children talked about different types of events before the lab visit, $ps > .05$. Length of the elicited narratives did not differ significantly as a function of the event type, $p > .05$.

3.1.2 Multivariate analyses of covariance (MANCOVA). A MANCOVA with three levels of the independent variable (event type: sad, fearful, and painful events) was used to examine differences in the parent use of the structural codes (MQE, MQR, YNE, YNR, SE, SR, EVAL). Type of event and utterance codes were within-subject factors; CCC-2 composite score was a covariate. There were no significant main effects in structural utterance codes, Pillai's trace = .05, $F(14, 660) = 1.29$, $p = .207$, $\eta^2 = .03$.

A MANCOVA with three levels of the independent variable (type of event: sad, fearful, and painful events) was used to examine differences in the parent use of the content codes (positive emotion, negative emotion, neutral emotion, explanation, coping, pain). Type of event and utterance codes were within-subject factors; CCC-2 composite score was a covariate. There was a significant main effect of the event type on parent use of content utterance codes, Pillai's trace = .86, $F(12, 662) = 41.53$, $p < .001$, $\eta^2 = .43$. Follow-up omnibus analyses of variance indicated parents used each content code differently depending on the event type (positive emotion, $F[2, 335] = 13.57$, $p < .001$, $\eta^2 = .08$; negative emotion, $F[2, 335] = 160.96$, $p < .001$, $\eta^2 = .49$; neutral emotion, $F[2, 335] = 7.37$, $p = .001$, $\eta^2 = .04$; explanation, $F[2, 335] = 19.28$, $p < .001$, $\eta^2 = .10$; coping, $F[2, 335] = 13.22$, $p < .001$, $\eta^2 = .07$; pain, $F[2, 335] = 465.96$, $p < .001$, $\eta^2 = .74$) at the adjusted α of .008 (Figure 1).

Follow-up t -tests demonstrated the following significant differences in parent use of content codes at the adjusted α level of .001. When talking about past events involving sadness ($M = .12$, $SD = .15$) versus pain ($M = .04$, $SD = .08$), parents tended to use significantly more positive emotion words, $t(113) = 5.35$, $p < .001$. There were no significant differences in parent

use of positive emotion words in fearful ($M = .07$, $SD = .11$) versus pain or fearful versus sad narratives, $ps \geq .004$. Parents used negative emotion words more frequently when talking about sad events ($M = .49$, $SD = .21$) as compared to painful events ($M = .11$, $SD = .12$; $t[113] = 15.92$, $p < .001$), but not fearful events ($M = .51$, $SD = .21$; $p = .293$). Similarly, narratives about past fearful events contained more negative emotion words as compared to narratives about past painful ($t[113] = 19.08$, $p < .001$) events. With regards to the neutral emotion words, parents used them more frequently when talking about sad events ($M = .09$, $SD = .11$) as compared to other types of events (fearful: $M = .05$, $SD = .09$, $t[113] = 3.67$, $p < .001$; painful: $M = .04$, $SD = .07$, $t[113] = 3.83$, $p < .001$). Parent use of neutral emotion words did not differ for painful versus fearful narratives, $p = .659$.

Parents used explanations less frequently when discussing past events involving pain ($M = .10$, $SD = .11$) compared to sadness ($M = .22$, $SD = .18$; $t[113] = 6.42$, $p < .001$) or fear ($M = .22$, $SD = .17$; $t[113] = 5.60$, $p < .001$). Parent use of explanations did not differ when parents talked about past events involving fear versus sadness, $p = .803$. Narratives about past sadness ($M = .04$, $SD = .08$) contained less coping-related words as compared to narratives about past fear ($M = .10$, $SD = .13$, $t[113] = -4.78$, $p < .001$) or pain ($M = .11$, $SD = .14$, $t[113] = -5.43$, $p < .001$). Parents did not differ in their use of coping-related words when talking about past fear versus past pain, $p = .350$. Parents used more pain-related words when talking about past painful events ($M = .59$, $SD = .22$) as compared to other types of events (sad: $M = .03$, $SD = .10$, $t[113] = 27.03$, $p < .001$; fearful: $M = .03$, $SD = .13$, $t[113] = 23.13$, $p < .001$). There were no significant differences in parent use of pain-related words between narratives about past sadness versus fear, $p = .666$. An omnibus analysis of variance showed no significant differences in the levels of conversational autonomy support, $p = .081$.

3.2 Hypothesis 2: Associations between Parent-Child Reminiscing and Children's Socio-Emotional Functioning

3.2.1 Bivariate correlations between parent-reported socio-emotional variables.

Means, standard deviations, and Cronbach's α s, as well as bivariate correlations between parent-reported socio-emotional variables are presented in Tables 4 and 5, respectively. Overall, higher levels of parent-reported children's prosocial behaviours correlated with higher levels of children's empathic responses, social skills, and adaptive emotion regulation, $r_s = |.25 - .47|$, $p_s < .05$. Higher levels of children's lability/negativity were associated with lower levels of children's prosocial/empathic responses and with higher levels of anger, anxiety, and sadness, $r_s = |.20 - .65|$, $p_s < .01$. Higher scores of parent-reported theory of mind were correlated with higher levels of children's prosocial/empathic responding, social skills, and adaptive emotion regulation and lower levels of children's levels of anger and sadness, $r_s = |.19 - .32|$, $p_s < .05$. Higher observed theory of mind scores were significantly associated with lower levels of lability/negativity, anger, and social distress $r_s = |.25 - .26|$, $p_s < .01$.

According to parent report, girls ($M = 23.03$, $SD = 3.95$) versus boys ($M = 24.86$, $SD = 5.27$) displayed lower levels of lability/negativity, $t(89) = -2.03$, $p = .045$. Girls ($M = 3.49$, $SD = 1.12$), as compared to boys ($M = 3.02$, $SD = 1.03$), demonstrated higher levels of observed theory of mind, $t(110) = 2.31$, $p = .023$. Children accompanied by fathers ($M = 3.51$, $SD = 1.05$) versus mothers ($M = 3.04$, $SD = 1.11$) demonstrated higher levels of observed theory of mind, $t(110) = 2.32$, $p = .022$. Older children were reported to have lower levels of lability/negativity, $r = -.20$, $p = .036$. There were no significant differences between parent-reported outcomes as a function of children's ethnicity or parents' level of education.

3.2.2 Prosocial behaviours in response to other's pain. Means, standard deviations, and percentages of observed children's behaviours (averaged across two types of imitated injuries) are presented in Table 4. Girls' and boys' behaviours in response to other's pain versus sadness did not significantly differ, $ps > .05$. There were no significant differences in children's behavioural responses to two different types of injuries, $ps > .05$.

3.2.3 Hierarchical regression models: Parent pain narrative codes and children's behaviours in response to other's pain. A series of bivariate correlations between parent pain narrative codes (i.e., codes used by parents when reminiscing about past pain) and children's prosocial behaviours in response to other's pain were conducted to examine the associations between the two sets of variables (Table 7). The more frequent parent use of memory question elaborations ($r = .19, p = .045$) and the less frequent use of pain-related words ($r = -.19, p = .046$) were related with more prosocial acts children performed when faced with other's pain. Children used hypothesis testing more if their parents used pain-related words more frequently ($r = .19, p = .042$). More frequent parent use of neutral emotion words was related with higher levels of children's global concern toward other's pain ($r = .25, p = .007$). Correlations between other variables were not significant, $ps > .05$. Based on the correlational analyses, three hierarchical regression models were tested to examine the associations between parent pain reminiscing codes and children's behavioural responses to other's pain (Table 8). Parent role, child sex, and CCC-2 composite score were entered as covariates.

3.2.3.1 Model 1. Prosocial acts. Child sex, parent role, and children's communications skills accounted for less than 1% of variance in children's prosocial acts, $F(3, 109) = 0.28, p = .837$. Above and beyond the covariates, the proportion of pain-related words and open questions containing elaborations accounted for 8% of variance in children's prosocial acts, $\Delta F(2, 107) =$

4.68, $p = .011$. The overall model accounted for 8.8% of variance in the number of children's prosocial acts, $F(5, 107) = 2.05, p = .077$. Predictors' beta weight suggested that greater parental use of memory question elaborations ($\beta = .22, p = .026$) and less frequent use of pain-related words ($\beta = -.16, p = .082$) were related to greater number of prosocial acts.

3.2.3.2 Model 2. Hypothesis testing. Child sex, parent role, and children's communications skills accounted for 4.6% of variance in children's hypothesis testing, $F(3, 109) = 1.73, p = .164$. The proportion of pain-related words accounted for 3% of variance in children's hypothesis testing, $\Delta F(1, 108) = 3.51, p = .064$, above and beyond the covariates. The overall model accounted for 7.6% of variance in children's hypothesis testing, $F(4, 108) = 2.21, p = .073$. A positive beta weight ($\beta = .17, p = .064$) suggested that greater parent use of pain-related words was related with more children's attempts to understand the other's pain.

3.2.3.3 Model 3. Global concern. Child sex, parent role, and children's communications skills accounted for 1.6% of variance in children's global concern, $F(3, 109) = 0.61, p = .614$. Above and beyond the covariate variables, the proportion of words associated with neutral emotions accounted for 8% of variance in children's global concern, $\Delta F(1, 108) = 9.99, p = .002$. The overall model accounted for 10% of variance in children's global concern, $F(4, 108) = 2.99, p = .022$. A positive beta weight ($\beta = .29, p = .002$) suggested that greater use of neutral emotion-related words was associated with higher levels of children's concern about other's pain.

3.2.4 Hierarchical regression models: Parent pain and sadness narrative codes and children's socio-emotional skills. As demonstrated above (i.e., section 3.1), parents differed in their use of narrative codes when talking about past pain versus sadness. To investigate unique contributions of pain narrative codes above and beyond sadness narrative codes, codes of both events were used in the following hierarchical regression models. The correlations between

narrative codes and children's socio-emotional variables are presented in Table 8. Based on the correlational analyses, eight hierarchical regression models were tested to examine the associations between parent pain narrative codes and children's socio-emotional variables (Table 9). Parent role, child sex, CCC-2 composite score, and parent reminiscing codes about sad events (if significantly correlated with the criterion) were entered as covariates. Models with a significant incremental predictive value of narrative codes (either pain- or sadness-related) are reported below ($p < .05$). Hierarchical regression models of parent-reported prosocial behaviours, social skills, lability/negativity, theory of mind, and anger were not significant, $ps > .05$.

3.2.4.1 Model 1. Children's empathic/prosocial response to other's distress (My Child Questionnaire). Child sex, parent role, and children's communications skills accounted for 8% of variance in children's empathic/prosocial response to other's distress, $F(3, 109) = 3.25, p = .025$. Above and beyond the covariates, the proportion of sad narrative statement elaborations, yes-no repetition questions, and words associated with coping accounted for 10% of variance in children's empathic/prosocial response to other's distress, $\Delta F(1, 106) = 3.80, p = .009$. The proportion of pain narrative yes-no repetition questions accounted for less than 1% of total variance, $\Delta F(1, 105) = 0.13, p = .724$. The overall model accounted for 18% of variance in children's empathic/prosocial response to other's distress, $F(7, 105) = 3.25, p = .004$. The beta weights of predictors suggest that greater parent use of statement elaborations ($\beta = .26, p = .009$) and words related to coping ($\beta = .19, p = .039$) when reminiscing about past sad events were associated with higher levels of children's empathic/prosocial responses to other's distress.

3.2.4.2 Model 2. Empathy (Empathy Questionnaire). Child sex, parent role, and children's communications skills accounted for 4% of variance in children's levels of empathy, $F(3, 105) = 1.29, p = .281$. Above and beyond the covariate variables, the proportion of coping-

related and negative emotion-related words in pain narratives accounted for 13% of variance in children's levels of empathy, $\Delta F(2, 103) = 7.71, p = .001$. The overall model accounted for 16% of variance in children's empathy, $F(5, 103) = 3.96, p = .003$. Beta weights of the predictors suggest that greater parent use of coping-related words ($\beta = .28, p = .003$) and less frequent use of negative emotion-related words ($\beta = -.20, p = .034$) when reminiscing about past pain were associated with higher levels of children's empathy.

3.2.4.3 Model 3. Sadness (NIH Toolbox). Child sex, parent role, and children's communications skills accounted for 12% of variance in children's levels of sadness, $F(3, 107) = 4.86, p = .003$. Above and beyond the covariate variables, the proportions of explanations and yes-no repetition questions in sadness narratives accounted for 6% of variance in children's sadness, $\Delta F(2, 105) = 4.69, p = .021$. The proportion of negative emotion words in pain narratives accounted for additional 3% of total variance, $\Delta F(1, 104) = 3.36, p = .070$. The overall model accounted for 21% of variance in children's levels of sadness, $F(6, 104) = 4.56, p < .001$. Beta weights of the predictors suggest that less frequent use of explanations (when reminiscing about past sad events; $\beta = -.21, p = .027$) and greater parent use of negative emotion words (when reminiscing about past pain; $\beta = .17, p = .070$) were related with higher levels of children's sadness.

3.3 Hypothesis 3: Parent Role and Child Sex Differences in Parent-Child Reminiscing.

To examine differences in parent reminiscing styles as a function of parent role and child sex, a $2 \times 2 \times 3 \times 7$ (parent role: father, mother \times child sex: female, male \times type of event: pain, fear, sadness \times structural utterance code: MQE, MQR, YNE, YNR, SE, SR, EVAL) and a $2 \times 2 \times 3 \times 6$ (parent role: mother, father \times child sex: female, male \times type of event: pain, fear, sadness \times content utterance code: positive emotion, negative emotion, neutral emotion, explanation,

coping, pain) MANCOVAs were conducted with CCC-2 composite score as a covariate. There were no significant main effects of parent role or child sex on content codes, $ps > .05$.

There was a significant main effect of parent role on parent use of structural codes, Pillai's Trace = .09, $F(7, 320) = 4.59, p < .001, \eta^2 = .09$. Follow-up tests demonstrated that mothers ($M = .23, SD = .10$) compared to fathers ($M = .29, SD = .13$) used yes-no elaboration questions less frequently, $F(1, 326) = 18.93, p < .001, \eta^2 = .06$. Conversely, mothers' use of statements (elaboration: $M = .17, SD = .14$; repetition: $M = .05, SD = .05$) was more frequent as compared to fathers' (elaboration: $M = .12, SD = .12$; repetition: $M = .04, SD = .05$), $F(1, 326) = 10.68, p = .001, \eta^2 = .03, F(1, 326) = 8.28, p = .004, \eta^2 = .03$, respectively. Differences in parent use of other structural codes as a function of parent role were not significant at the .007 α -level.

There was a significant main effect of child sex on parent use of structural codes, Pillai's trace = .06, $F(7, 320) = 2.35, p = .011, \eta^2 = .06$. Follow-up tests showed that parents of boys used more yes-no repetition question ($M = .22, SD = .11$) and less statement elaborations ($M = .13, SD = .11$) as compared to parents of girls (YNR: $M = .19, SD = .10, F[1, 326] = 10.50, p = .001, \eta^2 = .03$; SE, $M = .16, SD = .14, F[1, 326] = 8.15, p = .005, \eta^2 = .02$). Differences in parent use of other structural codes as a function of child sex were not significant at the adjusted .007 α -level.

Based on the hierarchical regression models (i.e., section 3.2), neither parent role nor child sex were significant predictors of the socio-emotional skills of children (β -weights' $ps > .05$). Independent sample t -tests showed no significant differences in the levels of conversational autonomy support as a function of parent role or child sex, $ps > .05$.

Chapter 4: Discussion

This is the first study to examine differences in parent reminiscing style as a function of autobiographical event type (i.e., pain, sadness, fear), parent role, and child sex. Another unique

contribution of this study is the use of multi-method (i.e., narrative elicitation, behavioural tasks, questionnaires) multi-source (i.e., parent report, children's behaviours) examination of the associations between parent-children reminiscing about past pain and children's socio-emotional skills and behavioural responses to other's pain.

Our findings demonstrated significant differences in parent reminiscing styles about different types of events (i.e., sadness, fear, and pain). In line with our hypothesis, parent-child narratives about past autobiographical events involving sadness, versus pain, were characterized by parents' greater use of emotion-laden words (i.e., words associated with positive, negative, and neutral emotions) and explanations. Parents did not use coping- or pain-related words as often as when talking about past pain- or fear-related events. Parent-child reminiscing about past fearful events was similar to reminiscing about past sadness, such that parents discussed emotions (i.e., positive and negative emotion-related words) and used explanations to a similar degree. Parents talked about coping more frequently when discussing past events involving fear versus sadness. Finally, parent-child narratives about past pain, compared to past fear or sadness, contained lower proportions of emotion-laden words and explanations. The past pain narratives were instead characterized by more frequent use of coping- and pain-related words.

These findings are in keeping with prior research. A comparison of parent-child narratives about past sad versus two painful (i.e., a minor outpatient surgery and everyday pain) events similarly demonstrated higher frequencies of emotion-laden language and explanations in the narratives about past sadness, but not pain (Pavlova et al., 2019). Past research comparing parent-children reminiscing about past positive versus negative events demonstrated that parents provided more causal explanations when talking about past distressing versus positive events (Sales et al., 2003). This highlights the unique feature of parent-children narratives about past

pain. Pain is unequivocally distressing yet reminiscing about it lacks narrative elements that are typical for other types of distressing events (e.g., emotion- or explanation-associated words). Pain is a multidimensional experience that involves unpleasant sensory and *affective* aspects (Merskey & Bogduk, 1994). However, it appears that parents focus on the sensory experience (i.e., use of pain-related words) and omit the emotional dimension of the past painful experiences, which may be characteristic of a broader society-level tendency to avoid pain-related emotional suffering. Lower frequencies of explanations in past pain narratives are also intriguing and, arguably, concerning. The work of Pennebaker and Seagal (1999) suggests that simple retelling of past distressing events is insufficient. Construction of coherent (i.e., rich in explanations and causal links) narrative is needed to make sense of the past experiences. Young children, whose autobiographical memory and socio-emotional skills are still developing, rely on their parents to help process emotional aspects of distressing events and construct meaning through parent provision of explanations. Lack of explanations and emotion-laden language in reminiscing about inevitable and ubiquitous pain experiences may, thus, lead to incoherent and distressing memories for past painful events. For instance, in a recent study, parental use of positive emotion language and elaborations when reminiscing about a recent surgery with their young children was predictive of children remembering their post-surgical pain in an accurate or less distressing way (Noel et al., 2019). Greater reminiscing about the sensory aspect of pain (i.e., use of pain-related words) was, on the contrary, related to exaggerated memories for pain.

With regards to fear narratives, consistent with the findings of Fivush et al. (2003), when reminiscing about past fearful, but not sad autobiographical events, parents talked more about coping. In the current study, past fearful events were mostly minor (e.g., watching a scary movie or being afraid of a specific object/activity), which might have resulted in parents talking about

ways to cope and immediately resolve the unpleasant emotion of fear. In contrast, the experience of sadness may lack immediate solutions or be less urgently demanding of coping behaviours as it centres on a less concrete versus immediate threat and, therefore, prompts parents to discuss emotions and causal associations instead of coping.

Contrary to our hypotheses, parents' narratives about past distressing events did not significantly differ in terms of the structural reminiscing codes (i.e., the use of open- versus close-ended questions, providing new information versus repeating the same details) or conversation autonomy support. This finding contrasts prior research that showed parents using more elaborative narrative codes (i.e., open-ended questions containing new information) when talking about past negative (i.e., an Emergency Department visit) versus positive events (Sales et al., 2003) or when talking about past sad versus painful (i.e., a minor surgery and everyday pain) events (Pavlova et al., 2019). It is possible that differences in the structure of reminiscing across various events become more apparent later in childhood. For example, parent use of repetitive reminiscing elements (i.e., memory question repetitions) decreased with age (Sales et al., 2003). In another study, parents used more elaborative elements (i.e., statement elaborations) when reminiscing about a past painful event with older children (Pavlova et al., 2019). Furthermore, in both studies, the distressing events (i.e., an emergency department visit in the study of Sales et al. [2003] and a minor surgery in the study of Pavlova et al. [2019]) were salient and identical for all children, whereas the events used for comparison (i.e., a past positive event in Sales et al. [2003] and a past event involving sadness in Pavlova et al. [2019]) varied in terms of content and when the event took place. In the present study, all events took place approximately same time ago (i.e., on average, 5.5 months ago). Thus, children's age and saliency of events may influence parent use of elaborative reminiscing elements across different types of events.

The present study contributes to the emerging body of research on differences in mother-versus father-child reminiscing. The findings to-date have been equivocal with a lack of differences between father- and mother-child reminiscing (Haden et al., 1997), mothers producing longer and more emotionally rich narratives (Fivush et al., 2000), and fathers using explanations more frequently when reminiscing about a child's recent surgery (Noel et al., 2019). In the present sample, both mothers and fathers used content codes (e.g., emotion-related words, explanations) in a similar manner. Mothers' and fathers' use of elaboration elements, however, differed, such that mothers compared to fathers used more elaborative *statements*, whereas fathers more frequently asked yes-no elaborative *questions*. Mothers may be engaging in habitual reminiscing patterns that are formed during the first years of children's life (with mothers being typically primary caregivers) when children are too young to talk and/or answer questions. Notably, as demonstrated in the previous research (Haden, Ornstein, Rudek, & Cameron, 2009), parental use of yes-no elaborative *questions*, and not statements, at the age of 18 months predicted children's autobiographical memory at 2 and 2.5 years of age. Therefore, teaching mothers to use more questions, versus statements, may constitute a potential intervention target to improve children's autobiographical memory skills. With regards to the role of child sex, parents of boys, versus girls, tended to use more yes-no repetition questions and fewer statement elaborations. The findings are in line with prior research that demonstrated parent's tendency to be more elaborative with daughters and more repetitive with sons (Reese, Haden, & Fivush, 1996; Sales et al., 2003). This may be indicative of gendered socialization of reminiscing, such that parents involve girls in reminiscing more than boys.

This study was the first to examine the associations between parent-children reminiscing about past pain and observed children's behavioural reactions to other's pain. Greater parent use

of elaborations and less frequent use of pain-related words associated with a greater number of children's prosocial acts (section 3.2.3.1, Model 1). Further, more frequent parent use of neutral emotion words related to higher levels of children's concern about another person in pain (section 3.2.3.3, Model 3). These findings raise the possibility that parent-child reminiscing about past pain may serve as one of the processes underlying children's socialization of pain and pain-related empathy. According to a conceptual model of pain-related empathy (Goubert et al., 2005), behavioural responses to other's pain result from one's affective responses (e.g., distress, sympathy) and knowing the experience of other's pain. The latter, in turn, is a product of bottom-up influences (e.g., observing other's pain expressions) and top-down influences (e.g., the observer's past learning experiences of and knowledge about pain). Parent-children reminiscing about past pain contributes to children's knowledge about pain. *Elaborative* reminiscing parents may enrich knowledge about pain with new details and highlight affective aspects of pain experience, which may, in turn, facilitate children's prosocial affective (e.g., sympathy, concern) and behavioural (e.g., providing comfort) responses to others. Conversely, frequent use of pain-related words reminding about the aversive sensory aspect of pain may prompt distress and withdrawal from other's pain. In one study, parent-child elaborative reminiscing (i.e., using elaborations and talking about emotions) related to less distressing children's memories for post-surgical pain, whereas parent more frequent use of pain-related words associated with more distressing memories for pain (Noel et al., 2019). It is, therefore, possible that parent reminiscing about pain contributes to multiple aspects of pain-specific empathy in children (i.e., knowledge, past learning experiences). Successful narrative interventions demonstrating that parent reminiscing style can be changed (Van Bergen et al., 2009) raise a possibility for pain-specific narrative interventions that may alter how children learn and respond to pain in others.

This study extends previous research on the associations between parent-child reminiscing about different types of events (i.e., pain and sadness) and children's overall socio-emotional skills. Parent reminiscing about past sadness and/or pain was associated with parent-reported children's empathic/prosocial responses to other's distress, children's levels of empathy, and children's levels of sadness.

Prosocial tendencies rapidly develop in early childhood under the influence of multiple factors (e.g., biological factors, socialization, situational context) (Eisenberg et al., 1998). By the age of 4, children are typically able to recognize, empathize with, and prosocially react toward other's distress (Eisenberg, Fabes, & Spinrad, 2006). Parent reminiscing may be one of the ways, in which parents socialize children to emotions and prosocial behaviour. This study showed that greater parent use of elaborations and coping-related words when reminiscing about sadness was associated with higher levels of parent-reported children's empathic/prosocial responses to other's distress (section 3.2.4.1, Model 1). Previous research examining the relationship between parent elaborative style (measured on a 5-point Likert scale) and children's social competence (assessed using a Challenging Situation Task and teacher's report) did not find significant associations (Leyva, Berrocal, & Nolivós, 2014). Yet multiple existing studies have demonstrated significant associations between elaborative reminiscing elements and children's emotional understanding and emotion regulation skills that are paramount for social skills development (Leyva & Nolivós, 2015; Salmon & Reese, 2016). The association between greater parent use of coping-related words and higher levels of children's prosocial responses is consistent with previous research. For example, Leyva et al. (2014) showed that greater parent use of words resolving (or, in other words, coping with) negative emotions predicted higher levels of children's social problem-solving skills. Parents reminiscing about ways to cope with

distressing emotions contributes to a more diverse repertoire of empathic reactions to other's distress. Past pain reminiscing codes were not significantly related to children's empathic/prosocial responses to other's distress. This may be due to the subscale used to measure children's socio-emotional skills, such that the subscale's items (e.g., "Likely to offer toys or candy to a crying playmate") ask about other's emotional, versus pain-related, distress.

Parent-children reminiscing about past pain associated with parent-reported children's levels of empathy (section 3.2.4.2, Model 2). Parents who frequently talked about coping and did not discuss negative emotions associated with the past painful experiences had children with higher levels of parent-reported empathy. Past research has examined the relationships between children's empathy and parent reminiscing elaborations, but not content (Laible, Murphy, & Augustine, 2013), where great parent use of elaborations was associated with higher levels of empathy in children. It is possible that parent reminiscing about coping during past painful events contributes to children's confidence in attending to and dealing with other's distress, thus increasing children's empathy. Conversely, highlighting negative emotional aspects of past painful experience (as opposed to more neutral discussion about the emotional experience of pain) may prompt children to avoid other's distress, thus exhibiting less empathy.

Finally, less frequent parent use of explanations in past sadness narratives and more negative emotion words in narratives about past pain associated with higher levels of parent-reported children's sadness (section 3.2.4.3, Model 3). It is possible that children's negative affect had an evocative effect on parent reminiscing patterns rather than vice versa. Parents of children with higher levels of sadness may have parents who avoid using explanations (i.e., providing additional casual details about past sad events) and have to attend to child's sadness by

the means of talking about negative emotions. Longitudinal research is needed to examine the temporality of these relationships.

4.1 Strengths and Limitations

The multimethod, multisource approach is a notable strength of the study. In line with the previous developmental psychology research (Sales et al., 2003), elicited parent-children reminiscing about past events were a close approximation to normal day-to-day conversations about the past. The present study used an established narrative coding scheme (Sales et al., 2003) that has been applied to parent-children narratives about past pain (Pavlova et al., 2019). With regards to children's socio-emotional functioning, the study used psychometrically sound parent-report measures, as well as standardized observational behavioural tasks. Half of the study's sample consisted of fathers allowing an investigation of parent role differences in reminiscing.

The findings of this study should also be viewed in light of limitations. First, the study design was cross-sectional, which limits any causal interpretations of the findings. While significant contributions of parent reminiscing style to children's socio-emotional skills have been found, the reverse associations may be true with children's emotional and social functioning influencing whether and how parents reminisce about past events. For example, children, who are, on average, exhibiting higher levels of sadness, may evoke more frequent negative emotion language. Second, parent reminiscing style may be a manifestation of attachment security or parenting style. Secure attachment is characterized by the caregiver's emotional availability and open discussions about distressing experiences (Laible, 2009). Insecure attachment is ruminative and restrictive (Laible, 2009), which may manifest in topic-switching reminiscing style. Previous research demonstrated a link between attachment and parent reminiscing styles, with parents of securely attached children using more elaborative

reminiscing elements (Fivush & Vasudeva, 2002). Parenting style has been conceptualized as a broader context influencing parenting practices, parents' socialization values and goals, and parents' attitudes toward children (Darling & Steinberg, 1993). Parent reminiscing styles may be moderated and shaped by this broader context. Third, both confederates conducting behavioural tasks were unfamiliar white young women. Children's prosocial behaviours to other's pain-related distress may vary as a function of the confederate's age (e.g., child's peer), sex (same as child's), or the level of familiarity (e.g., reacting to mother's, father's, or sibling's distress). Finally, the study's participants were predominately white, middle class, and employed full-time; the sample homogeneity may limit generalizability of the findings.

4.2 Future Directions and Implications

Future research should consider using longitudinal designs (e.g., following up a cohort of young children to assess parent reminiscing styles and children's prosocial and socio-emotional skills at different time points) and assessing additional parent variables (e.g., attachment relationship, parenting style) to allow for a more nuanced understanding of parent reminiscing style contributions. Family reminiscing (i.e., reminiscing with both parents and/or siblings) would be another promising research avenue. Reminiscing is a dynamic process that may involve multiple family members. Examination of family reminiscing patterns may provide a more in-depth and ecologically valid understanding of parent-child reminiscing and its influence on children's developmental trajectories. Methodologically, future research may employ momentary assessments of parent-child narratives at their homes. Random samples of everyday parent-child conversations may be collected using small recording devices worn on hand or waist; alternatively, parent-prompted reminiscing may be recorded at family's homes. More complex

statistical analyses (e.g., structural equation modelling and sequential analyses) will allow examining reciprocal temporal parent-child influences in the process of reminiscing.

Overall, this study furthers our understanding of parent-children reminiscing about different types of past distressing experiences as well the role of parent reminiscing style in children's socio-emotional skills and behaviours in response to other's pain. Parent use of elaborative reminiscing elements (e.g., providing new information, talking about coping) when discussing past distressing events was linked to higher levels of children's socio-emotional skills. Similarly, parent elaborative reminiscing about past pain (e.g., asking open-ended questions containing new information, talking about emotions) was associated with higher levels of children's concern for and more prosocial acts towards other's pain. Thus, parent-children reminiscing may be one of the processes underlying children's socialization to and meaning-making of distressing experiences, such as negative emotions and pain. Parent reminiscing style has been demonstrated to be malleable and amenable to change through short inexpensive narrative interventions. The present findings lend support for the interventions' utility and rationale, as well as provide specific intervention targets (e.g., teaching parents to elaboratively discuss emotional aspects of distressing experiences) to potentially alter children's socio-emotional skills and prosocial behaviours.

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Appendix A: Tables

Table 1

Sociodemographic Characteristics of the Sample

Sociodemographic Characteristic	<i>N</i> = 116
Age (months), <i>M</i> (<i>SD</i>)	54.61 (3.71)
Child sex (female, %)	54
Parent role (moms, %)	49
Child ethnicity (%)	
Black	1
Chinese	1
Filipino	1
Latin American	2
South East Asian	1
White	74
Multiple ethnicity	18
Other	2
Parent ethnicity (%)	
Aboriginal	1
Black	2
Chinese	5
Filipino	2
Latin American	4
South Asian	1
South East Asian	1
White	80
Multiple ethnicity	4
Parent highest level of education (%)	
High school or less	6
Vocational school/some college	21
College degree	53
Graduate school	20
Work status (%)	
Full time	69
Part time	17
Not employed	14
Household annual income (%)	

\$30,000 - \$39,000	4
\$40,000 - \$49,000	2
\$50,000 - \$59,000	1
\$60,000 - \$69,000	6
More than \$70,000	87
Parent marital status (%)	
Married/Common law	93
Single	3
Separated/divorced	3
Do not want to answer	1

Table 2

Mean Proportions and Standard Deviations for Parent Narrative Codes

	Sad event		Fearful event		Painful event	
<u>Total number of utterances</u>	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>
Parent	31.97	17.68	31.11	15.20	31.69	15.67
Child	20.14	12.65	19.88	11.24	18.99	10.23
Parent-child dyad	52.11	29.02	50.98	25.03	50.68	24.44
<u>Parent structure codes</u>						
MQE	.06	.06	.05	.08	.05	.05
YNE	.24	.12	.27	.12	.27	.10
SE	.17	.13	.12	.12	.15	.14
MQR	.13	.09	.12	.08	.13	.08
YNR	.19	.10	.21	.10	.21	.12
SR	.05	.05	.04	.05	.04	.05
EVAL	.17	.09	.19	.12	.17	.09
<u>Parent content codes</u>						
PEP	.12	.15	.07	.11	.04	.08
PEN	.49	.21	.51	.21	.11	.12
PE_	.09	.11	.05	.09	.04	.07
PEX	.22	.18	.22	.17	.10	.11
PCP	.04	.08	.10	.13	.11	.14
PPN	.03	.10	.03	.13	.59	.22

Note. MQE = memory question elaboration, YNE = yes-no question elaboration, SE = statement elaboration, MQR = memory question repetition, YNR = yes-no question repetition, SR = statement repetition, EVAL = evaluation; PEP = parent positive emotion, PEN = parent negative emotion, PE_ = parent neutral emotion, PEX = parent explanation, PCP = parent coping, PPN = parent pain.

Table 3

Characteristics of the Past Events

Event Characteristic	% or <i>M (SD)</i>
<u>Sad event</u>	
Losing/breaking something important (e.g., a favorite toy)	22
Parent/family member being absent or going away	21
Death	20
Other	16
Not being allowed to do something	11
Change (e.g., moving)	5
Peer conflict	5
<u>Fearful event</u>	
Movie/video game	14
A specific object (e.g., a spider, decorations)	14
Doing something (e.g., riding a bike)	13
Darkness/shadows	13
Ghosts/monsters	10
Dream-/sleep-related	10
Pain-related	10
Social situations (e.g., first day at school)	8
Being scared by someone	4
Other	4
<u>Painful event</u>	
Everyday pain (e.g., falling down, scraping a limb)	58
Needle-related pain (e.g., vaccination)	19
Illness-related pain (e.g., being sick with flu)	10
Pain inflicted by another child or animal	7
Trauma-related pain (e.g., breaking a limb)	4
Other	2
<u>When the event took place (months ago)</u>	
Sad event	5.91 (7.86)
Fearful event	4.97 (7.05)
Painful event	5.66 (7.96)
<u>How much parents and children talked about the event (0-10)</u>	
Sad event	4.35 (3.04)
Fearful event	3.71 (2.72)
Painful event	3.60 (2.43)

Children's recall of the event's key emotion/sensation

Sadness for the sad event ('1' – sad, '7' – happy)	1.85 (1.42)
Scared for the fearful event (0-4)	2.86 (1.40)
Pain for the painful event (0-10)	6.66 (3.67)

Table 4

Means and Standard Deviations for Key Variables

Key Outcome Variables	<i>M</i> (<i>SD</i>) or %	Cronbach α
<u>Theory of mind (observed)</u>		
Diverse desires task (% correct)	88	
Diverse beliefs task (% correct)	75	
Knowledge access task (% correct)	80	
Contents false belief task (% correct)	44	
Real-apparent emotion task (% correct)	41	
Total score (<i>M</i> , <i>SD</i>)	3.28 (1.10)	
<u>Children's behaviours in response to other's pain</u>		
Prosocial acts		
Distractions (% present)	25	
Helping (% present)	6	
Vocal sympathy (% present)	22	
Physical comfort (% present)	4	
Verbal advice (% present)	41	
Prosocial acts summed (0-6; <i>M</i> , <i>SD</i>)	0.69 (0.66)	
Rating of prosocial behaviour (0-3; <i>M</i> , <i>SD</i>)	0.49 (0.59)	
Attempts to understand the distress		
Imitation (% present)	20	
Hypothesis testing (0-3; <i>M</i> , <i>SD</i>)	0.91 (0.51)	
Self-distress		
Self-soothing (% present)	15	
Distress/fear (0-4; <i>M</i> , <i>SD</i>)	0.22 (0.46)	
Proximity to victim (0-3; <i>M</i> , <i>SD</i>)	0.29 (0.55)	
Unresponsive/inappropriate affect		
Ignoring (% present)	42	
Actively playing (% present)	15	
Positive affect (0-3; <i>M</i> , <i>SD</i>)	0.78 (0.79)	
Global rating of concern (0-6; <i>M</i> , <i>SD</i>)	1.18 (0.92)	

Parent-reported outcomes

Prosocial behaviours (Strengths and Difficulties Questionnaire)	8.19 (1.64)	.66
Empathic/prosocial response to other's distress (My Child Questionnaire)	5.22 (0.73)	.73
Empathy (Empathy Questionnaire)	20.18 (4.67)	.73
Social skills (Social Skills Improvement System Rating Scales)	102.49 (10.09)	.93
Emotion regulation (Emotion Regulation Checklist)		
Adaptive Emotion Regulation subscale	30.72 (3.68)	.68
Lability/Negativity subscale	23.86 (4.66)	.79
Theory of mind (Children's Social Understanding Scale)	3.13 (0.34)	.75
Early Childhood Emotion (NIH Toolbox)		
Overall anxiety (<i>t</i> -score)	55.59 (9.83)	.70
Anger (<i>t</i> -score)	51.70 (11.01)	.85
Sadness/low positive affect (<i>t</i> -score)	47.46 (8.56)	.67
Social distress/peer rejection	14.96 (4.23)	.90

Table 5

Correlations Between Key Variables

Variable	1	2	3	4	5	6	7	8	9	10	11	12
(1) Prosocial behaviours (SDQ)	1	.54 [‡]	.40 [‡]	.45 [‡]	.21*	-.25 [†]	.33 [‡]	.06	.02	-.31 [†]	-.11	-.10
(2) Empathic/prosocial response to other's distress (MCQ)		1	.47 [‡]	.34 [‡]	.15	-.06	.30 [†]	.04	.14	-.07	.09	-.04
(3) Empathy Questionnaire			1	.38 [‡]	.07	-.01	.20*	-.07	.11	-.04	.02	.12
(4) Social skills (SSIS-RS)				1	.64 [‡]	-.50 [‡]	.49 [‡]	.06	-.19*	-.41 [‡]	-.35 [‡]	-.24*
(5) Adaptive emotion regulation					1	-.37 [‡]	.42 [‡]	.03	-.24*	-.29 [†]	-.32 [†]	-.22*
(6) Lability/negativity						1	-.36 [‡]	-.25 [†]	.40 [‡]	.65 [‡]	.52 [‡]	.39 [‡]
(7) Theory of mind (CSUS)							1	.14	.05	-.32 [‡]	-.19*	-.24*
(8) Theory of mind (observed)								1	-.12	-.25 [†]	-.10	-.26 [†]
(9) Anxiety (NIH Toolbox)									1	.31 [†]	.45 [‡]	.19*
(10) Anger (NIH Toolbox)										1	.50 [‡]	.39 [‡]
(11) Sadness (NIH Toolbox)											1	.40 [‡]
(12) Social distress (NIH Toolbox)												1

Note. [‡] $p < .001$ (two-tailed); [†] $p < .01$ (two-tailed); * $p < .05$ (two-tailed).

Table 6

Correlations Between Children's Prosocial Behaviours and Parent Pain Narrative Codes

Variable	MQE	MQR	YNE	YNR	SE	SR	EVAL	PEP	PEN	PE_	PPN	PCP	PEX
(1) Prosocial acts (sum)	.19*	.15	-.05	-.09	-.16	.05	.14	.02	.07	.11	-.19*	.11	.06
(2) Prosocial behaviour rating	.10	.10	-.02	-.07	-.11	-.04	.15	.01	.02	.17	-.06	-.03	.03
(3) Hypothesis testing	.09	.04	.05	-.02	-.08	.05	-.02	-.05	-.15	.12	.19*	-.15	-.06
(4) Distress/fear	-.07	-.05	.17	.04	-.02	<-.01	-.12	.02	.13	-.01	-.01	-.03	-.09
(5) Proximity to victim	<.01	-.01	-.09	-.04	.08	.02	.02	-.10	-.03	.05	.03	.03	-.02
(6) Positive affect	-.03	-.05	.16	-.11	.01	-.06	.05	-.03	-.01	-.08	<.01	-.04	.12

(7) Global concern	.12	.07	.05	-.15	-.08	-.08	.16	<-.01	<-.01	.25 [†]	-.08	<.01	-.01
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Note. [‡] $p < .001$ (two-tailed); [†] $p < .01$ (two-tailed); * $p < .05$ (two-tailed); MQE = memory question elaboration, YNE = yes-no question elaboration, SE = statement elaboration, MQR = memory question repetition, YNR = yes-no question repetition, SR = statement repetition, EVAL = evaluation, PEP = positive emotion, PEN = negative emotion, PE_ = neutral emotion, PEX = explanation, PCP = coping, PPN = pain.

Table 8

Correlations Between Children's Socio-Emotional Variables and Parent Pain and Sadness Narrative Codes

Variable	MQE	MQR	YNE	YNR	SE	SR	EV	PEP	PEN	PE_	PEX	PCP	PPN
<u>Pain Narrative Codes</u>													
(1) Prosocial behaviours (SDQ)	-.06	.02	.02	-.19*	.03	.14	.12	.08	-.07	-.21*	.06	.07	.01
(2) Children's empathic/prosocial responses (MCQ)	.08	.01	-.13	-.20*	.17	.11	.06	.03	-.09	-.07	.08	.18	-.09
(3) Empathy (Empathy Questionnaire)	.08	.01	-.13	-.20	.17	.11	.06	.07	-.25 [†]	-.16	-.06	.31 [†]	-.01
(4) Social skills (SSIS-RS)	.09	-.08	-.13	-.24*	.15	.12	.17	.15	-.09	-.10	.16	.09	-.11
(5) Adaptive emotion regulation	.10	-.01	-.11	-.08	.07	.05	.04	.01	-.11	.04	.15	-.08	.02
(6) Lability/negativity	.14	.09	.12	.30 [†]	-.22*	-.16	-.26 [†]	-.01	.13	.17	-.11	-.04	-.04
(7) Theory of mind (CSUS)	-.03	-.08	-.15	-.20*	.21*	.11	.13	.07	-.13	-.09	.01	-.06	.11
(8) Theory of mind (observed)	-.04	.08	.08	-.12	-.01	-.07	.07	.05	.12	-.02	.09	.01	-.14
(9) Fear/anxiety	.04	.11	.01	-.04	-.04	-.05	.01	.12	.04	.07	-.02	.10	-.14
(10) Anger	.23*	.01	-.09	.21*	.01	-.20*	-.20*	.02	.11	.16	-.17	.02	-.05
(11) Sadness	-.02	-.08	.08	.09	-.02	-.16	-.02	.11	.27 [†]	.05	.02	-.07	-.17
(12) Social distress	-.02	-.02	.06	.05	.03	-.12	-.08	-.07	-.07	.16	-.06	-.06	.08
<u>Sadness Narrative Codes</u>													
(1) Prosocial behaviours (SDQ)	-.06	-.15	.13	-.19*	.17	-.06	.03	-.02	-.09	-.16	.07	.04	.05
(2) Children's empathic/prosocial responses (MCQ)	.01	-.14	-.08	-.20*	.32 [†]	.05	-.03	.07	-.07	.02	-.13	.21*	-.01
(3) Empathy (Empathy Questionnaire)	.01	-.01	-.08	-.18	.17	.05	.02	-.13	<.01	-.01	.02	.09	.01
(4) Social skills (SSIS-RS)	.03	.02	-.13	-.24*	.20*	.05	.06	-.11	-.11	.14	.13	.12	.06

(5) Adaptive emotion regulation	-.01	.08	-.12	-.05	.07	.07	-.01	-.23*	-.02	-.03	.13	.09	.08
(6) Lability/negativity	-.06	-.01	.07	.15	-.14	.01	.01	.08	.05	.06	-.16	-.08	-.04
(7) Theory of mind (CSUS)	-.05	-.07	-.10	-.15	.19*	-.12	.18	-.23*	-.03	.04	.05	.11	.06
(8) Theory of mind (observed)	.08	.11	<.01	-.06	-.13	-.14	.17	-.17	.08	-.03	.11	.11	-.17
(9) Fear/anxiety	-.03	-.06	.11	.12	-.01	-.10	-.11	.11	.11	-.08	-.17	.06	.01
(10) Anger	.01	.01	.06	.03	-.08	.09	-.06	-.05	.09	.18	-.16	-.02	-.04
(11) Sadness	-.10	-.18	.06	.21*	.09	-.09	-.12	.08	.06	.05	-.26†	.03	-.02
(12) Social distress	-.07	-.01	-.03	.08	.02	-.01	-.01	-.05	.12	-.03	-.09	-.12	-.05

Note. ‡ $p < .001$ (two-tailed); † $p < .01$ (two-tailed); * $p < .05$ (two-tailed). MQE = memory question elaboration, YNE = yes-no question elaboration, SE = statement elaboration, MQR = memory question repetition, YNR = yes-no question repetition, SR = statement repetition, EV = evaluation, PEP = positive emotion, PEN = negative emotion, PE_ = neutral emotion, PEX = explanation, PCP = coping, PPN = pain

Table 7

Hierarchical Regression Models: Parent Pain Narrative Codes and Children's Prosocial Behaviours in Response to Other's Pain.

Criterion Variable	Step	Predictor	β	ΔR^2	Cumulative R^2
1. Prosocial acts summed	1	Parent role	.03	.008	.008
		Child sex	.08		
	2	Children's communications skills	.01	<.001	.008
		3	Parent memory-question elaborations	.22**	.080**
		Parent pain-related words	-.16*		
2. Hypothesis testing	1	Parent role	-.19**	.038	.038
		Child sex	.02		
	2	Children's communications skills	-.09	.008	.046
		3	Parent pain-related words	.17*	.030*
3. Global concern	1	Parent role	-.01	.015	.015
		Child sex	.12		
	2	Children's communications skills	.03	.001	.016
		3	Parent neutral emotion words	.29 [†]	.083 [†]

[†] $p < .01$; ** $p < .05$; * $p < .10$

Table 9

Hierarchical Regression Models: Parent Pain and Sadness Narrative Codes and Children's Socio-Emotional Skills

Criterion Variable	Step	Predictor	β	ΔR^2	R^2
1. Children's empathic/prosocial responses to other's distress (My Child Questionnaire)	1	Parent role	.16*	.04	.04
		Child sex	.12		
	2	Children's communications skills	.21**	.05**	.08**
		3	Yes-no repetition questions (sadness)	-.09	.10 [†]
	Statement elaborations (sadness)		.26 [†]		
	Coping-related words (sadness)		.19**		
	4	Yes-no repetition questions (pain)	-.04	.001	.18 [†]
2. Empathy (Empathy Questionnaire)	1	Parent role	.15	.02	.02
		Child sex	.001		
	2	Children's communications skills	.11	.01	.04
		3	Coping words (pain)	.28 [†]	.13 [†]
	Negative emotion words (pain)		-.20**		
3. Sadness (NIH Toolbox)	1	Parent role	-.07	.03	.03
		Child sex	.17*		
	2	Children's communications skills	-.29 [†]	.09 [†]	.12 [†]

3	Explanations (sadness)	-.21**	.06*	.18†
	Yes-no repetition questions (sadness)	.11		
4	Negative emotion words (pain)	.17*	.03*	.21‡

‡ $p < .001$; † $p < .01$; ** $p < .05$; * $p < .10$

Appendix B: Figures

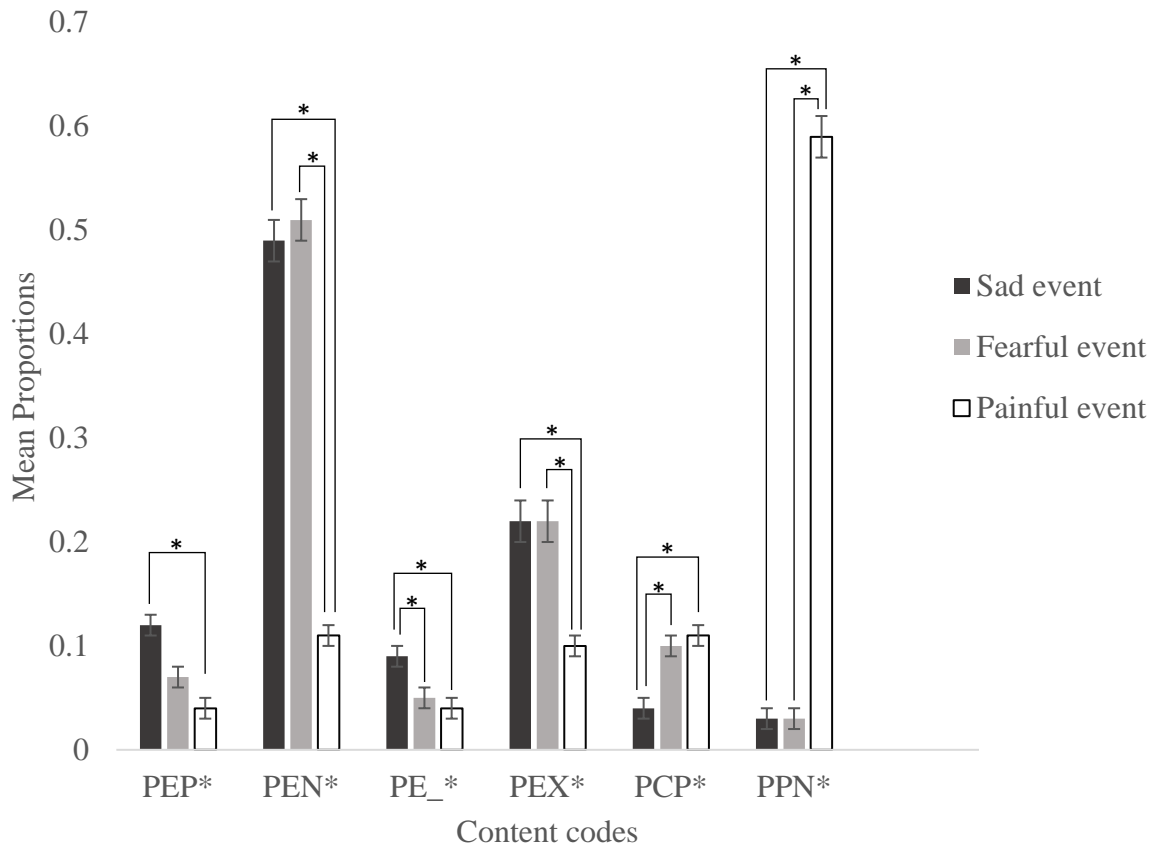


Figure 1. Parent use of content codes as a function of event type. Error bars represent one standard error of the mean. PEP = positive emotion, PEN = negative emotion, PE_ = neutral emotion, PEX = explanation, PCP = coping, PPN = pain-related words. * $p \leq .001$