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journal homepage: www.elsevier.com/locate/chiabunegThe development of empathy in child maltreatment contexts[☆]Sara R. Berzenski^{a,*}, Tuppett M. Yates^b^a California State University, Northridge, United States^b University of California, Riverside, United States

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ABSTRACT

Background: Despite robust associations between child maltreatment experiences and emotional development, a paucity of research examines the influence of child maltreatment on empathy development, and still fewer studies differentiate these effects across maltreatment subtypes.

Objective: The present study examined the development of children's empathy from ages six to eight, as predicted by maltreatment, and as moderated by children's attachment representations. **Participants and setting:** Participants were a community sample of 250 children followed longitudinally and assessed in a laboratory setting with their primary caregivers.

Method: Child maltreatment experiences from birth to age six were assessed by semi-structured interviews with caregivers, which were rated according to widely-used child maltreatment coding protocols, and by caregiver and child self-report measures. Child empathy was assessed at ages six and eight by caregiver-report. Attachment representations were observed in children using the MacArthur Story Stem Battery.

Results: Child emotional abuse ($\beta = -0.150, p = .012$) and child neglect ($\beta = -0.137, p = .016$) predicted decreased empathy at age eight, whereas child physical abuse ($\beta = 0.132, p = .027$) and child exposure to domestic violence ($\beta = 0.164, p = .004$) predicted increased empathy at age eight. Further, children's negative representations of mother figures moderated the positive association between child physical abuse and empathy ($\beta = -0.177, p = .005$), such that the association became weaker as negative representations increased.

Conclusions: These results highlight the nuanced ways in which child maltreatment experiences of different subtypes contribute to the development of empathy in school-aged children.

1. Introduction

Empathy, the capacity to feel and understand the feeling states of others, develops during childhood, and is key to the formation and maintenance of healthy social relationships (Saarni, 1990). Given that parental socialization is crucial for empathy, its development in contexts of child maltreatment is likely compromised (Luke & Banerjee, 2012; Zahn-Waxler & Radke-Yarrow, 1990). However, scarce research has examined the effects of maltreatment on the development of empathy, and even less work has considered the differential influence of maltreatment subtypes on this process. Given that maltreatment subtypes represent qualitatively different experiences with distinct effects and underlying mechanisms (Manly et al., 2001), the present study focused on identifying specific effects of maltreatment subtype experiences on empathy development among school-aged children.

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1.1. The development of empathy

Empathy encompasses capacities to share and understand another's emotional state and is often reflected in the prosocial behaviors (e.g., helping, comforting) it engenders. Empathy can be distinguished along cognitive (i.e., understanding someone else's feelings and taking their perspective) and affective (i.e., feeling an emotional response consistent with someone else's situation) dimensions (Dadds et al., 2008). Precursors to empathy and empathic behavior are evident even in infancy, such as reflexive crying (Martin & Clark, 1982), and in toddlerhood via prosocial responses to others' distress (Zahn-Waxler, Radke-Yarrow, et al., 1992). However, true empathy continues to develop across the preschool and childhood years as capacities for theory of mind and perspective-taking increase (McDonald & Messinger, 2011).

Although evidence shows empathic concern and prosocial responding are influenced in part by genetic and temperamental predispositions (Cornell & Frick, 2007; Knafo et al., 2008; Volbrecht et al., 2007; Zahn-Waxler, Robinson, & Emde, 1992), a great deal of research demonstrates that children's experiences in the family influence their empathy development. First, children's emotional synchrony with their caregiver in early childhood is positively associated with later empathy levels (Feldman, 2007; Levy et al., 2019), and this may be particularly relevant for the development of affective, rather than cognitive, empathy (McDonald & Messinger, 2011). Second, caregivers' emotion socialization behaviors, such as emotion labeling and provision of explanations for emotional behaviors (Garner, 2003), as well as direct modeling of empathic behaviors (Silke et al., 2018), contribute to children's empathy. Third, parenting behaviors influence the development of empathy. For example, a study of preschool children demonstrated that parenting style and disciplinary practices predicted empathic responding, at least among children with uninhibited temperamental dispositions (Cornell & Frick, 2007). Evidence summarized in a recent systematic review also highlighted empathy's positive associations with parental monitoring and negative associations with parental control (Silke et al., 2018).

Finally, the quality of the caregiver-child relationship and family climate are associated with children's empathy development. A recent meta-analysis identified a small but robust correlation between parent-child relationship quality and adolescent empathy, with stronger associations to positive dimensions of relationship quality, such as warmth and support, than to negative features, such as conflict and disrespect (Boele et al., 2019). This pattern is consistent with prior findings in childhood showing positive relations between parental warmth and empathy (Zhou et al., 2002), as well as with a systematic review of studies demonstrating associations between greater parent-child connectedness or attachment security and child empathy, as well as between cohesive family environments and greater empathy (Silke et al., 2018). Other work has shown associations between both supportive and discouraging family relations and more and less empathy in school aged children, respectively (Kilic & Altinok, 2017). Importantly, some work suggests that these associations may vary based on various child characteristics, such as their degree of fearfulness (McDonald & Messinger, 2011).

1.2. Maltreatment and the development of empathy

Given the influence of caregiver behaviors and caregiver-child relationship qualities on the development of empathy, it is vital to consider instances when these typical relational conditions are altered or missing, such as in contexts of child maltreatment (Cicchetti & Valentino, 2006). Child maltreatment is an umbrella term for caregiver acts of commission or omission that put a child's safety and/or development at risk, but it can be characterized more specifically by child physical abuse (CPA; i.e., physical harm beyond typically acceptable discipline), child sexual abuse (CSA; i.e., an adult obtaining sexual gratification through acts involving a child), child emotional abuse (CEA; i.e., direct acts by a caregiver that communicate a child is unsafe, unworthy, and/or unloved), child neglect (CN; i.e., failure of a caregiver to meet a child's physical, supervisory, and/or emotional needs), and exposure to domestic violence (DV; i.e., witnessing or hearing physical fighting between caregivers).¹

Previous research on maltreatment and empathy has been sparse, but the few studies to date point to associations between child maltreatment experiences and empathy deficits in children (Ardizzi et al., 2016), adolescents (Yu et al., 2020), and adults (Locher et al., 2014). One study of school-aged children noted that maltreatment history was associated with lower levels of facial mimicry of negative emotions (Ardizzi et al., 2016). In addition, several studies have noted reductions in prosocial behavior as a consequence of child maltreatment (Jaffee & Maikovich-Fong, 2011; Prino & Peyrot, 1994; Yu et al., 2020), which may stem from lower levels of empathy (Yu et al., 2020). Finally, a qualitative study of foster caregivers revealed that they perceived the children in their care to have deficits in social understanding and empathy (Luke & Banerjee, 2012).

1.3. Subtype-specific associations between maltreatment and empathy

Very few studies have evaluated specific subtypes of maltreatment experiences with regard to the development of empathy. One study of adults with marital difficulties found that histories of CEA were related to difficulties with empathic accuracy (i.e., correctly identifying partners' emotions; Maneta et al., 2015). Likewise, another study of empathic understanding between adult partners found that a history of CN, but not abuse, was associated with less use of motivated inaccuracy as a protective mechanism (i.e., misperceiving one's partner's emotions and thoughts when the relationship is threatened), and with generally more accurate perceptions of emotions (Miano et al., 2018). To our knowledge, only one study has compared associations between multiple maltreatment subtypes and

¹ Given the low base rate of child sexual abuse at the ages assessed in the present study, and the fact that it is not exclusively carried out by caregivers, it was not examined in these models.

aspects of empathy (Flasbeck et al., 2018). In this study, there were positive correlations between all types of maltreatment and feeling personal distress when others are distressed (i.e., affective empathy), but only *emotional* CN was negatively correlated with empathic concern (i.e., cognitive empathy). Interestingly, all types of abuse and neglect were associated with lower perspective taking scores, except for CPA, which was not significantly related to perspective taking.

Examinations of the mechanisms by which maltreatment might eventuate in children's empathy deficits may shed further light on subtype-specific expectations. First, maltreating caregivers may struggle with empathy themselves, which would implicate genetic and/or socialization mechanisms through which maltreated children would acquire deficits. For example, a recent study found that neglectful mothers showed deficits in emotion socialization behaviors, specifically elaboration and sensitive guidance of preschool children when reminiscing about emotional events (Kuehn et al., 2020). In addition, although one study found no significant differences in dispositional empathy across mothers, those at high risk for CPA showed significantly lower perspective taking and personal distress responses than non-maltreating mothers (de Paúl et al., 2008). Likewise, another study found that mothers' perspective taking and personal distress predicted child deficits in cognitive empathy via increased child abuse risk (Meidan & Uzefovsky, 2020). Of note, this study also found direct associations of mothers' empathic concern, personal distress, and components of cognitive empathy with children's affective empathy deficits. Finally, Mielke et al. (2016) found that mothers with a personal history of CPA or CSA showed lower maternal sensitivity toward the next generation, and maternal sensitivity was associated with increased grey matter volume in brain regions underlying empathy among non-maltreating mothers.

Maltreated children may have general deficits or delays in emotional and cognitive development that may underlie apparent difficulties with developing the higher-order skill of empathic understanding, and these may be more pronounced for particular maltreatment subtypes. For example, maltreatment has been related to reduced internal state language use in young children (Beeghly & Cicchetti, 1994), which is a likely cognitive substrate of empathy development. This finding joins a compendium of research pointing to maltreatment-based deficits in children's emotion understanding, which is another key substrate of cognitive empathy (e.g., Pears & Fisher, 2005). Some research in this area has identified subtype-specific effects such that children with a history of CN are especially vulnerable to these deficits in emotion understanding (Luke & Banerjee, 2013), though they vary based on the discrete emotion examined (Pollak et al., 2000). In a systematic review, Benarous et al. (2015) noted significant, though inconsistent, relations between child maltreatment and theory of mind deficits. Specifically, maltreated children demonstrated consistently worse performance than their non-maltreated peers on false belief tasks. However, in another study, perspective taking deficits were identified among children with a history of CPA, but not among those with a history of CN (Benarous et al., 2015). Although extant research on perspective taking and maltreatment has yielded mixed findings, it is notable that Luke and Banerjee (2013) found negative associations between these two constructs in three out of the five studies they reviewed.

1.4. Moderators of subtype-specific associations between maltreatment and empathy

Despite strong evidence for negative associations between maltreatment and empathy development, individual differences in empathy following maltreatment highlight the need to identify factors that influence this relation (e.g., see Flasbeck et al., 2018 for moderation by genotype). Specifically, children's representations of others and of their self may qualify the nature of the relation between particular types of maltreatment and empathic capacities.

According to attachment theory (Bowlby, 1969), the quality of parent-child relational exchanges informs internal models or representations that guide children's views of caregivers (e.g., as accepting or rejecting) and by extension of themselves (e.g., as competent or powerless; Macfie & Swan, 2009). With respect to empathy development, a child's view of trusted others may influence the extent to which they are able and willing to engage in perspective taking. Previous research has demonstrated that secure attachment patterns, wherein the caregiver is viewed as a secure base from which to explore and a safe haven to which the child can return when threatened, predict increased empathy in children (Murphy & Laible, 2013; Panfile & Laible, 2012). Extending to representation, Niec and Russ (2002) found that school-aged children (ages 8–10) who had more positive, benevolent representations of caregivers were rated higher in empathy by teachers.

Children's internal working models operate as information-processing heuristics that guide their perceptions, attributions, and behaviors in varied interpersonal contexts (Bretherton et al., 1990; Main et al., 1985; Sroufe et al., 1999). Thus, representational processes influence how children perceive and make meaning of relational experiences, including maltreatment. For example, positive representations of caregivers and the family may protect against the negative influences of family conflict (Yoo et al., 2014). Although evidence suggests representations are affected by maltreatment and family conflict, such that they are less positive and more negative overall (Stronach et al., 2011; Toth et al., 2000; Toth, Cicchetti, & Kim, 2002; Yoo et al., 2014), individual differences in children's representations persist (e.g., Stronach et al., 2011).

To the extent that maltreated children nevertheless develop positive representations of caregivers, the expected negative effects of maltreatment on development, including the development of empathy, may be reduced. For example, a longitudinal study of maltreated school-aged children who had been removed from their homes found that as children's representations of maltreating caregivers became more positive over time, their levels of externalizing and internalizing problems decreased (Manashko et al., 2009). At the same time, however, it is important to note that some negative representations may be adaptive in the context of child abuse or neglect. Lynch and Cicchetti (1998) found a significant interaction between trauma and representation such that maltreated children with secure representations had the highest rates of negative attention bias to maternal stimuli. These authors suggest that children with secure and complex representations may have been better able to acknowledge, attend to, and make sense of their maltreating caregivers' negative qualities (Lynch & Cicchetti, 1998), which may indicate that holding some negative representations of maltreating caregivers is actually healthy. Indeed, children who develop appropriately negative views of maltreating caregivers may be more

compassionate toward themselves and other victims, and quicker to develop empathy for victims in general.

Evidence that maltreated children may be more likely to develop negative representations of their caregivers *and* themselves (Toth et al., 2000), suggests that the adaptive development of representations among maltreated children may be a complicated process, and underscores the importance of examining individual differences in children's perceptions of their varied maltreatment experiences. Although rarely examined by subtype, one study did find that children who experienced CN and CEA expressed fewer positive representations of caregivers, which was not observed among those who experienced CPA or CSA (Stronach et al., 2011). Another study found that children who experienced CN were more likely to represent others as hurt or sad than children who experienced other subtypes of maltreatment (Waldinger et al., 2001), which may have implications for empathy. Thus, the present study examined the moderating influences of children's positive and negative representations of their caregivers and themselves on the association between maltreatment and empathy development. Although the specific direction of caregiver representation effects was exploratory, we hypothesized that positive self-representations would serve a protective function in light of prior studies showing that children's positive self-representations (i.e., self-concept) are related to higher levels of perspective taking abilities (Farmer & Maister, 2017) and empathy (Silke et al., 2018).

1.5. The present study

The present study examined the influence of specific maltreatment subtypes on the development of empathy in school-aged children, as moderated by their positive and negative caregiver- and self-representations. We hypothesized that experiences of each type of maltreatment (CPA, CEA, CN, and DV) prior to age 6 would be associated with decreased levels of empathy in children at age 8, controlling for prior empathy levels at age 6. We explored whether this association would differ by maltreatment subtype, with the expectation that CN would have the strongest negative association with empathy due to its documented associations with deficits in emotion understanding and limited parent emotion socialization opportunities. We further hypothesized that relations between maltreatment experiences and empathy development would be moderated by children's caregiver- and self-representations. Specifically, we explored both positive and negative caregiver representations as potential influences on these relations in light of mixed evidence supporting the promotive role of positive caregiver representations on empathy development generally (e.g., Murphy & Laible, 2013), in balance with the potentially protective effect of appropriately viewing a maltreating caregiver negatively (Lynch & Cicchetti, 1998). With regard to self-representations, we predicted that the negative effects of maltreatment on empathy would be relatively weaker and stronger as children's self-representations became more positive and more negative, respectively.

2. Method

2.1. Participants

Participants were 250 children (50 % female, 50 % male) and their primary caregivers who were recruited for a study of children's learning and development when the children were four years old. Children were followed annually, and data for the present analyses were drawn from assessments at ages four ($N = 250$; $M_{\text{age}} = 4.09$ years, $SD = 0.25$), five ($N = 215$; $M_{\text{age}} = 5.16$ years, $SD = 0.21$), six ($N = 215$; $M_{\text{age}} = 6.11$ years, $SD = 0.22$), and eight ($N = 211$; $M_{\text{age}} = 8.13$ years, $SD = 0.25$). The sample was ethnically and economically diverse, with children identifying as 46 % Latinx, 18 % Black, 11.2 % white, 0.4 % Asian, and 24.4 % multiracial, 27.6 % of the families residing below the poverty line, and a total of 72.9 % of the sample eligible to receive government aid. Primary caregivers at the initial assessment were 91.2 % biological mothers, 4.4 % foster, adoptive, or stepmothers, and 4.4 % other kin caregivers (e.g., grandmothers). Across waves, 238 (95.2 %) of the families completed at least one follow-up.

2.2. Procedures

Participants were invited to a study of "children's early learning and development" via flyers distributed to community-based childcare centers. Caregivers were screened by phone to ensure they met the inclusionary criteria (i.e., children were between 3.9 and 4.6 years of age, proficient in English, and typically developing). Each assessment took place in the laboratory and consisted of both independent and interactive child-caregiver assessment segments. The visits to the laboratory were between 3 and 4 h long, and participants received a \$75 incentive at each assessment, along with a small age-appropriate gift for the child. All procedures were approved by the Human Subjects Review Board of the participating University.

2.3. Measures

2.3.1. Child maltreatment

Separate maltreatment composites were formed for child physical abuse (CPA), child emotional abuse (CEA), child neglect (CN), and exposure to domestic violence (DV) using multiple sources of information from birth to age 6. This approach ensured that any experiences rising to the level of maltreatment were captured to obtain sensitive, comprehensive, and continuous severity indicators for analysis.

At each assessment, caregivers completed the Early Trauma Inventory (Bremner et al., 2000) for their child. This semi-structured interview asks several behaviorally-specific questions regarding each form of maltreatment, including CPA (e.g., has someone ever punished your child resulting in physical injury), CEA (e.g., has your child repeatedly been told s/he was no good), CN (e.g., has your

child been left alone when s/he was too young to care for herself/himself), and DV (e.g., has your child seen people in your family physically fighting). The interview includes follow-up questions with clarifying prompts to obtain a full description of reported events, including the frequency, intensity, and timing of each maltreatment experience.

Independent coders who were naïve to all other information about the family evaluated the frequency and intensity of each maltreatment experience using criteria set forth by McGee et al. (1995). These ratings were combined to yield a 4-point severity score for each type of maltreatment (i.e., 0 = none, 1 = infrequent, mild intensity, 2 = frequent, moderate intensity or infrequent, high intensity, 3 = frequent, high intensity). Coders resolved discrepancies during consensus meetings (average ICC_{CPA} = 0.967, average ICC_{CEA} = 0.838, average ICC_{CN} = 0.815, average ICC_{DV} = 0.963). For this study, the highest severity rating obtained across any assessment point was used to indicate maltreatment experiences from birth to age 6.

At age 6, caregivers also completed a shortened version of the Conflict Tactics Scales – Parent-Child (CTS-PC; Straus et al., 1998), which assessed CPA on the physical abuse subscale (4 items; e.g., how often have you hit your child with a fist or kicked your child hard; $M = 0.0610$, $SD = 0.457$) and CEA on the psychological aggression subscale (5 items; e.g., how often have you swore or cursed at your child; $M = 7.007$, $SD = 4.617$). All items were rated on a seven-point scale from 0 (*never*) to 6 (*>20 times*) in the past year. Children also completed the child report picture card version of the CTS-PC (Meber & Straus, 2002) wherein they were shown a drawing of a parent-child interaction with a behavioral description (e.g., “When this boy did something wrong, his mom said bad words to him. When you do something wrong, does your mom say bad words to you?”). If the child said yes, they were asked to select the frequency of the experience on a five-point scale: 0 (*never*), 1 (*one time*), 2 (*a few times*), 3 (*many times*), 4 (*every time*). Mirroring the parent report, CPA was assessed with 4 items on the physical abuse subscale ($M = 1.239$, $SD = 2.324$) and CEA was assessed with 5 items on the psychological aggression subscale ($M = 3.479$, $SD = 4.177$). As advised by the CTS authors (Straus & Mattingly, 2007), and consistent with prior work (Berzenski & Yates, 2013), we have not calculated the reliabilities for these scales because checklist items are not expected to correlate (e.g., a parent who preferentially hits with an object is not likely to report spanking).

Finally, at age 6, both caregivers and children reported maltreatment experiences on the Multidimensional Neglectful Behavior Scale (Kantor et al., 2004) to assess CN (e.g., how often is there not enough food in the house for the child; $M_{parent [34 items]} = 41.087$, $SD = 5.797$, $M_{child [19 items]} = 39.893$, $SD = 17.277$) and DV (e.g., how often have adults in the house hit each other or threw things and your child might have heard it; $M_{parent [2 items]} = 2.080$, $SD = 0.361$, $M_{child [3 items]} = 6.477$, $SD = 4.864$). Parents rated the frequency of each item on a four point scale from 1 (*never*) to 4 (*always*), and children used a picture card scale in which they were presented with two competing options (e.g., “this boy has enough food to eat in his home; this boy does not have enough food to eat in his home”), asked to select the child that was most like them, and then asked to rate their choice on a four point scale: 1 (*a little like you*), 2 (*sort of like you*), 3 (*a lot like you*), 4 (*really a lot like you*). Scores from each maltreatment measure were standardized and averaged to create continuous maltreatment scores across reporters and methods for CPA, CEA, CN, and DV.

Although it is not recommended by the authors of these measures to dichotomize them (i.e., these experiences are most accurately represented and analyzed on a continuum, so no cutoff scores are provided by authors), in order to better contextualize the nature of the sample used in the present study, dichotomous indicators were created and are reported here for descriptive purposes only. Specifically, the questionnaire measures were split at the 75th percentile, such that individuals in the top 25 % of reports of each type of maltreatment were marked as ‘present.’ Interview reports were dichotomized based on whether any maltreatment was reported or not (i.e., 0 vs. 1 through 3). Variables were then created that indicated whether participants experienced maltreatment of a given type according to any of the three reports. Based on these indications, 26 % of the sample experienced CPA, 40.8 % experienced CEA, 42.8 % experienced CN, and 35.2 % experienced DV. Further, 28.8 % of the sample experienced no maltreatment at all, 26.4 % experienced one subtype, and 44.8 % experienced two or more subtypes of maltreatment. These numbers should be interpreted with caution, as these experiences and reports are best conceptualized on a continuum, not a dichotomy.

2.3.2. Empathy

Caregivers reported on children's cognitive and affective empathy at ages six and eight using the Griffith Empathy Measure (GEM; Dadds et al., 2008). This measure contains 23 items assessing both cognitive (e.g., “my child can't understand why other people get upset;” reverse-coded) and affective (e.g., “my child becomes sad when other children are sad”) empathy, rated on an eight-point Likert scale from 1 (*strongly disagree*) to 8 (*strongly agree*). For these analyses, the total score was used at each time point ($\alpha_{age6} = .713$, $\alpha_{age8} = .673$).

2.3.3. Representations

Children's positive and negative representations of their mother figure and of themselves were assessed at age six using the MacArthur Story Stem Battery (MSSB; Bretherton et al., 1990). This widely-used measure assesses both the coherence and content of children's representations of self and other, and has been validated across a number of studies (e.g., Emde et al., 2003; Grey & Yates, 2014; Laible et al., 2004). In the present study, children completed five story stems (e.g., a child is injured with hot gravy, parents are arguing over lost keys) using a family of Calico Critter™ grey rabbit dolls. Each story stem was rated by independent coders who identified the presence (0/1) of positive mother representations across four domains (i.e., maternal figure is protective, caring, affectionate, helpful; ICC = .725), negative mother representations across four domains (i.e., maternal figure is harsh, rejecting, ineffectual, controlling; ICC = .679), positive child representations across four domains (i.e., child articulates pride, shows affection, demonstrates empathy, displays helping behavior; ICC = .769), and negative child representations across three domains (i.e., child exhibits aggression, displays noncompliance, expresses guilt or shame; ICC = .890) in each story. These ratings were averaged across the five story stems (separately for each category) and then summed across domains to create the overall positive and negative mother and child representation variables. Coders were trained to reliability by coding manual co-author Dr. Jenny Macfie (Robinson et al.,

1992, 1996) based on composites set forth by Toth et al. (Toth et al., 1997; Toth, Maughan, et al., 2002). Coders were naïve to all other study variables and discrepancies across double-coded cases ($n = 65$; 30 %) were resolved by consensus.

2.3.4. Covariates

Based on documented associations with child empathy (Israelashvili et al., 2020; Schwenck et al., 2014), the following variables were included as covariates in all analyses: child sex (male = 0, female = 1), child ethnicity (non-Latinx = 0, Latinx = 1), child IQ, and child emotion recognition.² All regressions predicting empathy at age eight also controlled for children's empathy at age six.

2.3.4.1. Child IQ. Child IQ was assessed at age six using the block design (i.e., children reconstructed presented models with red and white blocks) and expressive vocabulary (i.e., children verbally indicated the meanings of orally presented words) subtests from the Wechsler Preschool and Primary Scale of Intelligence (Wechsler, 2002). These scales were prorated and combined according to published scoring guidelines (Sattler, 2008) to form the full-scale intelligence score used here ($M = 89.81$, $SD = 11.70$).

2.3.4.2. Emotion recognition. Children's emotion recognition was assessed at age four using the Kusché Emotion Inventory (1984). This 40-item measure, shortened to 30 items in this and previous work (e.g., Berzenski & Yates, 2017; Rhoades et al., 2009), asks children to view four drawings of children displaying various emotions and selects the target emotion (e.g., "Which boy/girl feels happy? Point to happy"; $\alpha = 0.739$). Responses earn two points if correct and one point if incorrect but with the right valence.

2.4. Data analytic plan

All analyses were conducted in SPSS v.25 for Windows. Bivariate correlations and descriptive statistics were examined first. A hierarchical linear regression predicted empathy at age eight from all four maltreatment subtypes, controlling for child sex, ethnicity (Latinx/non-Latinx), IQ, emotion knowledge, and prior empathy at age six. Covariates were entered in step one, prior levels of empathy in step two, and CPA, CEA, CN, and DV in step three. Finally, four moderation models were run separately, one for each representation variable (positive and negative mother representations, positive and negative child representations), beginning with steps one through three of the original model, then adding fourth and fifth steps to include the representation variable and its interactions with each maltreatment subtype, respectively.

Missing data were present at each time point. Emotion recognition data were missing for four children (1.6 %) at the first time point due to administration errors. Representational data at age 6 were missing for 39 children (15.6 %) because they did not complete the time point ($n = 35$) or there was a video recording error ($n = 4$). Data on child IQ at age 6 were missing for 37 children (14.8 %) due to not completing the time point ($n = 35$) or administration errors ($n = 2$). Empathy data were missing for 91 children (36.4 %) at age 8 because the measure was added part-way through data collection ($n = 62$) and some children did not complete the time point ($n = 39$). Little's MCAR test revealed that these data were missing completely at random ($\chi^2[98] = 113.65$, $p = .133$). Therefore, missing data were imputed using the expectation maximization likelihood algorithm. This approach uses multiple imputation methods to create a single data set of values, avoiding using listwise deletion which is known to bias both estimates and standard errors of parameters (Tabachnick & Fidell, 2007).

3. Results

Descriptive statistics and bivariate correlations are reported in Table 1. Each maltreatment composite was substantially skewed and kurtotic due to the expectedly low base rates of these constructs. Therefore, natural log transformations were performed on each variable. These transformations successfully reduced skew and kurtosis below traditional thresholds (Afifi et al., 2007; Curran et al., 1996) for all variables except CPA, which was lowered to a skewness score of 2.265. Given the natural log transformation was the most successful and substantially lowered this variable's skewness, the transformed variable was retained in all analyses. None of the other variables were skewed or kurtotic.

At the bivariate level, each maltreatment subtype was significantly positively associated with each other subtype, except for CEA with DV. The strongest associations were between CPA and CEA and between CN and DV. CPA was associated with more positive self-representations. DV was associated with lower positive and negative mother representations. Both CPA and DV were associated with lower IQ scores. CEA was associated with better emotion recognition. CPA was associated with lower empathy scores at age six, CN was associated with lower empathy scores at age eight, and DV was associated with higher empathy scores at age eight. Female sex was associated with more positive mother representations, more positive self-representations, less negative self-representations, and higher empathy at both time points. Latinx ethnicity was associated with lower CPA and less positive self-representations. IQ was associated with more positive mother representations and less negative self-representations. Empathy at age eight was associated with more positive and fewer negative self-representations. Finally, empathy at age six was positively associated with empathy at age eight.

The hierarchical linear regression was significant at each step, and each step explained significant variance in age eight empathy (see Table 2). In the final step, the significant covariates were sex, ethnicity, and previous levels of empathy. All four maltreatment

² Age was included as a covariate in a preliminary analysis of this data, with equivalent results to those presented here. Given its lack of bivariate associations with empathy, nor association in the final regression models, age was not included here to preserve parsimony.

Table 1
Descriptive statistics and bivariate correlations.

	1	2	3	4	5	6	7	8	9	10	11	12	13	Mean/%	SD	Min	Max
Maltreatment^a																	
1. Child physical abuse	–													–.003	.656	–0.34	5.31
2. Child emotional abuse	.511***	–												–.026	.629	–.89	4.05
3. Child exposure to DV	.245***	.119	–											.001	.724	–.44	4.40
4. Child neglect	.129*	.136*	.364***	–										–.004	.669	–.91	5.34
Representation (rep.)																	
5. Positive mother rep.	–.004	–.039	–.153*	.015	–									3.886	1.940	0	11
6. Negative mother rep.	.004	.008	–.151*	.005	.085	–								.558	.922	0	5
7. Positive self rep.	.164**	.101	–.050	.033	.444***	.156*	–							1.780	1.432	0	6
8. Negative self rep.	.087	.029	–.042	–.098	.019	.485***	.171**	–						.632	1.008	0	5
Covariates																	
9. Sex (female)	–.029	–.002	–.032	.006	.233***	–.079	.147*	–.125*	–					50 %	n/a	0	1
10. Ethnicity (Latinx)	–.131*	–.069	–.018	–.010	.013	–.047	–.151*	–.104	–.076	–				66 %	n/a	0	1
11. Child IQ	–.141*	.001	–.174**	.068	.132*	–.018	.015	–.163**	.059	.036	–			89.810	11.698	52.00	140.000
12. Child emotion knowledge	–.070	.133*	–.102	–.123	–.005	–.091	.043	–.170**	.123	–.100	.364***	–		39.133	7.860	14.35	58.00
13. Child empathy (age 6)	–.139*	–.094	.080	–.103	.041	.000	–.002	–.022	.297***	.028	.050	0.103	–	5.337	.716	1.91	7.26
Outcome																	
14. Child empathy (age 8)	.052	–.123	.157*	–.126*	–.035	–.090	.208**	–.168**	.284***	–.117	–.079	.044	.538***	5.291	.734	3.35	7.04

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

^a Maltreatment means represent standardized composite means. Means of individual component measures are found in text.

subtypes predicted significant changes in empathy from ages six to eight. Specifically, over and above covariates and prior levels of empathy at age six, CPA and DV each predicted *increased* empathy at age eight, and CEA and CN each predicted *decreased* empathy at age eight. The final model was significant, $F(9, 240) = 16.367, p < .001, R^2 = .380$, Cohen's $F^2 = 0.613$.³

Finally, negative and positive mother and self-representations, as well as their respective interactions with each maltreatment subtype, were introduced as fourth and fifth steps, respectively, in each of four regression models to evaluate the moderating role of attachment representations on relations between each maltreatment subtype and empathy development. Across models, CPA was the only maltreatment subtype that significantly interacted with children's representation to influence predictions to child empathy (see Table 3). Specifically, negative mother representations moderated the effect of CPA on empathy at age eight ($b = -0.348, SE = 0.124, \beta = -.177, p = .005$). Johnson-Neyman examinations of the regions where the effect of CPA on empathy became significant revealed that CPA predicted increased empathy when negative mother representation scores fell below 0.024 (61st percentile). However, when negative mother representation scores exceeded 2.55 (98th percentile), CPA predicted significant declines in empathy from ages 6 to 8 (see Fig. 1). There was also a significant interaction between CPA and positive child self-representations ($b = 0.177, SE = 0.069, \beta = .160, p = .011$), such that CPA predicted increased empathy when positive self-representation exceeded 0.552 (72nd percentile).

4. Discussion

These findings demonstrate that child maltreatment experiences are robustly and differentially predictive of empathy development across early childhood. Each subtype of child maltreatment predicted empathy at age eight, controlling for demographic predictors, previous levels of empathy at age six, and the other maltreatment subtypes. Importantly, experiences of CEA and CN predicted declines in empathy, whereas experiences of CPA and childhood exposure to DV predicted increases in empathy from ages 6 to 8.

The associations of CEA and CN with lower levels of empathy are consistent with research demonstrating robust negative associations between these experiences and emotion competence broadly. In particular, CEA has been found to predict reduced emotional awareness (Berzenski & Yates, 2010; Kapeleris & Paivio, 2011) and CN has been consistently associated with lower levels of emotion knowledge (Pollak et al., 2000; Shipman et al., 2005). Given that awareness and understanding of emotions are critical substrates of the more complex capability of empathy, it is not surprising that CEA and CN emerged as barriers to empathy development in this study. As noted earlier, children who experience CN have fewer opportunities to observe parental emotion behaviors (Wilson et al., 2008), including empathy, and, as shown in recent research (Kuehn et al., 2020), also receive less emotion socialization from parents to feel and understand emotions. In addition, both emotionally abusive and neglectful parents may themselves display lower levels of empathy (Rodrigo et al., 2020), which may be transmitted to children genetically and/or through compromised social interactions. These CN findings are also consistent with literature showing strong associations between empathy development and positive versus negative family climate markers (Boele et al., 2019).

In contrast, CPA and exposure to DV were associated with increases in empathy at age eight, controlling for empathy at age six. It may be that children in homes with a high amount of physical violence witness siblings and/or caregivers (in the case of DV) being victimized which leads them to develop more empathy for others (Katz & Tener, 2021). Consistent with this interpretation, children who experience or witness physical violence are more accurate in perceiving emotions in others, particularly anger, as a protective mechanism (Pollak et al., 2000), and also show increased levels of parentified (caretaking) behaviors (Nuttall et al., 2021). In turn, higher levels of emotion knowledge and care provision experiences may promote increased empathy as children age. Of note, this type of positive growth following maltreatment experiences may have implications for later post-traumatic growth (PTG) potential among certain individuals. Although PTG has not been examined in children as young as eight, higher emotion competence and empathy should be investigated as potential pathways to future growth. Finally, evidence suggesting that moderate exposure to maltreatment is associated with deficits in cognitive empathy but more severe exposure (as may be the case with overt forms of violence) is associated with affective overarousal and decreased cognitive insight (Locher et al., 2014) may partially explain the associations of CPA and DV with increased empathy as a result of heightened affective empathy/emotional contagion. Importantly, the finding that CEA and DV were associated with empathy in opposite directions highlights the importance of disentangling effects of unique maltreatment subtypes. Although some maltreatment classification systems conceptualize exposure to DV as a subtype of CEA, the present findings suggest these experiences are distinct, or at least various subtypes of CEA may have differential effects on emotional development. Together, the present findings reinforce the need to examine child maltreatment as a heterogeneous experience, since collapsing across subtypes would have obscured significant and differential associations between maltreatment and empathy.

Moderation analyses revealed modest representational influences on the relation between child maltreatment and empathy development, after controlling for other maltreatment experiences. Specifically, negative caregiver representations and positive child self-representations qualified the effects of CPA on empathy development. The finding that CPA led to higher empathy when children held lower negative mother representations, but to decreased empathy when they held more negative mother representations may indicate that children have less negative, more empathetic, views of caregivers when they do not see them as exclusively perpetrators. Children with negative representations may be unable to form a complex view of caregivers as both targets of love and threats of

³ To account for the possibility that maltreatment occurring between ages 6 and 8 could have influenced the results, these analyses were also conducted removing 26 cases for whom maltreatment of any type occurred for the first time between ages 6 and 8, as well as controlling for a dichotomous variable indicating whether a participant had experienced maltreatment for the first time between ages 6 and 8. The substantive findings presented in the manuscript did not change with these cases removed or controlled, providing further evidence that *early* maltreatment is a critical predictor of later empathy development.

Table 2
Linear regression predicting empathy (age 8).

	<i>b</i>	<i>SE</i>	β	<i>p</i>	ΔR^2
Step 1					.099***
Sex (female)	0.358	0.079	.279	<.001	
Ethnicity (Latinx)	-0.119	0.083	-.088	.153	
IQ	-0.006	0.004	-.106	.105	
Emotion knowledge	0.003	0.005	.040	.546	
Step 2					.233***
Sex (female)	0.167	0.071	.130	.019	
Ethnicity (Latinx)	-0.158	0.072	-.117	.028	
IQ	-0.006	0.003	-.109	.055	
Emotion knowledge	0.000	0.005	.004	.948	
Empathy (age 6)	0.484	0.052	.508	<.001	
Step 3					.047**
Sex (female)	0.185	0.069	.144	.008	
Ethnicity (Latinx)	-0.142	0.070	-.105	.045	
IQ	-0.004	0.003	-.078	.164	
Emotion knowledge	0.002	0.005	.022	.699	
Empathy (age 6)	0.455	0.052	.478	<.001	
Child physical abuse	0.219	0.098	.132	.027	
Child emotional abuse	-0.150	0.059	-.150	.012	
Exposure to domestic violence	0.204	0.070	.164	.004	
Child neglect	-0.144	0.059	-.137	.016	

*** $p < .001$, ** $p < .01$; Final model: $F(9, 240) = 16.367$, $p < .001$, $R^2 = 0.380$.

Table 3
Summary of interaction effects (maltreatment \times representation predicting empathy)

	<i>b</i>	<i>SE</i>	β	<i>p</i>
Positive mother representation model				
Interaction with CPA	0.042	0.053	.050	.423
Interaction with CEA	-0.027	0.033	-.052	.416
Interaction with DV	-0.008	0.041	-.010	.854
Interaction with CN	-0.030	0.034	-.052	.374
Negative mother representation model				
Interaction with CPA	-0.348	0.124	-.177	.005
Interaction with CEA	-0.004	0.081	-.004	.956
Interaction with DV	0.101	0.088	.063	.255
Interaction with CN	0.076	0.080	.054	.345
Positive child self-representation model				
Interaction with CPA	0.177	0.069	.160	.011
Interaction with CEA	-0.040	0.039	-.061	.304
Interaction with DV	-0.068	0.053	-.076	.198
Interaction with CN	0.048	0.038	.077	.200
Negative child self-representation model				
Interaction with CPA	-0.067	0.125	-.034	.595
Interaction with CEA	-0.013	0.061	-.013	.827
Interaction with DV	0.129	0.078	.096	.097
Interaction with CN	-0.009	0.052	-.010	.861

*Significant effects noted in bold. All models were run with the same first three steps presented in Table 2, and the interaction effects added in subsequent steps.

danger, which could further undermine their emotion competence. Consistent with this assertion, Niec and Russ (2002) found that more complex representations of self and other were associated with increases in teacher-rated empathy among school-aged children. Although the present data cannot directly speak to overlap between maltreatment experiences, a subset of participants likely experienced both maltreatment subtypes, and these may be the cases who hold less negative mother representations. At the bivariate level, exposure to DV was associated with lower negative mother representations, which may support this interpretation.

Hoffman's (1975) empathy theory posits that the capacity to differentiate self and other is critical for developing empathy. In terms of the finding that positive self-representations enhanced empathy following CPA, forming positive representations of self throughout these experiences may indicate that children are able to successfully avoid self-blaming cognitions and appropriately view themselves (and other victims) as deserving of empathy (Cicchetti & Rogosch, 1997). In sum, our findings, along with the lack of moderating

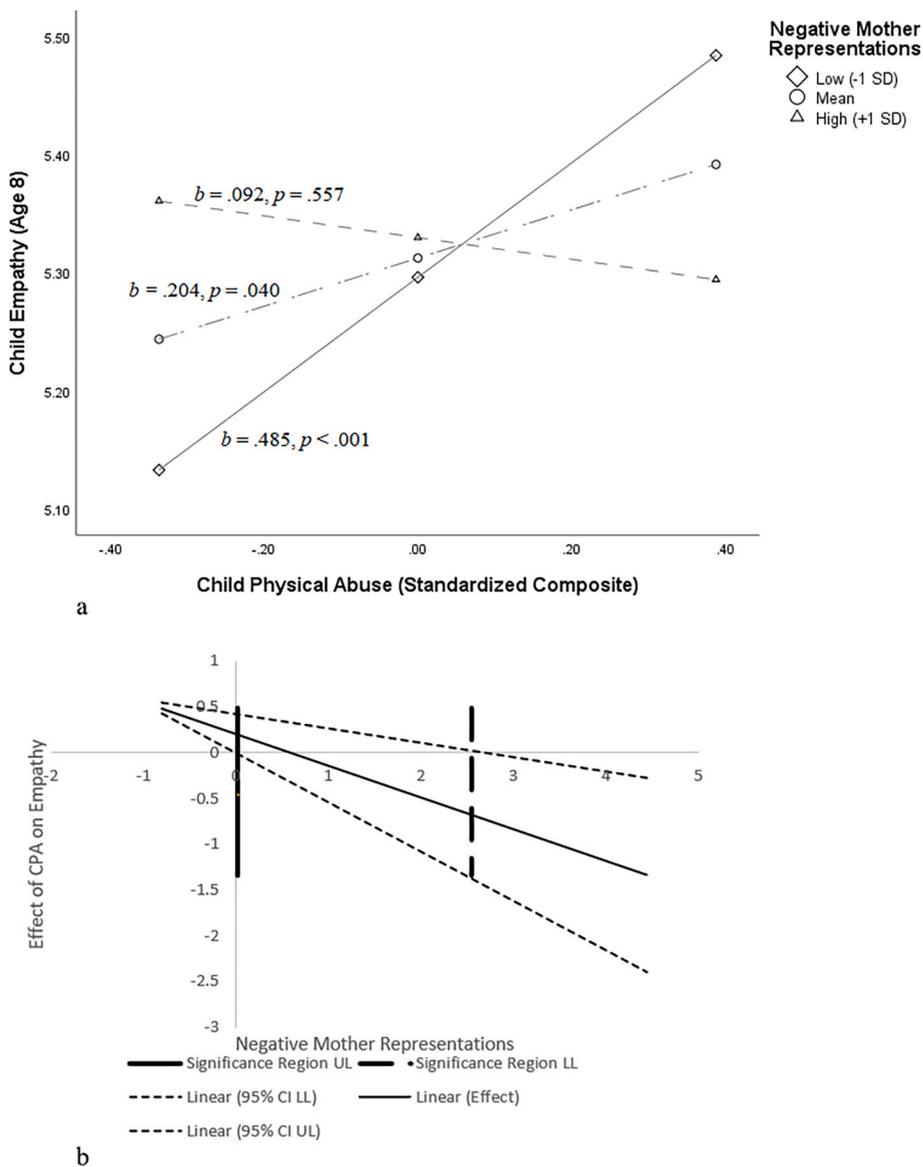


Fig. 1. a. Association between child physical abuse and child empathy as moderated by negative mother representations. b. Johnson-Neyman plot of the effect of CPA on empathy, by negative mother representation value.

influences of representations on CEA and CN effects, suggest that complicated processes may be at work, and highlight the need to examine potential three-way interactions among maltreatment, caregiver, and self-representations in future research.

4.1. Strengths and limitations

The findings of the present study should be contextualized according to both the strengths and limitations of the research design. First, although official (e.g., child protective services) reports of child maltreatment were not available, we were able to assess maltreatment according to multiple indices and reports to arrive at the most comprehensive and inclusive estimate possible. Some evidence suggests that CPS reports are not always the gold standard measure of maltreatment because they fail to capture sub-threshold and non-reported (or non-substantiated) incidents of maltreatment (Havlicek & Courtney, 2016; Leiter et al., 1994). CPS reports are particularly fallible in cases of CEA and DV. Caregiver reports of maltreatment are unlikely to yield false positive reports, but may include false negative ones. The inclusion of child reports in the present study allowed us to better-capture the full spectrum of possible maltreatment exposure and also account for the general climate in the household, even as it relates to sub-threshold maltreatment incidents that would not rise to the level of substantiated CPS reports. That said, future studies with access to both CPS and multiple family member reports are needed to determine whether these effects vary based on the source of information and/or

particular thresholds or strengths of maltreatment experiences.

Of note, the present study highlights the challenges inherent in using data from multiple methods and reporters. Consistent with our findings, a recent systematic review confirms that informant reports of maltreatment are only weakly correlated with each other (Cooley & Jackson, 2022). However, it is important to recognize that concordance among reporters is not associated with increased validity of the information, and weak correlations suggest that each informant provides valuable unique information (Pinto & Maia, 2014). Thus, it is critical to continue to explore solutions for the best way to incorporate multiple methods and informants into maltreatment research. Future studies should also examine measures and informant reports individually when possible, using study designs that can appropriately disaggregate measure modality from informant source and evaluate these relations with comparable degrees of statistical power across methods and informants. This dilemma is further complicated by the aforementioned overlap between experiences of maltreatment subtypes, and points to the necessity of examining these experiences while considering their comorbidity. Although a strength of present study rests in the controls for all maltreatment subtypes within all models, future studies should examine associations between empathy and specific combinations of maltreatment experiences when possible.

Second, the generalizability of the obtained findings was strengthened by the relatively large and sociodemographically diverse sample used in this study. At the same time, the available sample size of specific subgroups precluded nuanced tests of ethnic-racial and representational effects. For example, although nearly 50 % of the children were Latinx, the smaller number of children belonging to each of the other ethnic-racial groups restricted these analyses to a coarse control based on whether participants were Latinx or not. Likewise, as discussed earlier, it is likely that children's representations shape the developmental impact of maltreatment experiences in ways that are more complex than could be evaluated with the large, but nevertheless limited, sample size available in this study.

Third, despite our inclusion of both caregiver and child informants, the current findings may have been influenced by shared informant variance. For example, caregivers reported on children's empathy at both ages six and eight. Given the present study sought to evaluate caregiving influences on the development of empathy, a more stringent test would document the same effects using teacher or observational measures of empathy. Finally, empathy data at age 8 were missing for a third of the sample due to the later introduction of this measure to the data wave. Although these data were missing completely at random and imputation helped to minimize biased estimates and standard errors that would have resulted from listwise deletion, these results should be interpreted with caution.

4.2. Implications

This investigation uncovered critically important complexities that must be considered in efforts to elucidate familial influences on the development of empathy. Although previous studies have identified the family climate and parenting behaviors as relevant influences on empathy development (Boele et al., 2019; Silke et al., 2018), this study is the first to do so in a longitudinal model. Moreover, this study extended beyond prior investigations of negative parenting and emotion development with regard to both breadth and specificity (i.e., maltreatment subtypes as related to the development of empathy in particular).

This study has key implications for future research and practice. Beyond assuming that negative parenting of any type will be detrimental, this study revealed subtype-specific maltreatment effects on empathy development, as well as the likely influence of children's own meaning making on these relations. Practitioners should consider that and how maltreatment effects may vary by subtype and/or children's meaning making so they can tailor their intervention efforts accordingly. Of note, disruptions in the development of empathy in contexts of maltreatment may represent modifiable intermediaries that cascade to influence later adjustment outcomes that have been connected to child maltreatment, such as delinquent behaviors and personality disorders. Likewise, the finding that caregiver- and self-representations may influence maltreatment effects is critically important given prior evidence that these representations can be modified through intervention (Toth, Maughan, et al., 2002). Understanding how children's nuanced representations of caregivers and themselves influence their processing of child maltreatment has significant potential for ongoing efforts to understand the development of empathy as a complex emotion competence skill.

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