University of Southampton

Faculty of Environmental and Life Sciences

School of Psychology

Thesis for the degree of Doctorate in Educational Psychology

Exploring the importance of early care-giving experiences on children's socio-emotional functioning: the role of empathy

by

Derek Hanley

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The parent-child relationship is considered a critical context for children's socio-emotional development. While it is understood that this relationship is interactive and bi-directional in nature, parenting practices and behaviours, specifically, parental socialisation styles, have been consistently linked to children's development, including emotional competence and social skills. Empathy, which describes an innate capacity to understand and resonate with others' emotional experiences, is regarded by some as being at the core of what it means to be fully human, as it is central to social interaction, lays a foundation for moral judgement, and acts as a precursor to prosocial behaviour. Evidence has shown that individual differences in child empathy are related to and affected by the socialisation practices of parents. Building upon this research, this thesis presents two related, but individual papers that aim to further our understanding of how early care-giving experiences influence children's socio-emotional functioning, specifically empathy. Firstly, a systematic literature review was conducted to consider the association between the quality of the parent-child relationship, as defined by the indices of attachment security, parent warmth, and parental sensitivity, and the development of empathy in toddlers and pre-schoolers. 16 articles were included for review. Overall, the review highlights that the evidence-base exploring the association between child empathy and the quality of the parent-child relationship among toddlers and pre-schoolers is small and strikingly inconsistent. Put broadly, the most consistent associations were found in longitudinal studies with pre-schoolers where attachment security was linked with higher scores of empathy. Secondly, an empirical study was carried out to test a proposed mediational model, whereby lower empathy is a pathway between childhood maltreatment and peer relationship problems. Using a combination of parent-report, child-report measures, and behavioural measures, empathy and peer relations were assessed in a sample of maltreated (n = 29) and non-maltreated children (n = 82). Findings show that maltreated children scored significantly lower on parent-report measures of empathy and scored significantly higher on parent-report peer relationship problems than non-maltreated children. The behavioural data showed similar group level differences for child empathy, however, no differences were found for child-report peer relations. In terms of the proposed mediational model, empathy was found to mediate the relationship between maltreatment and poor peer relations. Taken together, both studies highlight the importance of early care-giving experiences on children's socio-emotional functioning, specifically empathy. The implications of this are discussed broadly and within the context of educational psychology.

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Research Thesis: Declaration of Authorship

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I declare that this thesis and the work presented in it are my own and has been generated by me as the result of my own original research.

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Definitions and Abbreviations

EP .....Educational Psychologist

IWM .....Internal Working Model

NG .....Nurture Group

SEL.....Social Emotional Literacy

SSP.....Strange Situation Procedure

ToM .....Theory of Mind

Chapter 1 Exploring the Importance of Early Care-giving Experiences on Children's Socio-Emotional Functioning: The Role of Empathy

"If you can learn a simple trick, Scout, you'll get along a lot better with all kinds of folks. You never really understand a person until you consider things from his point of view, until you climb inside of his skin and walk around in it."

— Atticus Finch in *To Kill a Mockingbird*

1.1 Overview

This thesis presents two related, but individual papers that aim to further our understanding of how early care-giving experiences influence children's socio-emotional functioning. The first paper is a systematic literature review which examines the link between the quality of the parent-child[1] relationship and the development of empathy in toddlers and pre-schoolers. The second paper is an empirical study that sets out to test a proposed mediational model, whereby lower empathy is a pathway between childhood maltreatment and peer relationship problems. The thesis also includes an introductory chapter which sets out to bridge the gap between the two papers and provide the context and theoretical underpinnings of the present research.

[1] In keeping with the literature, this thesis uses the term 'parent' rather than primary caregiver. However, the author readily acknowledges that many children's primary caregivers may not necessarily be a parent (biological or adoptive) and may include a family member, a trained professional or another individual.

1.2 The Parent-Child Relationship and Socio-Emotional Outcomes for Children

1.2.1 Parental Socialisation

The parent-child relationship is considered a critical context for children's socio-emotional development (Sharp & Fonagy, 2008). While it is understood that this relationship is interactive and bi-directional in nature (Pettit & Arsiwalla, 2008), parental socialisation style has been consistently linked to children's development, including emotional competence and social skills (Britto et al., 2017). Parental socialisation style has previously been defined as "a constellation of attitudes toward the child that are communicated to the child and that, taken together, create an emotional climate in which the parent's behaviours are expressed" (Darling & Steinberg, 1993, p. 488), including goal specific behaviours (socialisation practices, e.g., discipline, moral reasoning) and non-goal directed behaviours (e.g., gesture, tone of voice, emotional expressivity). Using a typological approach, socialisation styles have been classified into four broad types based upon levels of authority and affection (Baumrind, 1971, 1989; Steinberg et al., 1994). These are: *authoritarian* parenting, which is marked by little warmth and high control; *authoritative* parenting, which is characterised by both a high level of affection and control; *permissive* parenting, which can be described as a parent that shows little control but lots of warmth, and *neglectful* parenting which refers to parents who lack both authority and affection (Levin, 2011).

Variations in parental socialisation styles have been associated with children's emotional development. For example, a cross-sectional study with a sample of 57 pre-schoolers reported that authoritarian parenting measured through parental attempts to punish (e.g., "if you start crying, you will need to go to your bedroom") or suppress children's displays of emotions ("stop overreacting") led to an amplification of negative emotional expression (Fabes et al., 2001). Similarly, permissive parenting has been linked to lower emotional competence, including poorer emotion regulation and

greater emotional problems (Jabeen et al., 2013; Wischerth et al., 2016). In contrast, authoritative parenting, which is characterised by high parental warmth, has been positively associated with the development of children's regulation capacities and emotional intelligence (Eisenberg et al., 2003). For example, Davidov and Grusec (2006) reported that parental responsiveness to child distress predicted better negative affect regulation in a sample of 106 children (6-8 years old). Additionally, they found that maternal warmth was positively associated with the ability to express positive emotions (e.g., joy), but for boys only.

Parental socialisation style has also been shown to influence the development of children's social skills (Padilla-Walker, 2014; Thompson et al., 2003). Warm and supportive parenting styles have been found to reliably predict greater cooperation with peers (e.g., Lengua et al., 2007; Spinrad et al., 2007, 1999), whereas authoritarian parenting (high control and excessive intrusion) has been linked to aggression and hostility among children (Aunola & Nurmi, 2005; Benzies, et al., 2009; Huntsinger & Jose, 2009).

There is also evidence linking parental socialisation to children's prosocial behaviours, e.g., voluntary behaviours that benefit others (Eisenberg et al., 2006; Padilla-Walker, 2014). Parental warmth and sensitivity, which are key dimensions of an authoritative parenting style, have been linked to prosocial behaviour across child development, including toddlers (Gross et al., 2015), school-aged children (Yagmurlu & Sanson, 2009), and adolescents (Padilla-Walker et al., 2016). For example, a multi-level meta-analysis including 124 studies found that authoritative parenting was positively associated with prosocial behaviour (r = .174) and that these associations remained significant across infancy, childhood, and adolescence in both individualistic and collectivistic cultures (Wong et al., 2021).

Conversely, socialisation styles based upon excessive control and punitive discipline are negatively associated with prosocial responding and sympathy in children (Cornell & Frick, 2007; Hastings et al.,2000), most markedly during adolescence where young people typically resist or react against parental control (Barber et al., 2005). In a longitudinal study, Garner (2012) demonstrated

that maternal attempts to elicit compliance from power assertions was negatively related to pre-schooler's displays of sympathetic concern, but only for high levels of paternal power assertion.

Taken together, it is clear that parental socialisation styles can have a significant impact on children's socio-emotional functioning. In general, the research shows that authoritative parenting, which is characterised by warm and sensitive caregiving, is linked to the most favourable outcomes for children, whereas harsher, punitive styles tend to be associated with more negative outcomes.

1.2.2 Attachment Theory and Socio-Emotional Outcomes for Children

Attachment theory (Bowlby, 1988; Bretherton, 1995) has also been put forward as an important framework for understanding the link between the parent-child relationship and children's socioemotional development and adjustment. Put broadly, attachment theory describes how infants are biologically primed to seek contact and closeness with their primary caregiver when they feel frightened or vulnerable. For example, when a baby feels threatened or stressed, they will instinctively engage in protest behaviours, e.g., crying or searching, to try to restore proximity to their primary caregiver. In this regard, the origins of attachment are closely linked to evolutionary theory and explain the primary function of the bond between parent and child – to promote survival and reproduction (Fearon & Roisman, 2017).

However, the focus of attachment theory later shifted to parenting with Ainsworth's seminal research using the Strange Situation Procedure (SSP). Using a child-parent separation paradigm, Ainsworth identified individual differences in the regulation of attachment behaviour (Ainsworth et al., 1978). Initially, three patterns of attachment were identified: *secure* (type B) – children who sought and were comforted by the caregiver during reunion; i*nsecure-resistant* (or *anxious-ambivalent) (type C)* – children who signal distress when separated, but have difficulty being soothed by their caregiver *upon reunion*, and *insecure-avoidant (type A) – children who* do not appear to be upset by the separation, but actively avoid contact with their primary caregiver when reunited. A subsequent category *disorganised attachment* was later termed to describe children who exhibit

erratic behaviours towards their caregiver that lack coherence (Main & Solomon, 1990). Based on their observations from the SSP, Ainsworth and her colleagues proposed the 'caregiver sensitivity hypothesis' whereby individual differences in attachment could be explained by variation in parenting, specifically, parental sensitivity and responsiveness (Ainsworth et al., 1978).

Beyond simply being a theory of infant behaviour, much research has been devoted to exploring the relationship between children's attachment status and later socio-emotional functioning with the concept of the *internal working model* (IWM) being put forward as a potential mechanism (e.g., Sroufe et al., 2005). In short, an IWM is a cognitive framework of mental representations informed by children's early experiences with their primary caregiver, which helps them understand the world, self, and others (Sherman et al., 2015). For example, if caregivers are warm, sensitive, and responsive, children will develop secure IWMs where they view themselves as being worthy of love and develop expectations that others will provide comfort when needed. In contrast, if attachment figures are cold, insensitive, and unresponsive, children will develop mental representations where they see themselves as unlovable and view others as uncaring and unreliable. In relation to socio-emotional functioning, these IWMs shape how children interpret and experience social situations, which then affect their social and emotional competencies (Doyle & Cicchetti, 2017).

Meta-analyses provide robust evidence for a link between attachment security and children's social and emotional competencies (e.g., Groh et al., 2014; Madigan et al., 2013). In these studies, attachment has been shown to have reliable associations with social competence (Groh et al., 2014) and externalising behaviours (Fearon et al., 2010). Critically, these studies have also found that the effects of attachment are enduring and that they do not weaken as children develop. That is, associations either remain stable or grow in magnitude when outcomes are measured longitudinally (Fearon & Roisman, 2017).

Analytic reviews of the evidence also suggest that child-parent attachment security can predict the quality of peer relations both concurrently and longitudinally (Pallini et al., 2014;

Schneider et al., 2001). Studies have shown that, relative to children with insecure attachment styles, children with secure attachments are more likely to be liked by their peers and have more well-developed prosocial skills (Bohlin et al., 2000; Dykas et al., 2008; Laible, 2006), even when temperamental differences are controlled for (Szewczyk-Sokolowski et al., 2005).

The importance of peer relations in childhood is discussed in greater depth in the empirical chapter of this thesis. However, it should be noted that alongside parents, peer relationships play a critical role in the development of healthy and adaptive social and emotional functioning. For instance, it has been found that children with friends report less loneliness and higher self-esteem than friendless children (Brendgen et al., 2000). Studies have also shown that having a friend can have a 'buffering effect' on children who may be at risk for internalising and externalising problems by offering emotional and social support (e.g., Rubin et al., 2004; van Harmelen et al., 2016). Yet, it should also be equally noted that peer relations can have a detrimental effect on socio-emotional development. For example, peer rejection and peer victimisation are associated with developing both internalising disorders (e.g., anxiety) and externalising behaviour problems in adolescence (Laird et al., 2001; Reijntjes et al., 2010).

1.2.3 Child Maltreatment and Socio-Emotional Outcomes for Children

When considering variations in parenting and attachment experiences in children's social-emotional development, it is also important to examine when early 'normative' experiences are disrupted. In childhood, maltreatment represents a profound dysfunction in early caregiving experiences.

Child maltreatment has been previously defined as "any act or series of acts of commission or omission by a parent or other caregiver that results in harm, potential for harm or threat of harm to a child" (Leeb et al., 2008, p.11). In general, four categories of maltreatment are recognised: physical abuse, sexual abuse, emotional abuse, and neglect (Fallon et al., 2020). In the context of the parent-child relationship, child maltreatment presents a dramatic violation from environments

that foster healthy and adaptive development (Cicchetti & Ng, 2014). Accordingly, it poses significant risk for disrupting children's emotional and social development (e.g., Lavi et al., 2019; Luke & Banerjee, 2013).

There is considerable evidence linking the detrimental effects of child maltreatment on children's socio-emotional well-being (e.g., Luke & Banerjee, 2012). In terms of emotional development, research has shown that maltreated children demonstrate less accuracy in recognising emotions than non-maltreated peers, even when differences in language ability are accounted for (Pollak et al., 2000). For instance, maltreated children demonstrate abnormal patterns in their recognition of the facial expressions of other people, which appear to vary depending on the subset of maltreatment. Pollak and colleagues (2000) reported that children who have been subjected to physical abuse appear to show an increased bias towards anger-related cues and perceive angry faces as more salient than other emotions. In contrast, the same authors found that children who experienced neglect had greater difficulty discriminating between emotions when compared to non-maltreated children or physically abused children.

Similarly, child maltreatment has also been found to be positively associated with greater difficulty with regulating emotions in childhood and adolescence (Gruhn & Compas, 2020). Such a finding is unsurprising given that positive early interactions between child and parent, including direct communication, modelling, and expressions of warmth and support, are thought to underlie a child's ability to control and modulate their emotions (Watson et al., 2014). In the case of maltreated children, it has been posited that they fail to acquire adequate emotion regulation strategies as they receive insufficient support and scaffolding from their parents when experiencing negative emotions (Edwards et al., 2005; Shipman et al., 2007). Specifically, maltreating parents are less likely to validate their child's emotions, enter discussions about emotions, or offer strategies of how to manage negative emotions (e.g., anger) (Shipman et al., 2007; Shipman & Zeman, 2001). Another set of studies has demonstrated that maltreated children are more likely to use

maladaptive emotion regulation strategies, including emotion suppression, disengagement, and rumination (Boyes et al., 2016; Maughan & Cicchetti, 2002).

Furthermore, a link between maltreatment and poor social functioning has consistently been shown (Alink et al., 2012; Bolger & Patterson, 2001; Kim & Cicchetti, 2010). Studies have found that children who have experienced abuse or neglect exhibit significantly higher levels of aggression relative to non-maltreated peers (Cullerton-Sen et al., 2008; Rogosch et al., 1995). Research has also indicated that there is a negative relationship between maltreatment and prosocial behaviour (Jaffee & Maikovich-Fong, 2011; Prino & Peyrot, 1994; Yu, Li, & Zhao, 2020). When compared to their non-maltreated counterparts, children who have experienced abuse and neglect have been found to be less cooperative and demonstrate fewer prosocial behaviours (Anthonysamy & Zimmer-Gembeck, 2007; Koenig et al., 2004; Salzinger et al., 1993). Additionally, several studies have provided evidence that maltreated children are at increased risk of having less satisfactory friendships and peer relationships than children who have not been maltreated (Bolger & Patterson, 2001; Bolger et al., 1998; Kim & Cicchetti, 2010). In general, children who have experienced physical abuse or neglect appear to be less popular, less socially accepted, and more likely to experience peer rejection (Bolger & Patterson, 2001; Salzinger et al., 1993; Shonk & Cicchetti, 2001).

1.2.4 The Parent-Child Relationship and Empathy

Put broadly, empathy describes an innate capacity to understand and resonate with others' emotional experiences (Decety & Meyer, 2008). It is regarded by many as playing a critical role in human existence as it helps us form and maintain relationships with others, lays a foundation for moral behaviour, and acts as a driver for altruistic behaviour (Davis, 2016; Zahn-Waxler & Radke-Yarrow, 1990).

Owing to a diverse theoretical heritage that spans disciplines from art, philosophy, and theology, to psychology and neuroscience, empathy has been subjected to multiple definitions and

there is much heterogeneity among researchers in how it is conceived and studied (Zahn-Waxler & Radke-Yarrow, 1990). However, among the extant definitions, there is general consensus that empathy is a multi-dimensional construct that is comprised of cognitive, affective, and motivational components (Decety, 2015). Cognitive empathy describes the ability to understand what others are thinking or feeling, without necessarily 'resonating' with the observed emotion (Blair, 2005). In contrast, affective empathy refers to the ability to vicariously experience and share the emotional states of others. Critically, for affective empathy there needs to be some form of congruence between the observed emotion and the emotion experience. As such, if a person views a person who is sad and they subsequently feel sad themselves, they can be said to be experiencing empathy (Batson et al., 1991). The motivational dimension of empathy is characterised by concern for others' welfare and a desire to relieve their distress (Kiang et al., 2004).

For clarity and to reduce definitional ambiguity, it is also important to distinguish empathy from the related constructs of sympathy and personal distress. Unlike empathy, sympathy does not necessarily involve shared emotions but rather describes feelings of sorrow or pity for another's distress that arise primarily from cognitive processes, including perspective taking and memory retrieval (Eisenberg et al., 2006). In this regard, sympathy can be described as *feeling for* the other while empathy can be defined as *feeling as* the other. Likewise, personal distress refers to a self-focused, aversive response to another's distress rather than the 'other-directed' emotional experience of empathy. Rather than promote helping and altruistic behaviours, personal distress focuses attention on alleviating one's own feelings of discomfort (Batson et al., 1991).

Hoffman's (1982; 2000) theoretical model of empathy development is based on a four-phase structure. Hoffman's model outlines how a developmental shift occurs in infancy from self- concern to empathic concern for others that arises due to an integration of affective and cognitive abilities. In the first year of life, infants lack self-other differentiation and therefore their ability to empathise is limited to a general expression of distress when in the presence of another person in distress. At

this stage, Hoffman proposes that infants cannot yet separate themselves from others and experience distress as if it were happening to themselves. For example, on seeing another child hurt themselves, an infant may cry themselves and seek comfort from their parent or caregiver. Hoffman labelled this stage as *Global Empathy.*

The second phase, termed *Egocentric Empathy,* describes a period where toddlers develop a cognitive sense of others through the emergence of 'object permanence' (e.g., that another person exists as a physical entity distinct from themselves). This allows them to distinguish self from other and understand that it is another person who is experiencing distress. While the child will demonstrate empathic concern or prosocial behaviours in response to another's distress, they have not yet fully developed the awareness that other individuals have of their own internal states and will seek to offer consolation that they would find comforting, e.g., offering their favourite toy or fetching their own parent or caregiver.

Hoffman's third period, *Empathy for Another's Feelings*, emerges with the development of rudimentary perspective-taking abilities from the ages of 2 to 3 years. At this stage, children become increasingly aware of other people's feelings and experiences, and more skilled at imagining another's experience. This other-oriented understanding promotes prosocial behaviour as children become more responsive to others' needs and emotional cues. This phase of development also marks a time where children can begin to empathise with others who may not be physically present (e.g., if they hear or read about a person in distress).

The final stage, referred to as *Empathy for Another's Condition,* occurs in late childhood and adolescence. At this point in children's cognitive development, they begin to understand that others' feelings may not be because of the immediate situation but stem from their more lasting life conditions. This allows them to empathise with another person's general condition or plight. For example, a child may experience empathy for another child with a terminal illness even when they

appear outwardly happy. Equally, children are also now able to experience empathy for the plight of entire groups or classes of people, who are oppressed, exploited, or otherwise treated unfairly.

While empathy is widely regarded as an innate human attribute, individual differences appear across child development (Eisenberg et al., 2015). Like most developmental processes, these individual differences in empathy likely stem from a combination of temperament, biological, genetic, and environmental factors (Knafo & Uzefovsky, 2013). Specifically, there is fairly consistent evidence that child empathy is related to and affected by the socialisation practices of parents. In line with previously cited findings between parenting and children's socio-emotional functioning, parenting practices marked by warmth and sensitivity have also been shown to be positively associated with the development of child empathy (Robinson et al., 1994; Robinson & Little, 1994; Zahn-Waxler & Radke-Yarrow, 1990). For instance, Zhou and colleagues (2002) reported both concurrent and longitudinal links between parental warmth and positive expressiveness and children's empathy as measured by child-report and physiological indices. Although further work is needed to better understand the mechanisms by which parental warmth and sensitivity translate into children being able to empathise with others, attachment theory has also been put forward as a potential framework for understanding how parents influence the development of child (Shaver et al., 2016; Stern & Cassidy, 2018).

Stern and Cassidy (2018) have proposed a theoretical framework of how sensitive parenting and attachment may account for individual differences in empathic development, with a focus on potential mechanisms and moderators. This model is presented and discussed in detail in the systematic literature review chapter of this thesis, therefore, only a brief overview will be provided here. Stern and Cassidy outline several potential mechanisms of influence that may explain how parent-child attachment may be linked to the development of empathy in children and adolescents. In the model, they suggest that IWMs may mediate the link between attachment and empathy by providing children with relational scripts of how to respond to the distress of others. Language is

proposed as a further mechanism between attachment and empathy. Drawing upon research that shows securely attached children engage in more in-depth discussions about emotions with their parents and caregivers (e.g., Gini et al., 2007), Cassidy and Stern suggest that this discourse may draw greater attention and awareness to the emotional needs of others. In the framework, the authors also put forward that attachment security develops children's emotional and self-regulation capacities, which, in turn, allows them to respond to others' distress without becoming overwhelmed by their own feelings of distress. Building upon the connection between self-regulation and empathy, Cassidy and Stern also suggest that neurobiological programming is a potential mechanism between attachment and the development of empathy. Based on literature that shows that attachment experiences can influence a child's physiological responsiveness to stress (e.g., the production of the stress hormone cortisol) (Oliveira & Fearon, 2019), they contend that securely attached children experience less reactivity to stressors, which enables them to devote greater attention to the emotions and needs of others.

In addition to mechanisms that mediate the link between attachment and empathy, the authors also consider common antecedents to attachment and empathy, specifically, parental sensitivity and parental socialisation, and the contributions they make to empathy development in children. Finally, Cassidy and Stern list several moderators in the model, which may influence the relationship between attachment and empathy. These include within-child factors, such as gender, genetics, temperament, and development, as well as dyadic, group, and societal influences.

However, it should be noted that although the model is well-grounded in theory, Cassidy and Stern (2018) report that there is a paucity of empirical evidence examining relationship between attachment and empathy in childhood. Additionally, they add that studies yield mixed findings, particularly in infancy and the pre-school years. To address this issue, the systematic literature review chapter of this thesis examines the association between the quality of the parent-child

relationship, as defined by the indices of attachment security, parental warmth and sensitivity, and the development of empathy in toddlers and pre-schoolers.

1.3 The Importance of Empathy and Relevance to Educational Psychologists (EPs)

Empathy has important implications for child development and later life outcomes. Firstly, empathy has been linked with increased social competence (Eisenberg et al., 2006). Research has shown that empathy can act as a driver for prosocial behaviour across childhood (Eisenberg et al., 2010), which can result in empathic children being more liked by their peers (Gleason et al., 2009; Wang et al., 2019), having greater social engagement with peers (Robinson et al., 1994; Young et al.,1999), and benefitting from mutually supportive friendships (Ladd et al., 2006; Sebanc, 2003). Conversely, in childhood, low empathy is associated with poor peer relations and hostility (Findlay et al., 2006; Mayberry & Espelage, 2006).

Secondly, research has shown that there is a negative association between empathy, aggression and problematic behaviours in children (Hastings et al., 2000; Strayer & Roberts, 2004). It has been suggested that empathy can reduce aggressive tendencies and behaviours as it allows children to assume the perspective of others and predict the potential consequences of their actions (Hoffman, 2000). In one longitudinal study, researchers found that primary-aged children's empathic responses to images of people displaying negative emotions were related to lower levels of adult-reported externalising behaviour problems, even when controlling for empathy two years prior (Zhou et al., 2002).

Additionally, there are also studies that link low empathy with bullying behaviours in children and adolescents, particularly among boys (Jolliffe & Farrington, 2004; Stavrinides et al., 2010). For instance, results from a study investigating the association between empathy and bullying among pre-adolescents identified negative associations between self-reported bullying and

empathy with the correlations being strongest for boys (Espelage et al., 2004). In contrast, another study reported that high levels of empathy were related to greater protecting of victims of bullying over time, but for girls only (Barchia & Bussey, 2011).

While empathy has been linked with positive outcome across the lifespan, including greater connectedness with others and life satisfaction (Grühn et al., 2008), it has been argued that the effects of empathy also extend beyond the individual and can contribute to a kinder, fairer, more humane society (de Waal, 2010). From an evolutionary perspective, it has been argued that humans have a natural propensity to develop empathy to attend to offspring, to promote cooperation and altruism among group members. Drawing upon this theory, it has been proposed that empathy is a skill that can be developed and used to benefit ourselves, others, and the world in general. In a call for greater compassion and empathy in the world, Greenberg and Turksma (2015) state that empathy and compassion lie at the core of what it is to be fully human and make a claim for it to be cultivated in people. They assert that "awareness, empathy, and compassion contribute to personal well-being and interpersonal experiences that nurture secure, authentic, and life-enhancing relationships. Thus, promoting these qualities in caregivers (parents, teachers) and in children and youth themselves, is essential to promoting child well-being, strengthening families, building cohesive communities, and caring for the environment" (Greenberg & Turksma, 2015, p. 298).

Given the implications of having empathy on children's socioemotional functioning, there are strong grounds for it to form part of social emotional learning (SEL) programs within schools and for school leaders to foster whole-school cultures that are underpinned by empathy, kindness, and compassion. Evidence suggests SEL programs have greater success when they are fully embedded into the ethos of a school, teachers are fully engaged, and partnerships with parents are established (Goldberg et al., 2019). With their experience of working at a systemic level across schools, families, and communities (Buck, 2015), EPs are well-placed to support teachers to implement whole-school approaches to promoting empathy in schools. Firstly, at a universal level, they could help teachers to

build nurturing and supportive relationships with their pupils. Studies have shown that teacher warmth and empathy is positively associated with children's empathy-related responses and prosocial behaviour (Kienbaum et al., 2001; Luckner & Pianta, 2011). Moreover, results from a meta-analysis found that teacher warmth and empathy is correlated with pupils' self-esteem, positive motivation, and social connection (Cornelius-White, 2007).

Secondly, EPs can also help schools to deliver SEL programs that have a specific focus within the curriculum on the promotion of empathy. A large-scale meta-analysis by Durlak and colleagues (2011) reported that children and young people in SEL programmes make significant gains across a range of domains, including social and emotional functioning, prosocial behaviour, and academic achievement. Roots of Empathy (ROE; Gordon, 2009) is an example of an evidence-based classroom SEL programme that aims to increase empathy and prosocial behaviour in children. Central to the programme are regular visits by a mother-child dyad, where a trained ROE instructor draws attention to the development of the infant, the relationships with their parent, and their subsequent attachment. Using the mother-child visit as a stimulus, further discussions also take place on emotional understanding, awareness of others' feelings, and problem-solving skills. To date, evaluation studies examining the efficacy of the program have reported that children who have taken part in ROE have shown improved social and emotional competency, displayed fewer aggressive behaviours, and engaged in more prosocial acts (Schonert-Reichl et al., 2012).

Above all, EPs can help foster empathy and understanding in adults for children and young people who have experienced trauma and adversity in their lives. EPs can encourage teaching staff to adopt a non-judgmental and empathic attitude towards difficult behaviours and help them regard these children as vulnerable rather than troublesome. Put simply, teachers need to *show* children empathy so they can *feel* empathy and self-compassion. The importance of showing empathy to vulnerable children cannot be overstated. Carl Rogers, a founding father of the humanistic approach of psychology, echoes this sentiment in the following observation:

"Over the years, however, the research evidence keeps piling up, and it points strongly to the conclusion that a high degree of empathy in a relationship is possibly the most potent and certainly one of the most potent factors in bringing about change and learning"

(Rogers, 1975)

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Chapter 2 A Systematic Literature Review Exploring the Relationship between the Quality of the Parent-Child Relationship and the Development of Empathy in Toddlers and Pre-Schoolers

Abstract

This systematic review aims to examine the association between the quality of the parent-child relationship, as defined by attachment security, parental warmth, and parental sensitivity, and the development of empathy, specifically in toddlers (12 to 36 months) and pre-schoolers (3 to 6 years of age). Four databases were systematically searched (PsycINFO, MEDLINE, ERIC, and Web of Science Core Collection) following a clear search strategy and inclusion criteria. Subsequently, abstracts were co-screened by two researchers before reviewing full-texts for suitability of inclusion. 16 articles were identified and critically appraised to understand the current picture of the research. On balance, the review highlights that the evidence-base exploring the association between child empathy and the quality of the parent-child relationship among toddlers and pre-schoolers is small and strikingly inconsistent. Put broadly, the most consistent associations were found in longitudinal studies with pre-schoolers where attachment security was linked with higher scores of empathy. Although links were found for parental sensitivity and warmth, the correlations tended to be modest. Few studies considered the potential mechanisms underlying the association between the quality of the parent-child relationship and empathy, however, two studies provided consistent evidence that emotion regulation is a mediator in this relationship. Overall, while the findings of this review suggest that a modest link exists between a broad range of indicators of the quality of the parent-child relationship and the development of empathy in toddlers and pre-schoolers, the relationship remains complex and not yet fully understood. Future research should look to use longitudinal and experimental designs (e.g., priming) to

provide greater evidence for a causal link between the quality of the parent-child relationship and empathy.

"Yet, taught by time, my heart has learned to glow for others' good, and melt at others' woe."

Homer (8th Century BC)

2.1 Introduction

2.1.1 Empathy

Empathy, at its most basic, describes an innate capacity to understand and resonate with others' emotional experiences (Decety & Meyer, 2008). It is regarded by some as being at the core of what it means to be fully human, as it is central to social interaction, lays a foundation for moral judgement, and acts as a precursor to prosocial behaviour (Davis, 2016; Zahn-Waxler & Radke-Yarrow, 1990).

Although the term empathy has been subject to multiple definitions on account of its diverse theoretical heritage (Zahn-Waxler & Radke-Yarrow, 1990), it is generally conceived as a multidimensional construct, which is underpinned by the ability to recognise, understand, and share the emotional states of others (Derntl & Regenbogen, 2014). Accordingly, most models of empathy are comprised of two related but distinct components: affective empathy and cognitive empathy (Decety & Meyer, 2008). Cognitive empathy describes the ability to understand what others are thinking or feeling via the labelling of emotions and the reading of situational cues (Blair, 2005). In contrast, affective empathy refers to the capacity to share in and vicariously experience another person's emotion (Batson et al., 1991). In some conceptualisations, behavioural empathy is also considered a further domain, which is characterised by an expression of concern for others in distress and a desire to relieve that distress (Kiang et al., 2004; Robinson et al., 1994).

Furthermore, although empathy is conceptually related to affective responses such as sympathy and personal distress, they are distinct phenomena. Unlike empathy, sympathy does not involve a shared perspective or emotions but rather describes feelings of sorrow or pity for another's distress (Eisenberg et al., 2006). Similarly, personal distress refers to a self-focused, aversive response (e.g., anxiety or discomfort) to another's distress rather than the 'other-directed' emotional experience of empathy (Batson et al., 1991).

2.1.2 Empathy Development in Toddlerhood and the Pre-School Years

Although it has been suggested that the emergence of empathy has an early onset with an infant's reflexive cry in response to others' distress being viewed as a primitive precursor to empathic concern (Ruffman et al., 2017), it is widely understood that the second year of life marks a critical period for its development (Zahn-Waxler & Radke-Yarrow, 1990). During this time, toddlers develop cognitive skills, including self-other differentiation, emotion regulation, and increased language capabilities that allow them to shift from an egocentric concern for self to concern for others (Ornaghi et al., 2020). Empirical evidence of the development of more complex empathic feelings in toddlers can be found in the increased concern (e.g., worried expression), hypothesis testing (e.g., 'What is it?'), and prosocial behaviour (e.g., offering a toy) they display to distress in others (McDonald & Messinger, 2013).

As children enter the pre-school years, they make further gains that underpin empathy, specifically the cognitive dimension. For example, by 4 years of age, children are beginning to develop a theory of mind (ToM) – an ability to attribute mental states (e.g., beliefs, intents, desires, emotions), and knowledge to others (Bartsch & Wellman, 1995). At this age, children are able to successfully pass false-belief tasks, which are typically used to assess ToM, by inferring that the other person does not possess knowledge that they possess (e.g., 'smarties' test) (Wellman et al., 2001). It has been argued that the development of ToM is integral to more mature feelings of empathy as it shifts children's early self-focused, affective experiences of

empathy towards a more other-oriented empathy as they gain insight into the feelings, thoughts, and experiences of other people (McDonald & Messinger, 2013).

Research on empathy in toddlers tends to be largely based on observations of children's response to distress (Robinson, 2008). In general, four research methods are used to measure young children's empathic responses in distress paradigms. First, there is an infant-distress simulation that involves children listening to a pre-recorded new-born cry and children's behavioural responses being coded and rated. Second, is naturalistic observation, where parents or teachers are asked to keep a diary and record children's responses to incidents where they have witnessed another person in distress. Third, researchers simulate distress in the presence of the child (e.g., a feigned injury or coughing fit) and children's responses are videotaped. Fourth, parents are trained to simulate distress and record their child's response.

However, it should be noted that some concern has been raised about the specificity of such measures as they do not consider the internal motivation that lies behind children's responses. As Stern and Cassidy (2018) note, empathy cannot be directly observed as children's behaviour may be driven by "compliance with adult authority, a sense of obligation or fairness, desire for affiliation, egoistic desire for praise or fear of punishment, or deference to a peer's social dominance" (p.3).

2.1.3 What Factors Explain Individual Differences in Empathy?

While empathy is considered a universal human characteristic (Eisenberg et al., 2006), individual differences emerge across childhood, with some children responding to others' distress with genuine concern and a desire to help, and others reacting with caution, indifference, or even hostility (Shaver et al., 2016). Furthermore, research suggests that such differences can influence developmental outcomes. For example, children with high empathy are more socially competent (Davis, 2004), more prosocial (Williams et al., 2014) and, consequently, more likely to be accepted by their peers (Rose-Krasnor & Denham, 2009). In contrast, lack of empathy is associated with loneliness (Beadle et al., 2012), aggression (Hastings et al., 2000), and peer rejection (Warden &

MacKinnon, 2003). Moreover, in adolescence low empathy is linked with the development of antisocial-delinquent behaviours (van Langen et al., 2014).

Given the apparent implications that empathy has upon children's wellbeing and relationships, it is important to understand the factors that may influence its development. Although individual differences in empathy likely stem from a combination of temperament, biological, and genetic factors (Knafo & Uzefovsky, 2013), its development also appears to be related to interactions with parents (Spinrad et al., 2019). Specifically, there is fairly consistent evidence that child empathy is related to and affected by the socialisation practices of parents. For example, inductions by parents (e.g., reasoning), emotion socialisation, and parent modelling have been found to be positively associated with child empathy (Eisenberg et al., 1998; Zhou et al., 2002). Conversely, the use of punitive discipline and excessive control by parents has been linked to low empathy in young children and adolescents (Cornell & Frick, 2007; Yoo et al., 2013).

2.1.4 The Quality of the Parent-Child Relationship and the Development of Empathy

The constructs of parental warmth (i.e., attuned, responsive, child-centred parenting) and parental sensitivity (i.e., expressions of affection, support, interest) are often used as indices of the quality of the parent-child relationship (McDonald & Messinger, 2013). In general, they have been shown to be positively associated with the development of child empathy (Robinson et al., 1994; Robinson & Little, 1994; Zahn-Waxler & Radke-Yarrow, 1990). Although further work is needed to better understand the mechanisms by which parental warmth and sensitivity translate into children being able to empathise with others, it has been proposed that social learning theory (e.g., Staub, 1978) and parental modelling may offer possible explanations. That is, children observe, internalise, and imitate the empathic concern that adults model (Spinrad et al., 2019; Stern & Cassidy, 2018).

Unsurprisingly, given that parental sensitivity and warmth are well-established antecedents of attachment security, attachment theory has also been put forward as a potential

framework for understanding how parents influence the development of child empathy (Shaver et al., 2016). The central premise of attachment theory is that infants are biologically motivated to develop strong emotional bonds to their primary caregivers to maintain closeness for protection and nurturance (Bowlby, 1989). For example, when a baby feels threatened, they will display instinctive behaviours, such as crying, to restore proximity to their caregiver. Although most infants and young children will typically become attached to their caregiver, it is also submitted that they vary in the security of their attachment based on the quality of their caregiving experiences (Ainsworth & Bowlby, 1991). In this regard, an adult who is consistently sensitive and responsive to the needs of a distressed child will cultivate a secure attachment. By contrast, if a caregiver rejects the child's distress or responds in an inconsistent manner, the child will develop an insecure attachment. Additionally, based upon these patterns of social interactions with their caregiver, a child will gradually form enduring beliefs and mental representations, also known as 'internal working models' (IWMs), for understanding the world, self, others, and relationships, which then serve as templates for future interactions with others (Bowlby, 1982; Main & George, 1985). As such, securely attached children develop IWMs, where they view themselves worthy of love and perceive others as caring and responsive (Ainsworth et al., 1978).

From an attachment theory perspective, the context of a secure attachment shapes children's IWMs about relationships such that they expect distress to be met by kindness and compassion, and they trust others and assume they have positive intentions (Bretherton & Munholland, 1999). In relation to empathy, such positive IWMs allow children to see others as being worthy of support and kindness, which gives rise to empathic attitudes and behaviours in response to their distress. Conversely, attachment theory presupposes that children with insecure IWMs are more likely to be wary of others as they fear they could be criticised, rejected, or even abused, which provokes a self-focused rather 'other-oriented' response to others' distress (Shaver et al., 2016).

2.1.5 Theoretical Model Linking Sensitive Parenting and Attachment to Empathy

Building upon a conceptual model of the link between attachment security and care for others (Shaver et al., 2016), Stern and Cassidy (2018) have proposed a theoretical framework of how the distinct but related constructs of parental sensitivity and attachment may account for individual differences in empathic development, with a focus on potential mechanisms and moderators (see Figure 1).

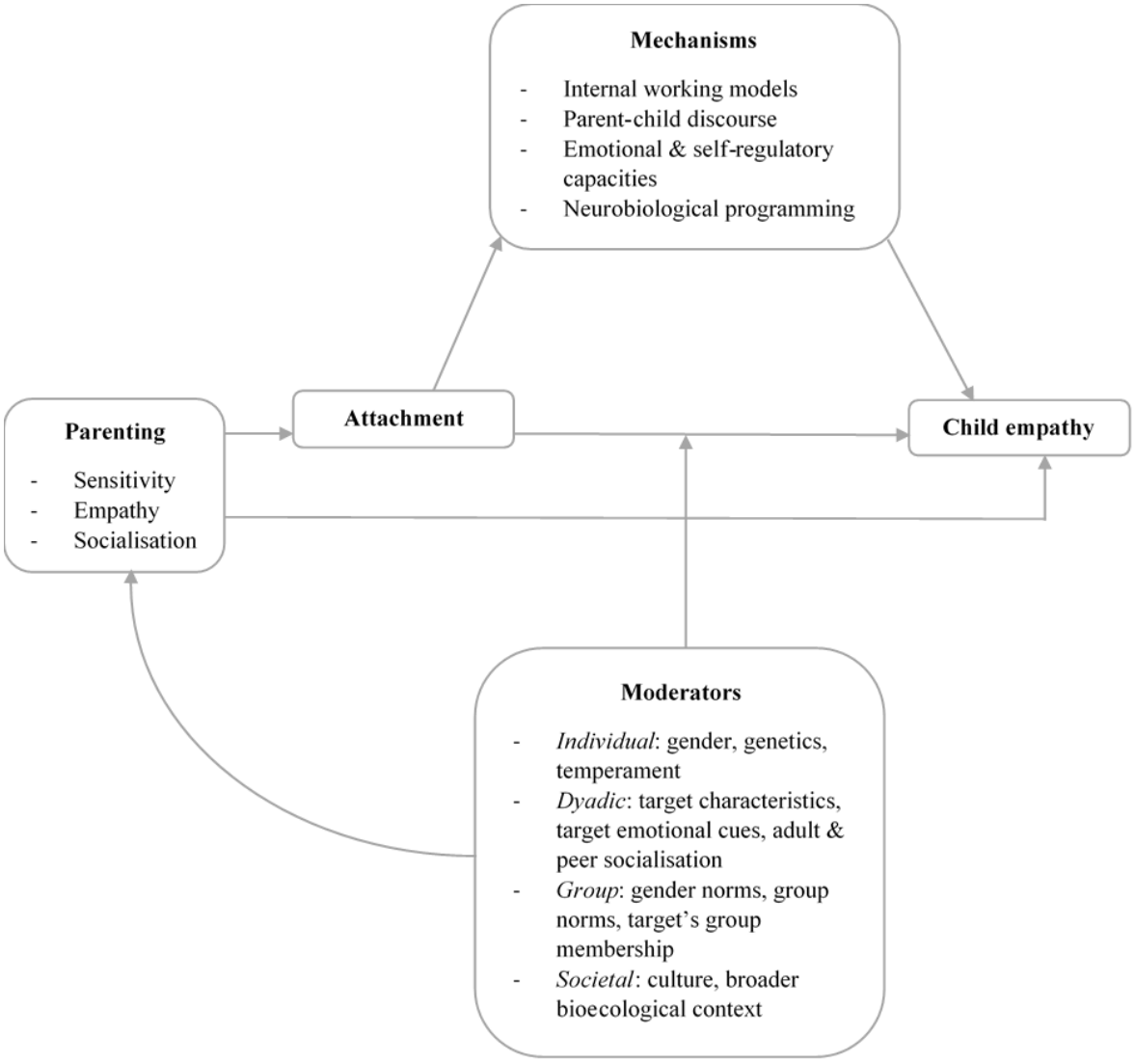


Figure 1

Attachment theoretical model of individual differences in empathy (Cassidy & Stern, 2018)

According to the model, empathy arises from a complex interplay between sensitive parenting, attachment and an array of moderators, including within-child factors (e.g., gender, genetics, temperament) and environmental factors (e.g., target's characteristics, gender and groups norms, and societal and cultural contexts). Furthermore, the model suggests potential mechanisms that explain the relationship between attachment and child empathy.

As discussed previously, IMWs are thought likely to mediate the association between attachment and child empathy insofar as securely attached children develop *scripts* (schemas) about how situations unfold, where distress is displayed by others (Bosmans et al., 2020). For example, based upon their own experiences of sensitive and responsive caregiving, secure children will have an internalised script that in times of need or distress, a caregiver will recognise, attend to, and resolve said distress, thereby offering a return to a state of equilibrium (Waters & Waters, 2006). In the model, it is suggested that when children with secure attachments are faced with other people in distress, they draw upon their script as if it were a ""how to" manual for providing comfort and aid to a distressed other, thus, enabling them to respond empathically (Stern & Cassidy, 2018).

Within the framework, language has also been offered as a possible mechanism to explain the link between attachment and child empathy. Referring to evidence that suggests children with secure attachments engage in more emotion-related discourse with parents (Oppenheim et al., 2007). Stern and Cassidy (2018) argue that by talking about emotions, parents heighten children's awareness and understanding about theirs' and others' emotional states, resulting in "empathic attunement" (p. 5).

Self-regulatory capacities, specifically emotion regulation, are also believed to be implicated in the relationship between attachment and the development of empathy. Based upon attachment theory, children learn to regulate their emotions in accordance with their IWMs (Mikulincer & Shaver, 2008). In infancy, children have not yet developed the capacity to regulate their emotions and therefore are reliant upon their parents to help them modulate arousal.

Through co-regulation with the parent, children begin to internalise strategies to manage their distress, the product of which is greater self-regulation (Brumariu, 2015). In relation to empathy development, it is thought that when securely attached children are confronted with other people in distress, they become less aroused by their own emotional responses, allowing them to devote greater attention to the distressed individual (Stern & Cassidy, 2018).

In support of their theoretical framework, Cassidy and Stern (2018) have considered the existing empirical evidence for the relationship between attachment, its antecedents (e.g., parental warmth and sensitivity), and individual differences in empathy from infancy through adolescence. Although the adolescent research consistently yielded a positive association between attachment and empathy, the relationship was less clear in other developmental periods, most notably among infants and toddlers, where there were inconsistent and, at times, contradictory results. Given that many of the cognitive and self-regulatory abilities underlying empathy do not emerge till later (Hoffman, 2000), it has been speculated that the association between attachment and empathy may be at its weakest during this period (Shaver et al., 2016).

2.1.6 Current Study

At present, the literature has not yet established coherently and systematically whether an association exists between the quality of the parent-child relationships and empathy in early developmental periods (e.g., toddlerhood). This may partly be due to the associated challenges with measurement and conceptualisation of empathy during this period. For example, many studies rely on parent-report to assess young children's empathy, which raises the issues of report bias and whether an internal state, like empathy, can be measured by such means. Similarly, research on empathy in this age group relies heavily on observations of children's response to others' distress (Robinson, 2008). Yet, some researchers have argued that prosocial behaviour is an inadequate proxy for empathy as it fails to address the internal motivation driving the behaviour, which make it difficult to determine whether it is prompted by concern for the others (Stern & Cassidy, 2018). Equally, developmental changes, such as the emergence of cognitive

processes (e.g., self-regulation and Theory of Mind), also render it difficult to firmly establish the strength of the association between the quality of the parent-child relationship and the development of empathy in toddlers and pre-schoolers.

Therefore, taking the aforementioned model as a starting point, the current review seeks to further our knowledge and understanding of how the quality of the parent-child relationship is related to the development of empathy in in toddlers (12 to 36 months) and pre-schoolers (3 to 6 years of age) – critical periods for the development of empathy (Zahn-Waxler & Radke-Yarrow, 1990). The present review acknowledges that attachment and parental sensitivity and warmth are distinct constructs but considers them as direct predictors for empathy that sit within a broader concept of parent child relationship indicators. As such, the review will examine individually how attachment, parental warmth and sensitivity inform our understanding of the relevance of parent-child relationship experiences for the development of empathy.

To this aim, the present study will appraise the available evidence on the association between quality of parent-child relationship indicators and young children's empathy. This aim will be met via the following questions:

1. Does an association exist between the quality of the parent-child relationship and the development of empathy in toddlers (12 – 36 months) and pre-schoolers (3 – 6 years old)?
2. What mechanisms link the quality of the parent-child relationship to the development of empathy in toddlers and pre-schoolers?

2.2 Review Methodology

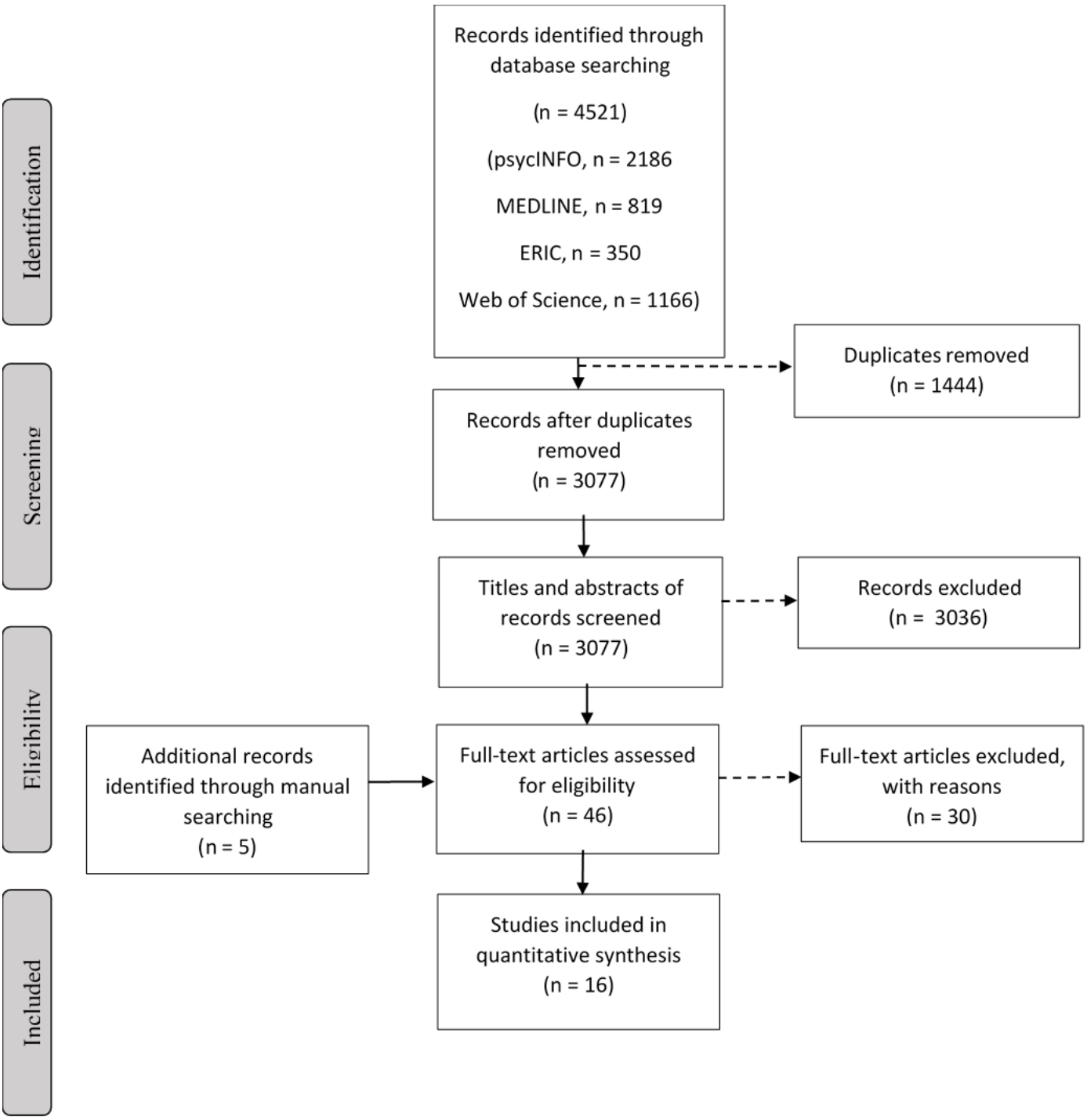
2.2.1 Search Strategy

To aid transparency and accuracy, the current review followed Preferred Reporting Items for Systematic Reviews and Meta-analyses (PRISMA) guidelines (Moher et al., 2009). A protocol was also submitted for registration with PROSPERO but was rejected on the grounds that it did

not include “an outcome of clear relevance to the health of humans” (see Appendix A). A protocol was subsequently registered with the Open Science Framework. Searches were conducted in four databases: PsycINFO and MEDLINE (via EBSCO); ERIC (via ProQuest), and Web of Science Core Collection. Synonyms for ‘quality of parent-child relationship’ (e.g., attachment security), and ‘empathy’ were drawn from target papers (e.g., van der Mark et al., 2002) and background articles (Stern & Cassidy, 2018). The same search terms were entered into all four databases with no filters applied. See Appendix B for a full list of specific search terms. Searches are up to date as of 28/6/2021. Additional papers were also identified through a manual search of the reference lists of retrieved articles.

Figure 2

PRISMA Flow Diagram for Screening and Selection



Given the limited research in this area (Panfile & Laible, 2012; Stern & Cassidy, 2018), no date or language restrictions were applied. Participants were aged 1 to 6 years of age to capture the toddler (1-3 years old) and pre-school (3–6-year-old) age range. To assess the association between the quality of parent-child relationship and the development of empathy in early childhood, only papers that considered at least one measure of the quality of parent-child relationship and a measure of child empathy were included.

2.2.2 Inclusion and Exclusion Criteria

Pre-defined inclusion and exclusion criteria were developed prior to running searches to minimise the risk of selection bias of studies. See Table 1.

Table 1

Exclusion and Inclusion Criteria

Study Item	Inclusion Criteria	Exclusion Criteria
Type of Research	Original/primary research.	Secondary research, e.g., literature reviews.
Publication Requirement	Published in a peer reviewed journal.	Published in a book, non-peer reviewed articles and unpublished work, e.g., dissertations/theses.
Date	Any year.	NA.
Language	No language restrictions.	NA.
Participants	Child participants aged between 1 and 6 years old. Any gender.	Child participants aged under 1 and above 6 years old. Child participants reported to have a diagnosed neurodevelopmental condition (e.g., Autism Spectrum Condition/ Attention Deficit Hyperactivity Disorder) or severe developmental delay.
Methodology/Study Design	Quantitative research.	Qualitative research. Experimental studies, including interventions.
Outcome Variable	Studies that measure an aspect of child empathy, i.e., cognitive (perspective taking), affective (emotion sharing) or behavioural (concern for others' wellbeing).	Studies that solely measure empathy-related constructs, including personal distress, sympathy and prosocial behaviour (e.g., non-care behaviour such as cooperation).
Independent Variable	Studies that include at least one measure of the quality of parent-child relationship (operationalised as attachment security and its antecedents, specifically, parental warmth and sensitivity).	Studies that include measures of specific parenting behaviours and practices, e.g., discipline and control; inductive reasoning, and emotion socialization.

2.2.3 Study Selection

Initial database searches produced a combined total of 4521 records. With duplicates (*n* = 1444) removed, the abstract and titles of the remaining records were screened for relevance using Rayyan, a web-based systematic review tool. Of the 3077 records screened, 3036 were excluded, primarily for not reporting measures of child empathy or parent-child relationship quality. An additional five studies were identified through manual searches of the reference lists. Following full-text assessment of 46 articles, a further 30 articles were excluded. For details of these papers and reasons for exclusion see Appendix C. Overall, 16 articles were deemed eligible for inclusion in the review.

All initial screening and paper selection were carried out by the first author. Subsequent reliability checks were undertaken by an undergraduate student before analysis to ensure agreement on inclusion and exclusion decisions. Agreement was 80%. Any discrepancies were discussed and resolved.

2.2.4 Data Extraction and Synthesis

The 16 selected papers were reviewed systematically, and data were extracted relating to authors, year and country, sample characteristics, study design, measures and main relevant findings. The extracted data is detailed in Appendix D.

2.2.5 Quality Assurance

The included 16 studies were quality assured by the first author using the AXIS critical appraisal tool for cross-sectional studies (Downes et al., 2016). As some studies used a longitudinal design, five additional longitudinal items were added to the checklist. Given the concerns surrounding the use of numerical scores to rate the quality of studies (e.g., Greenland & O'Rourke, 2001), overall judgement on the quality of individual studies was informed by the checklists rather than the total of criteria met on the appraisal tool.

2.3 Results

2.3.1 Sample Characteristics

The selected 16 papers which addressed the association between the quality of parent-child relationship and the development of empathy in early childhood were published between 1979 and 2019. There was a total of 1,904 child participants across all studies, however, there was great variation in terms of sample size between studies (smallest sample size, *n* = 39 and largest sample size, *n* = 661). Overall, 48% of child participants were female. With the exception of one study (Kim & Kochanska, 2018), the quality of parent-child relationship was measured solely between mother-child dyads.

Study samples were predominantly drawn from U.S. populations (*n* = 12), although some studies used samples taken from European countries, including Romania (*n* = 2), the Netherlands (*n* = 1) and Switzerland (*n* = 1). As the dataset is comprised solely from North American and European groups, the reviewed papers lack cultural variability and are therefore vulnerable to ethnocentrism. This is an important consideration as previous research has challenged the assumed universality of attachment theory (Rothbaum et al., 2000) and highlighted that cultural differences exist between parenting styles and child and adolescent outcomes (Chao, 2001; Mandara & Murray, 2002). Moreover, it should also be noted that research paradigms such as the SSP were developed in the Western, educated, industrialized, rich and democratic (WEIRD) societies and thus reflect their norms and values. In this regard, the SSP could be viewed as an imposed etic and argued to have limited utility in assessing attachment across cultures as it subject to inherent bias.

Among the reviewed papers, several studies drew participants from the same samples. (Ştefan & Avram, 2018, 2019) reported two studies using the same dataset. However, given that the papers had distinct objectives and reported different statistical analyses, they were both deemed suitable for review. Similarly, papers from (Murphy & Laible, 2013; Panfile & Laible, 2012) also drew participants from the same pool, but had distinct research aims, methods, measures and analyses. Studies by Robinson and colleagues (1994) and Robinson and Little (1994) used data from a larger longitudinal study (The MacArthur longitudinal twins study) but reported on different aspects of the quality of the parent-child relationship. Three further papers also took their participants' data from another longitudinal study
(The Minnesota longitudinal study of parents and children), but used different measures (Kestenbaum et al., 1989; Sroufe, 1983; Waters et al., 1979).

Table 2

Characteristics of Selected Papers

Number of articles	Grouping criteria	Papers
Measures of the quality of the parent-child relationship		
7	Attachment security measured using the Strange Situation Procedure (SSP, Ainsworth & Bowlby, 1991)	- Bischoff-Kohler, 2000; - Carter et al., 1999; - Iannotti et al., 1992; - Kestenbaum et al., 1989; - Kim & Kochanska, 2017; - van der Mark et al., 2002; - Waters et al., 1979;
2	Attachment security measured using the Attachment Story Completion Test (ACST, Bretherton et al., 1990).	- Ştefan & Avram, 2018; - Ştefan & Avram, 2019;
3	Attachment security measured using the Attachment Q-Sort (AQS, 3.0, Waters & Deane, 1985)	- Kim & Kochanska, 2017; - Murphy & Laible, 2013; - Panfile & Laible, 2012;
2	Maternal sensitivity measured using the Emotional Availability Scales (EAS, Biringen et al. 1990; Biringen & Robinson, 1991; Biringen et al., 1994)	- Kiang et al., 2004; - Robinson and Little, 1994;
1	Maternal sensitivity measured using the revised Erikson scales (Supportive presence, Clarity of instruction, and Sensitivity and timing in instruction (Egeland et al., 1990).	- van der Mark et al., 2002;
2	Maternal warmth measured based on the interactions of a mother-child dyad during a free-play episode	- Iannotti et al., 1992; - Robinson et al., 1994;
1	Maternal warmth measured using the Parenting Practices Questionnaire (PPQ; Robinson et al., 1995)	- Wagers & Kiel, 2019;

Measures of child empathy

5	Empathy measured using a simulated distressed paradigm based on a procedure and coding manual originally developed by Zahn-Waxler and colleagues (1992)	- Kiang et al., 2004; - Kim & Kochanska, 2018; - Murphy & Laible, 2013; - Robinson et al., 1994; - van der Mark et al., 2002;
2	Empathy measured using observations of children's responses to episodes where distress or injury naturally occurred	- Kestenbaum et al., 1989; - Robinson & Little, 1994;
2	Empathy measured using a subscale from the Infant-Toddler Social and Emotional Assessment (ITSEA; Briggs-Gowan & Carter, 2001)	- Carter et al., 1999; - Wagers & Kiel, 2019;
1	Empathy measured using a subscale from My Child, a 100-item questionnaire (Kochanska, DeVet, Goldman, Murray, & Putnam, 1994)	- Murphy & Laible, 2013;
1	Empathy measured using an adapted version of the Index of Empathy (Bryant, 1982)	- Murphy & Laible, 2013;
2	Empathy measured using the Block California 100-item Q-sort deck (Block & Block, 1979)	- Kestenbaum et al., 1989; - Sroufe, 1983

2.3.2 Quality Assurance

The majority of studies had clear aims and objectives, an appropriate design to test hypotheses, and included discussions and conclusions which were justified by the results. However, some of the older studies (Kestenbaum et al., 1989; Sroufe, 1983; Waters et al., 1979) provided insufficient details about statistical methods and basic raw data. None of the included studies used a power analysis to justify sample size. Overall, three studies were judged to be of low quality, four of medium quality, and nine of high quality (see appendix E for further details).

2.3.3 Evidence for the Relationship between the Quality of the Parent-Child Relationship and the Development of Empathy

2.3.3.1 Toddlers – Attachment and Empathy

When examining the association between attachment security and empathy development in toddlers, the evidence-base is sparse. Only four studies included for review examined the relationship between parent-child attachment and child empathy. Using a longitudinal design and employing observational measures, van der Mark and colleagues (van der Mark et al., 2002) measured 125 female toddler's attachment and empathy at two time points, 16 months and 22 months. On both occasions, the researchers measured attachment using the SSP and empathy using the child's responses to their mother's and a stranger's simulated distress. While attachment at 16 months did not predict empathy at either time point, the authors reported that attachment security at 22 months predicted greater empathy towards the stranger (β = .19), when temperamental differences were controlled. In a separate study, (Bischof-Köhler, 2000) found positive associations from longitudinal data for 39 toddlers that examined the relationship between their attachment security to their mothers as measured by the SSP and their empathic concern towards a distressed stranger. Additionally, one paper found that toddler's (22-40 months) attachment security, as rated by trained coders using the AQS, was modestly correlated (r = .24) with concurrent child empathy shown towards simulated parental distress (Play Study; (Kim & Kochanska, 2018).

A further study looked at group differences in maternal rated empathy among 91 toddlers (12-13 months) based on a 3-way distinction of attachment classifications (Carter et al., 1999). While secure children (n = 62) were rated as having the highest levels of empathy followed by the avoidant group (n =12), and then the resistant and disorganised (n = 16) group, the differences only reached modest statistical significance (p < .10). This may be partly attributed to a lack of power given the small cell counts and the uneven numbers in attachment classifications. However, it should be noted that a group difference in empathy was obtained in follow-up tests based on a binary categorisation of secure versus other attachment classifications.

2.3.3.2 Toddlers – Parental Warmth and Sensitivity, and Empathy

Two studies that explored the relationship between parental warmth and child empathy found significant effects. Specifically, Wagers and Kiel (2019) found that self-report measures of maternal warmth were positively related to mother rated child empathy both concurrently (24 months) (r = .31) and longitudinally (36 months) (r =.28) in a sample of 117 toddlers. The authors also reported that maternal warmth predicted empathy (a composite of measures taken at 24 and 36 months) for children with low levels of inhibited temperament (β = .19). Given that both measures relied upon mother reports, it should be noted that there is a risk that common method variance may have led to apparent correlations due to the same respondents completing both assessments.

However, a second longitudinal study also reported that maternal warmth was associated with group differences in child empathy using observational measures. Using a sample of 158 toddlers whose empathy had been previously assessed in a simulated distress paradigm at 14 and 20 months of age and then categorised as either low, middle, or high, (Robinson et al., 1994) found that ratings of maternal warmth at 20 months were associated with group differences between the children with initially high empathy, with those maintaining high empathy having mothers with higher ratings of maternal warmth than those children whose empathy dropped from high to middle.

Two papers exploring the relationship between maternal sensitivity and child empathy in toddlers found significant associations but reported conflicting findings in terms of the differential effects of empathy targets. In one study with a sample of 187 toddlers, maternal sensitivity was positively correlated (r = .24) with empathy shown towards the mother but not towards a stranger (Kiang et al., 2004). Whereas another study with toddlers found no evidence to support an association between maternal sensitivity and empathic concern towards the mother but did report a significant negative association (r = -.24) between empathy towards a stranger and concurrent maternal sensitivity (van der Mark et al., 2002). However, it should be noted that it has been questioned whether the maternal sensitivity task used, which involved mothers

supporting their children to complete a cognitive puzzle, provided ample opportunity for mothers to demonstrate sensitive or affective caregiving (Kiang et al., 2004).

Taken together, the present review identified only a handful of studies that provide data on the association between the quality of the parent-child relationships as measured by attachment security, parental warmth and sensitivity, and children's empathy. Despite this, the available evidence suggests that there is a modest link between these indices of the attachment and maternal warmth, and the development of empathy. In terms of maternal sensitivity, the results appear much more equivocal.

However, given the methodological differences and the mixed results of some of the studies, the relationship between these measures of the quality of the parent-child relationship and toddler empathy warrants further investigation. Firstly, it is still unclear how the intended recipient of empathy affects toddlers' empathic responses. In one study, van der Mark and colleagues (2002) reported that attachment security and maternal sensitivity are associated with empathic responses to experimenters' simulated distress, but unrelated to empathic concern shown towards mothers. Such a finding fits in well with the hypothesis that high empathy for family members may be part of normal development, and that differences in the quality of the parent-child relationship may only surface in more challenging situations with less familiar people (Stern & Cassidy, 2018). Yet it should also be noted that another paper reported that maternal sensitivity was correlated with empathy towards the mother but not the experimenter and argued that the experimenter's simulated pain may have elicited greater levels of personal distress in the toddlers than empathy (Kiang et al., 2004). As it stands, the effect of different empathy targets on toddler's empathic responses is uncertain and needs to be examined.

Secondly, differences in findings were observed across the reviewed papers depending on whether the associations between the quality of the parent-child relationship and toddler empathy were assessed concurrently or longitudinally. In relation to attachment, all significant associations were found concurrently. Among the studies that reported positive links, two studies used a cross-sectional design (Bischof-Köhler, 2000; Kim & Kochanska, 2018) and a third

longitudinal study, which collected data for both measures at two separate time-points, found just one significant concurrent relationship (van der Mark et al., 2002). In direct contrast, in terms of maternal warmth and sensitivity, all positive associations were observed in studies that used longitudinal designs (Kiang et al., 2004; Robinson et al., 1994; Wagers & Kiel, 2019). Among these papers, only Wagers and Kiel (2019) included concurrent data between maternal caregiving and toddler empathy, which was also found to be positively related.

2.3.3.3 Pre-schoolers – Attachment and Empathy

Ten studies provided data on the association between attachment security and empathy in pre-schoolers with nine reporting positive findings and one study reporting non-significant correlations.

Using longitudinal designs, seven studies found positive links with attachment security and later empathy. Among them, three drew data from a larger, more extensive study (the Minnesota Longitudinal Study; MLS), which tracks the impact of early care-giving experiences on development from childhood to adulthood. In an initial study, where 32 toddlers' attachment security was measured at 15 months using an adapted version of the SSP, children who were categorised as secure were rated by researchers in a Q-sort as displaying higher levels empathic concern towards their peers' distress at 3.5 years of age compared to those classed as insecure (Waters et al., 1979). Using the same sample, a subsequent study supplemented the observational measures of empathy with teacher reports on 40 pre-schoolers aged 4. Consistent with the previous finding, analyses revealed that empathic behaviour was more typical of children, who were securely attached at 15 months than those with insecure classifications (Sroufe, 1983). A later iteration of the MLS, which coded children's empathic responses to naturalistic situations where their peers appeared distress in the pre-school environment, consolidated the previous findings. In a sample of 24 pre-schoolers (*M* age = 48.7 months), children who were classified as secure as infants (12 and 18 months) displayed more empathic concern than anxious-avoidant children (Kestenbaum et al., 1989). No statistical differences

were observed between the secure group and the anxious-resistant group. However, some level of caution is necessary as quality assurance deemed the studies to be of lower quality when compared to other studies, primarily due to small sample sizes, basic data and analyses not being adequately described.

The findings of two recent longitudinal studies in a paper by Kim and Kochanska (2018) lend further support for an association between attachment and empathic behaviour in pre-schoolers. In their Parent-Child Study, 101 pre-schoolers' attachment security to their mothers was assessed at 14 months using the SSP and measured again at 22 months using maternal report. Empathic concern towards maternal simulated distress was measured later at 45 months. Preliminary analyses showed that attachment security as assessed by the SSP was significantly correlated to later child empathy (r = .26), but mother reported attachment (was unrelated. A subsequent multiple regression analysis revealed that security in the SSP was a significant predictor of child empathy (β = .39); security as measured by the maternal rated attachment was a non-significant predictor.

Kim and Kochanska's (2018) Family Study, which was in the same paper as the aforementioned longitudinal studies, examined the effect of early attachment organisation with both mothers and fathers on the development of child empathy. In a sample of 99 pre-schoolers, the quality of attachment in mother-child dyads, as assessed by the SSP, was found to be positively related to empathy displayed towards the mother (r = .20). However, the association between attachment quality to fathers and children's empathic responses to fathers' distress was found to be non-significant.

Using a cross-lagged design that measured 62 pre-schoolers attachment security and empathic responses at 42 months and 48 months, Murphy and Laible (2013) reported that mother-rated attachment when children were 42 months positively predicted their empathic concern during a baby-cry procedure at 48 months, even when the influence of earlier empathy had been controlled for (β = .27). It should be acknowledged, however, that this link was not

observed in either of the concurrent relationships. Notably, the authors also tested the direction of the relationship between attachment security and empathy and found that attachment predicted empathy and not the reverse.

In contrast, one study did not detect significant correlations between early attachment at 2 years old (SSP) and children's affective responses to emotive photographs at 5 years (Iannotti et al., 1992). However, Stern and Cassidy (2018) highlighted that empathy tasks that rely upon picture-based scenarios or labelling emotions may result in null findings as they require cognitive or language skills that exceed the current abilities of a pre-schooler.

Three studies using cross-sectional study designs also reported associations between early attachment and empathy. One study, which relied upon mother reports for both variables, reported that they were positively correlated among a sample of 63 pre-schoolers (r = .41) (Panfile & Laible, 2012). However, using a mediation model, the authors also found that this association was mediated by children's emotion regulation. Specifically, more-secure children were better able to regulate their emotions, which, in turn, predicted higher levels of empathy. (Ştefan & Avram, 2018, 2019) reported on two cross-sectional studies, which used the same dataset of 212 pre-schoolers, and measures for attachment and empathy. In their first published study (2018), they sought to replicate the findings found in Panfile and Laible's (2012) path analysis using behavioural measures rather than adult-report. Their results confirmed that attachment security facilitates greater emotion regulation awareness, which is then associated with higher levels of empathy. Their second paper, which explored the direct pathway between attachment and empathy, found that attachment status, as measured by a doll-play procedure, was associated with group differences in affective, cognitive and behavioural empathic perspective-taking tasks (2019).

2.3.3.4 Pre-Schoolers – Parental Warmth and Sensitivity, and Empathy

Two studies included for review examined the association between children's empathy and maternal sensitivity and warmth but reported mixed findings. (Robinson & Little, 1994)

cross-sectional study of 100 pre-schoolers (3 years of age) found maternal sensitivity, which was measured using coded observations of mother-child interactions, was linked with the children's empathic responses to their twins and their mother. In contrast, Iannotti and colleagues (1992) found no longitudinal association between maternal warmth coded during mother-child interactions at 3 years and children's empathic responses to photographs depicting emotional and situational cues at 5 years. As previously discussed, the null findings in the latter study may be attributed to the language skills need in the empathy measure.

In summary, the vast majority of studies using measures of attachment security report a significant association between attachment and empathy. This was true for both studies with toddlers and studies on pre-schoolers. In contrast, when measures of parental warmth and sensitivity were used to assess associations with children's empathy, the findings were less clear. Noteworthy is that far fewer studies which explore parental warmth and sensitivity in children's empathy seem to exist. While links between attachment security and children's empathy were reported in twelve studies for both toddlers and pre-schoolers, it is important to note that the nature of these relationships was different. While the associations between attachment and empathy in toddlers were predominantly found concurrently, the evidence for this relationship in pre-schoolers comes from longitudinal studies with the direction of effect suggesting early attachment predicts later empathy. Although two cross-sectional studies describe significant correlations between attachment and empathy, subsequent mediational analyses reveal that attachment has an indirect effect on empathy, which is mediated by a third variable (e.g., emotion regulation). Methodological differences in the research with toddlers and pre-schoolers also add further complexity to understanding the relationship between the quality of the parent-child relationship and children's empathy. While empathy in toddlers was generally measured in simulated distress paradigms involving mothers and experimenters, studies with pre-schoolers also measured their responses to situations where their peers displayed distress. Therefore, consideration needs to be given to the specific methods that different studies employ as they may impact findings.

2.3.3.5 Mediators and Moderators - Gender

Despite the putative gender differences that exist in the expression of empathy (Robinson et al., 1994), the studies included in this review report little evidence in support of the effect of gender on the association between the quality of the parent-child relationship and the development of empathy. Among the included studies, three papers made no reference to the effects of gender. This included one paper which explored the relationship between attachment security and empathy in toddlers (Carter et al., 1999) and two studies that looked at the same variables in pre-schoolers (Sroufe, 1983; Waters et al., 1979). A further four studies commented that gender was not related to any variables so was not included in any further analyses, including a study investigating attachment and empathy in toddlers (Kestenbaum et al., 1989), two papers examining attachment and empathy in pre-schoolers (Murphy & Laible, 2013; Panfile & Laible, 2012) and a further paper exploring the link between maternal warmth and empathy in toddlers (Wagers & Kiel, 2019).

Four studies did report gender differences, including papers examining attachment and empathy in toddlers (Kim & Kochanska, 2018) and pre-schoolers (Ştefan & Avram, 2018), maternal sensitivity in toddlers (Kiang et al., 2004) and maternal warmth in toddlers (Robinson et al., 1994). Of the four studies reporting on gender differences, three reported that no significant effects were observed when using modelling techniques (Kiang et al., 2004) or gender as a covariate (Ştefan & Avram, 2018), or when controlling for gender (Kim & Kochanska, 2018).

One study did find evidence for an effect of gender on processes contributing to the development of empathy, specifically maternal warmth. In a study where 158 toddlers' empathy was measured at 14 and 20 months, and maternal warmth was rated at 14 months, Robinson and colleagues (1994) found that gender moderated the relationship between maternal warmth and toddlers' empathy. Specifically, they reported that high levels of maternal warmth at 14 months were linked with increases in empathy at 20 months in girls only. They also reported that low maternal warmth led to either significant increases or decreases in boy's empathy at 20 months but had no effect on girl's initial empathy (Robinson et al., 1994).

2.3.3.6 Mediators and Moderators - Temperament

At its most basic, a child's temperament describes the way in which they approach and react to the world around them. For example, temperament can affect children's moods and emotions and how they react to new and novel situations (Rothbart et al., 1994). According to Stern and Cassidy's theoretical attachment model (Stern & Cassidy, 2018), child temperament is a potential moderator between attachment and child empathy. Despite this, only three studies included in this review directly examine whether child temperament interacts with attachment to predict their empathy. The findings are inconsistent.

One paper reported that inhibited child temperament moderates the relation between maternal warmth and empathy. In a longitudinal study with 117 mother-toddler dyads, (Wagers & Kiel, 2019) used maternal reports to assess inhibited temperament, child empathy, and maternal warmth. The authors reported that maternal warmth was significantly related to empathy for children with low levels of inhibited temperament but not for children with either mean or high levels of inhibited temperament. Such results suggest that that maternal warmth fosters empathy only in children who display low levels of fearfulness or anxiety.

In contrast, another study using a mediation model found no evidence to support the hypothesis that temperament is a mechanism that underlies the relationship between attachment and child empathy. In a cross-sectional study with 63 three-year-olds, Panfile and Laible (2012) reported that although mother-rated attachment security predicted maternal reports of negative emotionality, negative emotionality did not predict maternal reports of child empathy and was subsequently removed from the model.

A third longitudinal study by van der Mark and colleagues (2002) used regression modelling to examine how the interplay between behaviour inhibition and attachment affects the development of child empathy. Using an all-female sample of 125 toddlers, observational methods were used to measure children's attachment status (SSP), behaviour inhibition to unfamiliar items, and empathic concern towards their mothers and strangers in a simulated distress paradigm. The authors reported that a more fearful temperament and a less secure

attachment status at 16 months predicted less empathic concern shown towards the experimenter at 22 months.

It should be noted although the studies of Wagers and Kiel (2019) and Panfile and Laible (2012) both used path analyses and relied solely upon maternal report, there are marked differences between them in terms of research methods. Besides measuring different indices of the quality of the parent-child relationship, they also draw upon different age group samples and employ different study designs. Panfile & Laible (2012) conducted a cross-sectional study with pre-schoolers whereas Wagers and Kiel (2019) used a longitudinal design with toddlers. This may potentially account for the conflicting findings as the evidence collected by this review suggests that there is a greater likelihood of finding an association between maternal warmth and empathy in toddlers using a longitudinal study design. Equally, the findings of the present review also suggest that there is only a weak concurrent association between attachment and empathy in toddlers. Moreover, it should be noted that both studies measure different dimensions of temperament (behavioural inhibition and negative emotionality), which may further explain the contradictory results.

Given that too few studies have included temperament as a potential mechanism in the relationship between the quality of the parent-child relationship, it is difficult to establish any meaningful sense of whether temperament is an important factor.

2.3.3.7 Mediators and Moderators – Emotion Regulation

Stern and Cassidy's theoretical model of attachment also considers emotion regulation as a key mechanism of influence in the relationship between attachment security and empathy. Two studies explored emotional regulation as a mediator and one study explored its influence as a moderator. Panfile & Laible (2012) used mother-report measures to assess attachment security, empathy, and emotion regulation competency of 64 pre-schoolers. Children's emotion regulation capacity fully mediated the association between attachment security and empathy. In other words, children with greater attachment security were more able to self-regulate their emotions, which, in turn, predicted greater displays of empathy.

Ştefan & Avram (2018) sought to not only replicate these findings, but also explored whether emotion regulation could potentially moderate the relationship between attachment and empathy. To address the potential risk of bias in only using parent-report measures, Stefan and Avram also used child behavioural observation measures to measure attachment, empathy, and emotion regulation. However, it should be noted that children's awareness of emotion regulations strategies was used as a proxy of emotion regulation rather than a more established measure of emotion regulation.

Similar to Panfile and Laible (2012), emotion regulation mediated the association between attachment security and empathic perspective taking. When emotion regulation was tested as a moderator, the positive association between attachment security and empathy was strongest with children with low levels of emotion regulation awareness while the relationship became non-significant for children with above-average emotion regulation strategies.

Given the significant mediation and moderation models, Ştefan and Avram also tested the indirect pathway from attachment to empathy to see if empathy would be influenced by the level of attachment security. Slopes analysis from the model suggest that the indirect effect is at its strongest when attachment security is below the mean, relatively strong at mean attachment security, and at its weakest when attachment security is high. This suggests that an increase from low to high attachment also represents a gain in emotion regulation awareness, which, in turn, leads to greater empathic perspective-taking.

Whilst acknowledging the limited evidence-base, the aforementioned studies offer some explanation of how attachment security may be associated with empathy via emotion regulation. However, further studies using longitudinal designs and more comparable methodological approaches would need to be carried out to confirm the link and offer a more exact understanding of the nature and direction of the relationship.

2.4 Discussion

2.4.1 Summary

Taken together, the evidence-base exploring the association between children's empathy and the quality of the parent-child relationship among toddlers and pre-schoolers is small and strikingly inconsistent. In the twelve studies which reported the association between attachment and empathy the link tended to be modest in strength (r =.19 to .41) and most evident in the pre-school years. Although five papers found a link between parental sensitivity and warmth, and child empathy, the correlations also tended to be relatively modest (r = .20 to .41). From the papers reviewed, only emotion regulation seems to be able to consistently mediate the link between the quality of the parent-child relationship, specifically attachment security, and child empathy.

Notwithstanding the possibility that no meaningful association exists between the quality of the parent-child relationship and child empathy, there are several possible explanations for the mixed findings in this review. First, developmental changes, including increased language and cognitive sophistication, may mean that the individual differences in how attachment security and its precursors relate to empathy only become apparent as children become older (Hoffman, 2000). Consistent with this assumption, the evidence is strongest for pre-schoolers (Spinrad et al., 2019). Equally, as children become older the amount of time they spend interacting with peers and adults outside of the home environment increases, which invariably provides more opportunities for them to display empathy-related behaviours with different groups of people, including peers (Booth, 1994).

Second, the conflicting findings may be attributed to variations in conceptualisation and measurements of empathy and attachment in child development research. In the literature, there is often a lack of clarity in how empathy is operationalised (Neumann et al., 2015). The studies included in this review all claim to be investigating empathy, yet many of them are measuring distinct aspects of empathy, including affective matching (Iannotti et al., 1992),

perspective taking (Ştefan & Avram, 2018, 2019), and empathic concern (e.g., van der Mark et al., 2002). In a similar vein, many of the assessments of empathy lack sensitivity and specificity, and do not clearly differentiate empathy from related constructs, including prosocial behaviour (Eisenberg et al., 2015). For example, many studies employ a simulated distress paradigm where children's comforting behaviour is used as a proxy for empathy. However, given that empathy is experienced internally, it is not possible to determine whether such behaviour is driven by altruism or by egoistic factors, including concrete reward, social approval, or the elimination of one's own personal distress (Hastings et al., 2007).

Similarly, various measures of attachment conceive attachment classification differently. The SSP, which is widely regarded as the gold standard of attachment, results in a categorical rating of attachment style. In contrast, the ASQ places children on a continuum from securely to insecurely attached and does not classify the type of insecure attachment. As some evidence suggests that children with different classifications of insecure attachment may vary significantly in their displays of empathy when compared to secure children (e.g., Kestenbaum et al., 1989), it is possible that when children with insecure attachments are clustered together such differences go undetected.

Third, methodological constraints and variations across age groups may also explain inconsistencies in findings. Due to toddlers' limited verbal abilities, observational methods are used to assess their children's empathy while adult reported measures, including Q-sorts and questionnaires, are more routinely used with pre-schoolers. Given the inherent bias found in parent- report measures, their ratings of children's empathy may be subject to the effects of social desirability, whereby they present an overly favourable picture of their child that preserves their efficacy as parents (Stern & Cassidy, 2018). Likewise, teachers' ratings of children may be influenced by other individual characteristics, including temperament, cognitive ability, and general behaviour (Findlay et al., 2006).

2.4.2 Limitations and Future Research

Several limitations need to be considered within the context of this review. Firstly, seven studies were cross-sectional which prohibits the ability to draw inferences about the directions of effects between the quality of the parent-child relationship and child empathy. Even with regard to the longitudinal studies, only one study assessed the direction of this relationship using a cross-lagged design (Murphy & Laible, 2013).

Moreover, except for one study (Family Study; (Kim & Kochanska, 2018), all the papers examined the quality of the parent-child relationship in the context of mother-child dyads. It remains unclear whether the quality of relationship children have with their fathers and mothers offer differential and unique contributions to the development of their empathy.

Also, out of the 16 studies included within the review, only two treat empathy as a multidimensional construct (Ştefan & Avram, 2018, 2019). Most studies view it as a unitary concept and report a single, or composite score of empathy. Therefore, it is difficult to discern whether the quality of the parent-child relationship affects separate components of empathy (e.g., cognitive; affective; behavioural) differently.

Equally, the review process itself was not without its limitations. The omission of grey literature and non-published studies may have subjected the review to publication bias. Similarly, although excluding child participants diagnosed with a neurodevelopmental condition (e.g., Autism Spectrum Condition) allows for typical trajectories to be examined, it limits the generalisability of the present findings to clinical populations. A further potential weakness of the review is that its scope is too broad and that it would have benefitted from focusing on a single index of the quality of the parent-child relationship, e.g., attachment security. However, as noted in previous reviews examining the evidence between parent-child attachment and the development of empathy in toddlers and pre-schoolers (e.g., Shaver et al., 2016; Stern & Cassidy, 2018), there is a distinct lack of research in this field. Therefore, it was necessary to take a more

general view of the quality of the parent-child relationship by looking at parental sensitivity and warmth alongside attachment security.

Future research should seek to address these limitations, including greater use of longitudinal designs to better understand the developmental trajectories between the quality of the parent-child relationship and the development of child empathy. Research including fathers, siblings and other caregivers (e.g., grandparents) would also provide a more nuanced understanding of how children's relationships within a wider family network influence the development of child empathy. For example, studies suggest that children with siblings outperform singletons on Theory of Mind tasks (Peterson, 2000) and that the quality of sibling relationships positively affects children's prosocial behaviours (Smorti & Ponti, 2018). Experimental research, involving attachment priming, would also provide greater evidence for a causal link between the quality of the parent-child relationship and empathy (Mikulincer & Shaver, 2001).

Above all, given the general lack of consistency in how core constructs are conceptualised across studies, particularly in relation to empathy, the research field would benefit both from better clarity around how concepts are defined. Similarly, assessment tools that measure empathy with specificity and sensitivity in young children are also much needed. As such, future research should consider the use of physiological and facial indices to measure empathy.

2.4.3 Implications for EP Practice

As has been previously established, children's empathy has implications for their wellbeing and relationships (van Noorden et al., 2015). Based on the findings of the present review, one potential way educational psychologists can foster empathy in children is by promoting better quality relationship with their parents and caregivers. As part of their role, EPs often engage in direct work with parents, including delivering programmes (e.g., Triple P) designed to improve their parenting skills, including the way they relate and communicate with their child (Sanders &

Mazzucchell, 2017). Beyond such parenting programmes, some EPs are also using a relatively new intervention approach called Video Interaction Guidance (VIG), which is a well-evidenced intervention used to enhance parents' relational interactions with their children (McKeating, 2018). In brief, VIG is a form of video feedback "where the clients [parents] are guided to reflect on video clips of their own successful interactions" (Kennedy et al., 2011, p.21). By actively engaging parents to identify 'better than usual' moments in their interactions, parents are supported to develop better quality relationships with their child.

Equally, EPs could also help deliver child empathy interventions to children, parent, and schools that are underpinned by attachment theory. For example, Roots of Empathy (ROE; Gordon, 2009) is an evidence-based classroom programme that aims to increase empathy and prosocial behaviour in children. Central to the programme are classroom visits by a mother-infant dyad, where children witness sensitive and responsive caregiving. This then serves as a model for discussion where children are encouraged to observe the infant's intentions and label their emotions. It is argued this facilitates children's understanding of other people's feelings, which is integral to empathy. To date, evaluation studies examining the efficacy of the program have reported that children who have taken part in ROE have shown improved social and emotional competency, displayed fewer aggressive behaviours, and engaged in more prosocial acts (Schonert-Reichl et al., 2012).

Finally, EPs are well-placed to support children's relationships beyond the home context. Nurture Groups (NGs) is one school-based intervention that aims to offer reparative attachment experiences for children (Hughes and Schlösser, 2014). The main principle of NGs is to teach children social and emotional skills and provide a nurturing environment where children can build positive and trusting relationships with adults. It is hoped that this can in turn revise children's IWMs and help them forge greater attachment security (Bennathan & Boxall, 2013). Although NGs are a school intervention, EPs can help facilitate them by providing support, training, and supervision to school staff responsible for running them.

2.4.4 Conclusion

Although the findings of this review suggest that a modest link exists between broad indicators of the quality of the parent-child relationship and the development of empathy in toddlers and pre-schoolers, it is evident from the results that the relationship is complex and not yet fully understood. From a theoretical perspective, there are strong grounds for the existence of such an association, but it is evident that further research is needed to firmly establish the exact strength and nature of this relationship.

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Chapter 3 Associations between Childhood Maltreatment and Peer Relationships: the Role of Empathy

Abstract

In the literature, it has been well-established that children who have experienced maltreatment are at greater risk of impaired social development. Research also shows that, relative to non-maltreated peers, physically abused or neglected young children are more vulnerable to peer relation difficulties. This susceptibility is of concern, not only as there is preliminary evidence to suggest that positive peer relations can act as a potential protective factor, but also peer rejection is a known risk factor for poor adjustment in adolescence and adulthood. Taken together, peer relationships appear to be critical contexts for development and are likely important mediators or moderators of development and adjustment for children who have been maltreated. One psychological ability believed to be implicated in the developmental trajectory of maltreated children is empathy and it has been posited that it may act as a potential mediator between childhood maltreatment and problematic peer relations. To explore this association, this study used online adult-report questionnaires to collect data from parents of adopted children with a history of maltreatment and children living with their biological parents without such a history (6-11 years of age). Scales included a parent-report measure of child empathy and a parent-report measure on the quality of children's peer relations. Further data was also collected from a sub-sample of children who completed additional behavioural measures of empathy and a peer relationships measure. Findings show that maltreated children scored significantly lower on parent-report measures of empathy and scored significantly higher on parent-report peer relationship problems than non-maltreated children. The behavioural data showed similar group level differences for child empathy, however, no differences were found for child-report peer relations. In terms of the proposed mediational model, empathy was found to mediate the relationship between maltreatment and poor peer relations. These findings are encouraging as they suggest that interventions that target empathy may help maltreated children to enjoy more positive and satisfying relationships with their peers.

Chapter 3

"*Could a greater miracle take place than for us to look through each other's eyes for an instant*?"

Henry David Thoreau, an American Essayist

3.1 Introduction

3.1.1 Maltreatment

Child maltreatment has been previously defined as "any act or series of acts of commission or omission by a parent or other caregiver that results in harm, potential for harm or threat of harm to a child" (Leeb et al., 2008). In general, four categories of maltreatment have been distinguished: physical abuse, sexual abuse, emotional abuse, and neglect (Fallon et al., 2020). In the context of the parent-child relationship, it has been contended that maltreatment represents one of "the most profound failures of the environment to present opportunities to foster normal developmental processes" (Cicchetti & Toth, 2004, p. 414). Research has shown that early exposure to maltreatment can disrupt children's emotional, cognitive and physiological development and its effects can endure across the life span (Lansford et al., 2002; Norman et al., 2012). Critically, repeated developmental disruptions have been linked with increased risk for psychopathology (Gilbert et al., 2009; Vachon et al., 2015).

To explain the mechanisms that link child maltreatment and the emergence of maladaptation and psychopathology, McCrory and colleagues (2017; 2015) have proposed the theory of Latent Vulnerability. The model proposes that early adversity results in measurable alterations in neurocognitive systems, including threat processing, reward processing, emotion regulation, and executive control, which reflect calibrations to neglectful or abusive environments. A central tenet of the model is that these changes can be adaptive and confer short-term advantages within a maltreating environment. However, it is also suggested that within the context of a 'normative' environment, such adaptations may no longer be beneficial and may instead act as potential vulnerabilities (McCrory et al., 2017). For example, being hyper-vigilant to threat might be highly adaptive within an abusive caregiving environment, however,

this increased detection to threat may become a vulnerability to risk in a different context, where a bias towards threat may impede a child's ability to make and keep friends. In this regard, changes in brain structure and function following abuse and neglect can have significant implications for children's day-to-day interactions and relationships.

Therefore, it is unsurprising that among the negative developmental sequelae of abuse and neglect in childhood, difficulties with social and interpersonal relationships have been reported (Trickett & Negriff, 2011). In the model of latent vulnerability, McCrory and colleagues (2015; 2017) label this effect as *social thinning* – whereby changes in threat processing, reward systems, and executive function render it more difficult for children to establish and maintain friendships.

3.1.2 Peer Relations

Peer relations serve as key contexts for children's development. In contrast to parent-child or teacher-child relations, peer relationships are more balanced as they are voluntary and social power and abilities tend to be shared more evenly (Hartup & Stevens, 1999). Given the egalitarian nature of peer interactions, it has been argued that they provide children with unique opportunities to learn personal skills (i.e., emotion understanding, self-regulation, moral reasoning) and interpersonal skills (i.e., cooperation, empathy, problem solving, Bolger et al., 1998; Ladd et al., 2006). Positive peer relationships have also been linked to a range of outcomes across child and adolescent development (Brown & Larson, 2009; Parker et al., 2015). These include concurrent and longitudinal associations with school engagement and attainment (Blatchford & Baines, 2017; Juvonen et al., 2012), concurrent links with better mental health and wellbeing in adolescence (Roach, 2018), and greater work competence and relationship satisfaction in adulthood (Collins & van Dulmen, 2006). In contrast, peer rejection and low peer acceptance have been found to be associated with poor emotional and behavioural adjustment in childhood, adolescence, and adulthood, including aggression, depression, and suicidal behaviours

(Angelakis et al., 2020; Anthonysamy & Zimmer-Gembeck, 2007; Fitton et al., 2018; Humphreys et al., 2020).

Compared to non-maltreated children, maltreated children are at increased risk of experiencing difficulties with peers and friends (Bolger et al., 1998; Bolger & Patterson, 2001; Kim & Cicchetti, 2010). Children who have experienced physical abuse or neglect are more likely to be unpopular, socially unaccepted, and to experience peer rejection (Bolger & Patterson, 2001; Salzinger et al., 1993; Shonk & Cicchetti, 2001). For instance, in a prospective cohort study, researchers measured peer rejection, aggressive behaviour, and social withdrawal among a sample of 107 maltreated children and a matched-comparison group. Their results indicated that the maltreated group were at greater risk of being repeatedly rejected by their peers across childhood and adolescence (Bolger & Patterson, 2001).

Several theoretical perspectives offer explanations for the association between maltreatment and poor peer relations. Drawing upon attachment theory (Bowlby, 1988), children with secure attachments form mental representations of themselves as people who are worthy of love and respect, and of others as trustworthy and reliable (Ainsworth & Bowlby, 1991). In the case of maltreated children, their early caregiving experiences can lead them to develop an insecure attachment style based upon negative models of self-other relationships, and a low concept of self which, in turn, increases the risk of poor peer experiences (Bowlby, 1982; Main & George, 1985).

Evidence from meta-analyses have found significant associations between attachment security and peer relations in childhood and adolescence (Dykas et al., 2008; Pallini et al., 2014; Schneider et al., 2001). Schneider, Atkinson, and Tardif (2001) carried out a meta-analysis of 63 studies on the link between attachment security and peer relations in childhood. The authors reported an overall effect size of (r = .20), which was fairly consistent across papers. They also added that the magnitude of effect sizes was greater in middle childhood and adolescence than in the pre-school years and that the effects were larger for close friendships than for other parts of

peer relations. A subsequent meta-analysis of 44 studies found similar findings and reported a small to moderate overall effect size (*r* =.19) between the parent-child attachment and peer relations (Pallini et al., 2014)

Crick and Dodge's (1994) model of social information processing also offers a potential explanation for the link between childhood maltreatment and problematic peer relations. The theoretical framework proposes that children's responses to social situations are determined by earlier experiences and social knowledge. Based upon prior interactions, children develop cognitive schemas, which help them to make sense of, and act in, social situations. For maltreated children, a history of abuse may lead them to misinterpret ambiguous and benign cues from their peers as hostile and threatening, which may prompt aggressive responses (Keil & Price, 2009). In an empirical study with a sample of 309 4-year-old children, Dodge and colleagues (1990) provided evidence for this pathway when they demonstrated that the relationship between childhood maltreatment and teacher-rated aggression was mediated by biased and maladaptive patterns of social processing, including "a failure to attend to relevant cues, a bias to attribute hostile intentions to others, and a lack of competent behavioural strategies to solve interpersonal problems" (p.1682). These findings were subsequently reproduced in a later study by the same authors even when confounding factors were controlled for (e.g., child factors), although they were unable to replicate the link for hostile attributions (Dodge et al., 1995).

However, it should be noted that successful development of peer relations and friendships can also act as protective factors and potentially buffer against the effects of maltreatment (Bolger et al., 1998; Powers et al., 2009). It has been suggested that when a child's needs are not being met in a particular relationship context (e.g., parent-child relationship) peer relationships can act as a substitute for social and emotional support (Cicchetti et al., 1992), provide opportunities to practise and improve social skills (Howes & Espinosa, 1985), and help develop more appropriate and adaptive social behaviours by having positive interaction with peers (Price, 1996).

In summary, peer relationships appear to be critical contexts for development and are likely to be important mediators or moderators of development and adjustment for children who have been maltreated.

3.1.3 Maltreatment and Empathy

Empathy can be broadly defined as "an emotional response that stems from another's emotional state or condition and that is congruent with the others' emotional state or situation" (Eisenberg & Strayer, 1987). It is argued to be a multi-faceted construct that is comprised of cognitive, affective, and motivational components (Decety, 2015). Cognitive empathy describes the ability to understand what others are thinking or feeling, without necessarily 'resonating' with the observed emotion (Blair, 2005). In contrast, affective empathy refers to the ability to vicariously experience and share the emotional states of others (Batson et al., 1991). The motivational dimension of empathy is characterised by concern for others' welfare and a desire to relieve their distress (Kiang et al., 2004).

Empathy is widely regarded as a "core dimension of human nature" (Stern & Cassidy, 2018) as it plays a central role in maintaining positive social relationships across development, acting as a driver for both moral and prosocial behaviour (Decety & Cowell, 2014; Sze, Gyurak, Goodkind, & Levenson, 2012; Telle & Pfister, 2015). Equally, low empathy has been found to contribute poor social functioning across the lifespan. In childhood, it is linked to poor peer relationships, bullying behaviour, and victimisation (Denham et al., 2003; van Noorden et al., 2015). In adolescence, deficits in empathy can manifest in aggression and anti-social behaviour (Cohen & Strayer, 1996; Euler et al., 2017).

Although the negative impact of maltreatment on empathy development has been highlighted (e.g., Luke & Banerjee, 2012, 2013), there remains a dearth of research in this area (Locher et al., 2014). In terms of empirical evidence with children, Main and George (1985) carried out a study with 20 toddlers (aged 1 to 3 years) in a pre-school setting, where they

compared the behaviours of children of maltreated against non-maltreated children. The authors reported that children who had experienced physical abuse were less likely to respond to their peers' distress with empathy or concern than non-abused children. By contrast, their behaviour was typically marked by fear, anger, and aggression.

Despite the paucity of research, indirect evidence lends support to a link between maltreatment and empathy. Specifically, there is robust evidence that socio-emotional competencies regarded as integral to the development of empathy are impaired in maltreated children, including emotion recognition and emotion regulation (Luke & Banerjee, 2013).

Emotion recognition, the ability to recognise emotions from behavioural cues, e.g., facial expressions, gestures, tone of voice, is critical to the development of empathy (Eisenberg et al., 2006). Research has reliably shown that maltreated children demonstrate less accuracy in recognising emotions than non-maltreated peers (Camras et al., 1983; During & McMahon, 1991). Additionally, in a series of experiments with pre-schoolers, Pollak and colleagues (2000, 2002, 2009) demonstrated that differences also exist between maltreatment subtypes. The researchers reported that children who have been subjected to physical abuse show a response bias for angry facial expressions and require less perceptual information to recognize angry expressions. Conversely, they observed that children who had experienced neglect had greater difficulty discriminating between emotions when compared to non-maltreated children or physically abused children.

Similarly, emotion regulation, the ability to handle, modulate, and inhibit emotional expression, has also been emphasised as a prerequisite for experiencing empathy (Eisenberg, 2000). It has been argued that a child's ability to regulate their emotions can determine whether they experience empathy or personal distress in response to others' distress (e.g., Eisenberg, 2000). More precisely, researchers have suggested that children with better emotion regulation abilities can redirect their attention away from their own distress to that of others, which allows space for empathic responses (Panfile & Laible, 2012). Several studies have provided empirical

evidence in support of the link between emotion regulation and empathy across childhood (e.g., Peterson et al., 2018) and adolescence (e.g., Lockwood et al., 2014). For example, in a longitudinal study Laible and colleagues (2014) reported that high levels of self-regulation in the pre-school years predicted higher levels of empathy in middle childhood, whereas poor regulations skills were associated with fewer empathic behaviours.

Attachment theory also offers a theoretical explanation for a link between maltreatment and child empathy. It has been argued that empathy develops in the context of a secure, nurturing parent-child relationship and that individual differences in empathy may emerge as result of the quality of the attachment (Shaver et al., 2018). To explain how attachment security relates to empathy, Stern and Cassidy (2018) have proposed a theoretical framework which outlines potential mechanisms that may underlie this association. In the model, they suggest children develop mental representations, also known as internal working models (IWMs), based upon the early patterns of interaction with their primary caregiver, which then shape their understanding and expectations of self-other relationships. More specifically, Cassidy and Stern suggest that IWMs contain relational scripts of how to respond to others in social situations. In relation to children with secure attachments, they argue that repeated experiences with a responsive caregiver offering comfort to their distress provides a blueprint of how caregiving typically unfolds. They add that these relational scripts then serve as a 'how to' manual when faced with other people in distress.

In the context of maltreated children, research suggests exposure to inconsistent and pathological care results in insecure IWMs where they develop negative expectations about others, as well as mental representations of themselves as unlovable and inadequate (Cicchetti & Doyle, 2016). When faced with others' distress, maltreated children with insecure attachments may respond with "self-concern, self-protection, and defensive rejection of others' needs" (Shaver et al., 2016, p. 880), as their experiences of abuse and neglect have constructed a relational script where the focus is on the self rather than the other.

In the framework, the authors also put forward that attachment security develops children's emotional and self-regulation competencies, which, in turn, allows them to respond to others' distress without becoming overwhelmed by their own feelings of distress. Cassidy and Stern propose that emotional and self-regulation capacities emerge as the result of repeated experiences of attunement and co-regulation, which are known to contribute to secure attachment. In the case of maltreated children, it has been argued that they typically experience impoverished social and emotional environments, which can prevent the healthy development of emotional and self-regulatory skills (Cicchetti & Ng, 2014). Studies have shown that abusive or neglectful mothers, relative to non-maltreating mothers, are less responsive to their child's emotional displays and are less likely to offer comfort, with the consequence being that maltreated children demonstrate poorer emotional regulation (e.g., Edwards et al., 2005; Shipman et al., 2007).

Stern and Cassidy also state in their theoretical model that a range of within-child factors (i.e., temperament) may moderate the relationship between attachment and the development of empathy. Research has shown that individual differences in language and cognition may be related to the development of empathy in children. Several studies have shown that children's language skills play a role in their empathy-related responding (e.g., Girard et al., 2017; Ornaghi et al., 2017). For instance, in a longitudinal study with pre-schoolers, Ensor and colleagues (2011) reported that a child's verbal ability measured at 2, 3 and 4 years of age predicted greater levels of empathy and prosocial behaviour across all time points. Similarly, children's executive functions, specifically working memory and attentional control, have also been related to children's empathic concern for others. Research has shown that better executive control is associated with empathic attitudes and behaviours. A recent meta-analysis by Yan and colleagues (2020) has provided results that suggest that executive functions such as inhibitory control, working memory, and cognitive flexibility all have small to moderate correlations with empathy.

In relation to non-maltreated children, children who have been subjected to neglectful and abusive environments tend to score significantly lower in tests of language and cognitive ability (e.g., Spratt et al., 2012). For example, a study with 33 pre-school aged children with a history of neglect achieved lower scores on measures of expressive vocabulary and the production of syntactic structures compared to non-neglected children, even after controlling for age and their mother's cognitive ability (Eigsti & Cicchetti, 2004). Likewise, a prospective study found a significant relationship between child maltreatment and delayed cognitive development in a sample of 352 extremely low birth weight infants, even after adjusting for perinatal and parental risk factors (Strathearn et al., 2001).

3.1.4 Maltreatment, Empathy, and Peer Relations: A Mediational Model

Given the aforementioned theoretical considerations and the literature reviewed above, there are strong grounds to believe that neglect and abuse may impair the development of children's empathy and that this, in turn, will have an adverse effect upon their peer relations. In other words, empathy may mediate the relationship between child maltreatment and poor peer relations. Although a mediational model has yet to be tested empirically, Luke and Banerjee (2012) have examined the viability of such a model using qualitative methods. The authors conducted focus groups and semi-structured interviews with a set of 10 fosters carers with the primary aim of determining whether their experiences with maltreated children upheld a conceptual model in which difficulties in social understanding and empathy mediate the relationship between maltreatment and problematic peer relations. Following a thematic analysis, the authors reported that several themes around empathy and peer relations emerged from the data. There was general consensus among the carers that the children they had looked after struggled to maintain positive relations with their peers. This was largely attributed to inappropriate behaviours (e.g., stealing food), difficulties with managing emotions, and control seeking behaviours with other children. Importantly, the carers were also keen to stress the

belief that these children want to have positive relationships with friends and family but lack the skills to do so.

Regarding empathy, over half the carers commented that the children they looked after showed a lack of empathy to others' emotional situations and cited difficulties with recognising and understanding emotions, and taking the perspective of others as contributing factors. Additionally, a significant number of carers reported their belief that a lack of empathic understanding among the children they looked after played a causal role in the development and maintenance of their problematic peer relations.

These qualitative findings of Luke and Banerjee offer tentative support for a mediational model whereby empathy is the mechanism that links child maltreatment to poor relations, however, it is clear that empirical studies need to be carried out to evaluate this theoretical model.

3.1.5 The Present Study

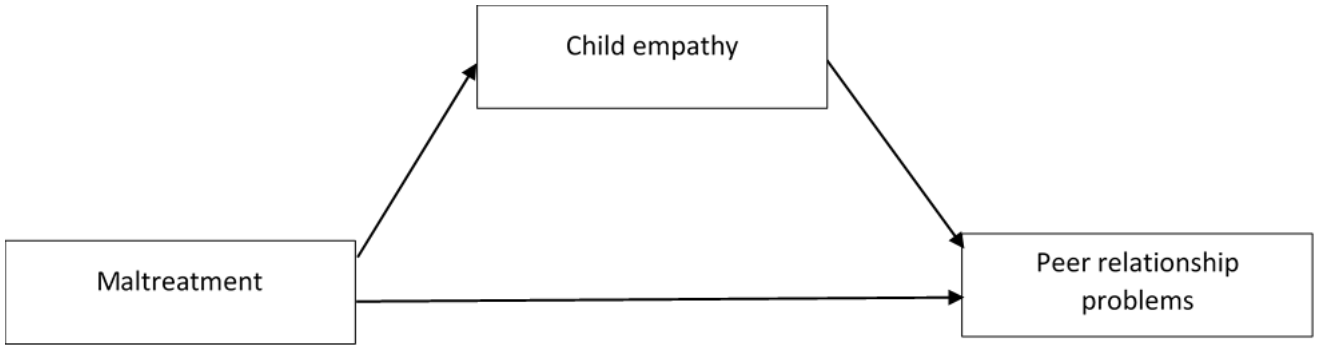
The present study seeks to build upon the work of Luke and Banerjee (2012) and empirically test their proposed mediational model which sets out that the relationship between child maltreatment and subsequent peer relation problems is potentially mediated by a lack of empathy (see figure 1). In this study, empathy will be operationalised as a multidimensional concept and will employ measures that assess both cognitive and affective components of empathy. Similarly, it will define peer relations as the relationships within the peer group, including peer status, peer acceptance, and peer rejection, as well as dyads, such as reciprocated friendships and the quality of friendships (Maunder & Monks, 2019).

Middle childhood is an important developmental period for peer relations as it marks a time that a child's social world begins to shift towards their peers, friendship groups are formed, and peer acceptance takes on greater significance (Maunder & Monks, 2019). Consequently, the present study will focus upon children aged between 6 and 11 years of age. In practical terms,

middle childhood also a represents a stage where children can make accurate judgements about their emotions and peer relations (e.g., Durbin, 2010; Maunder & Monks, 2019).

Figure 3

A Conceptual Mediation Model. The Link between Maltreatment and Peer Relationship Problems is Mediated by Empathy.



3.1.6 Aims

To address gaps in the literature, the current study first aims to replicate the relationship between childhood maltreatment and poor peer relations. Secondly, it will look to examine whether the putative link between child maltreatment and impaired empathy can be established. Finally, it aims to formulate a mediational model to clarify the mechanisms underlying the association between maltreatment and poor peer relations, specifically, whether empathy mediates the pathway.

3.2 Methods

3.2.1 Hypotheses

The present research sets out to test three hypotheses that inform the proposed mediational model. Firstly, it is anticipated that maltreated children will have poorer peer relations, relative to non-maltreated peers, across self and parent-report measures. Secondly, it is expected that children who have been subjected to maltreatment will achieve lower levels of empathy, including all its sub-components (i.e., cognitive empathy, affect empathy, and

motivational empathy) across behavioural and parent-report measures. Finally, it is hypothesised that children's empathy scores will mediate the association between maltreatment and problematic peer relations.

3.2.2 Design

This research was part of a larger-scale study within the University of Southampton's Centre for Innovation in Mental Health (CIMH) Adversity Research Project (CARE). The CARE research team is comprised of two supervisors, four doctoral students, and a group of undergraduate researchers and research assistants. Recruitment was shared among the doctoral students and a variety of data pertaining to different research foci was collected. This paper describes the key aspects relevant to the author's research project and research questions.

3.2.3 Participants

The total sample included of 111 children, aged between 6 and 11 years (M= 8.73 years, SD = 1.64; 48 girls). The maltreated sample included 29 children (21% girls) who had experienced neglect or abuse in either infancy or early childhood and had been subsequently adopted between 1 month old to 7.42 years. The non-maltreated group included 82 children (55% girls) who had no reported history of maltreatment and had remained living with their biological parents since birth.

Demographics of the current sample are presented in Table 3. No significant differences between groups were observed for child sex, child age, child's cognitive ability, and caregiver sex. Sibling participants that met the inclusion criteria were permitted. In cases of siblings, parents were asked to complete questionnaires for each participating child.

Within the study, a sub-sample of children (*n* = 21) from both non-maltreated (*n* = 7, *M* age = 8.46 years, 71% girls) and maltreated (*n* = 14, *M* age = 9.59, girls 57%) groups also completed additional behavioural and cognitive assessments via online videoconferencing

(Microsoft Teams). These included a self-report questionnaire measure for peer relations (PROMIS), a cognitive assessment (WASI-II), and an empathy behavioural measure (KEDS).

In summary, behavioural data was obtained for 21 children and 109 parent-report questionnaires were collected from our total child sample (*n*=111) as two children with behavioural data did not have corresponding parent-report questionnaires.

Table 1

Demographic Details of Participants by Group

Demographic Variables	Total (*n*)	Group	
		Maltreated (*n*)	Non-maltreated (*n*)
Gender of child			
Male	63	13	50
Female	48	16	32
Age of child (Years)			
6	18	3	15
7	24	4	20
8	19	8	11
9	17	3	14
10	18	5	13
11	15	6	9
Number of foster carer placements prior to adoption			
0		1	-
1		12	-
2		3	-
3		1	-
4		0	-
5		1	-
Missing		11	-

Gender of caregiver			
Male	15	5	10
Female	96	24	72
Age of caregiver (Years)			
20 – 29	5	-	5
30 – 39	38	5	33
40 – 49	47	15	34
50 – 59	11	8	3
Missing	8	1	7
Highest level of parent education			
GCSE/O levels	10	4	6
A levels	6	-	6
Vocational training	10	2	8
University degree	48	9	39
Higher degree	29	13	16
Missing	8	1	7

3.2.4 Recruitment

Both groups were recruited through social media advertisements, primary schools, local authority newsletters for families, adoptive agency newsletters, and social media platforms. The recruitment advertisements targeted parents of adopted and biological children with and without a history of maltreatment. Specifically, parents of adopted children were invited to participate if their child had a history of abuse and neglect, and parents of biological children were invited to participate if their child had no history of abuse and neglect. Additional exclusion criteria included a suspected diagnosis of Fetal Alcohol Syndrome and children outside of the age range of six to eleven years old.

3.2.5 Measures

3.2.5.1 Parent-Report Empathy - Griffith's Empathy Measure (GEM; Dadds et al., 2008)

The Griffith's Empathy Measure is a 23-item parent report standardised assessment of child empathy. Respondents are asked to rate their level of agreement on a 9-point Likert scale ranging from 'Strongly Disagree (-4)' to 'Strongly Agree (+4)'. It is comprised of three subscales: cognitive empathy, affective empathy, and a total empathy score. A higher subscale score represents a higher level of child empathy. The GEM has been shown to have good test-retest reliability and convergent validity with the Bryant Index for Empathy (Bryant, 1982), a 22-item self-report measure of empathy for children and adolescents (r = .412) (Dadds et al., 2008). Cronbach's alphas for all subscales were in an acceptable to good range for this study (.76 to 87).

3.2.5.2 Child-Report Empathy - Kids Empathic Development Scale (KEDS, Reid et al., 2013)

The Kids Empathic Development Scale is a standardised multidimensional measure that assesses cognitive, affective and behavioural aspects of empathy. The test was administered to children online via video conferencing. Initially, children are asked to assign pre-determined emotion labels (sad, happy, angry, surprised, afraid, and relaxed) to ideograms, depicting a range of facial expressions. Subsequently, children are presented with 12 picture-based scenarios and asked to make affective inferences for faceless characters. Using the ideograms, children are then asked to ascribe one of the pre-identified emotions to each character in the image, by verbally labelling the emotion depicted (e.g., How do you think the boy feels?). Next, children are asked a series of test questions to assess their cognitive inference (e.g., Why do you think this boy feels happy?) and behavioural inference (e.g., What would you have done if you were that boy?). Subscale scores are derived for each aspect of empathy assessed by summing scores across the 12 images. Higher scores in each subscale represents a higher level of child empathy.

The KEDS has been validated for use with children between 7 and 10 years of age (Reid et al., 2013), and been modified for use with pre-schoolers (Ştefan & Avram, 2019) and used

effectively with vulnerable groups, such as preterm 7-year-olds (Campbell et al., 2015). Cronbach's alpha in this study ranged from questionable to good (.64 to.85).

3.2.5.3 Parent-Report Peer Relations - Friendships and Social Skills Test (FASST; Whiteside et al., 2016)

The Friendships and Social Skills Test is a 35-item parent report measure covering the quality of a child's peer relationships, positive and negative peer-directed behaviours, as well as the level of parental concern expressed about a child's social functioning on a 4-point Likert scale, ranging from (0) 'Never' to (5) 'Always'. The measure is made up of 5 subscales: pro-social skills (e.g., *"When playing with other children, my child waits his/her turn"),* negative social behaviours (e.g., "*My child loses his/her temper with other children"*), child acceptance (e.g., *"My child has children from school or extracurricular activities come over to play"),* child rejection ("*Other children call my child names"*), and the level of concern expressed about a child's social functioning (e.g., *"I am concerned about my child's social relationships").* For the scales, all positive items are reversed scored so that higher scores indicate more concerns on all scales. Specifically, a high score on child acceptance indicates that the child is not accepted by other children very often, and a high score on child rejection indicates that the child is rejected often. Internal consistency of all subscales ranged from acceptable to excellent (.82 to .93).

3.2.5.4 Child-Report Peer Relations - Patient-Reported Outcomes Measurement Information System (PROMIS®) Pediatric Peer Relationships Scale v2.0 (PROMIS; Dewalt et al., 2013)

The PROMIS Pediatric Peer Relationships Scale is a unidimensional, child self-report measure that assesses the quality of a child's friendships and their sense of connectedness with his or her peers. Children are asked to respond to 15-items (e.g., '*I feel accepted by other kids my age'*) on a 5-point Likert scale ranging from 'Never (1) to 'Almost Always' (5). Ordinarily, children are asked to consider their responses over the past seven days. However, given lock down restrictions and school closures arising from the global pandemic, children in this study were asked to assess their peer relationships based on their experiences prior to COVID-19. All items are positively framed, and higher total scores indicate better quality of peer relationships.

The scale has been found to be a valid assessment tool with children with autism (Toomey et al., 2016) and in native Dutch-speaking children (Luijten et al., 2021). The Cronbach's alpha for the scale was found to be good (.80).

3.2.6 Cognitive Ability – WASI-II

The Wechsler Abbreviated Scale of Intelligence – Second Edition (WASI-II; Wechsler, 2011) is a standardised measure of cognitive ability, which is comprised of four subtests: Vocabulary (31-item); Block Study (13-item); Similarities (24-item), and Matrix Reasoning (30-item). The test can be administered in either a four or two subtest form. In the present study, the scales for Vocabulary and Matrix Reasoning were administered. The Vocabulary assessment examines word knowledge, verbal concept formation, fund of knowledge and degree of language development. The Matrix Reasoning assessment measures spatial ability and perceptual organisation. Raw scores for each subtest are computed into *T*-scores (M=50, SD=10) and a composite Full-Scale 2 score is derived from the sum of their *T*-scores (M=100, SD=15). The composite score was compared between groups.

3.2.7 Statistical Procedure

Following APA recommendations (Williams, 1999), the data were checked for normality by visually inspecting histograms and Q-Q plots. Similarly, boxplots were examined for outliers (Field, 2013). Overall, the data for the parent and child report empathy appeared normally distributed. Although some outliers were detected in the parent -reported affective empathy subscale, they were retained on the basis that they appear to represent natural variation. In relation to homogeneity of variance, the different lengths of boxplots for each group on child report total empathy suggests unequal variance. Accordingly, subsequent analyses for child report total empathy have been reported using non-pooled variances.

Equally, the data for the child report peer relationship problems appeared to be normally distributed and the variance across both groups seemed to be relatively equal.

In contrast, the data for the parent report peer relationship problems violated assumption of normality, outliers and suggested unequal variance. Visual inspection of histograms suggested that the distribution of scores on the peer rejection and expressed parental concern scales were positively skewed for both groups. Additionally, the scores for the non-maltreated group on negative social behaviours also appeared right skewed. Outliers were also identified in both the expressed parental concern scale and the peer relationship problems total. To establish whether the inclusion of the outliers would materially affect statistical analyses, the results of paired-samples *t*-tests with and without outliers were compared. No differences were found on either *t*-test, so all outliers were retained in the dataset. Boxplots also suggested that there were unequal variances across groups for expressed parental concern, peer rejection, negative social behaviours, and peer relationship problems total (see appendix F). As such, all reported statistics and degrees of freedom are based upon non-pooled variances (see appendix G).

Overall, the analysis consisted of three stages. First, a series of independent-samples *t*-tests were carried out to assess differences between maltreated and non-maltreated groups on measures of child empathy and of peer relations (i.e., to test hypotheses one and two). Given that some of the variables had non-normal distributions, non-parametric tests (Mann-Whitney U Tests) were also conducted. As the findings from non-parametric analyses yielded comparable results to those from the parametric analyses (see Appendix H) only the findings from parametric analyses are reported below. Next, Pearson's bivariate correlations were run between the constructs of child empathy (i.e., affective, cognitive, and behavioural empathy) and peer relations (i.e., child acceptance, child rejection, parental expressed concern, negative social behaviours, and prosocial behaviours), using both parent and child report variables. Using Cohen's criteria for effect sizes, $r > .50$ signifies a large effect, $r > .30$ a medium and $r > .10$ a small effect (Cohen, 1988; Field, 2013). This analysis subsequently informed the third stage of analysis, the testing of mediation models. An initial simple mediation model was constructed to establish whether parent reported child empathy mediated the pathway between maltreatment and

parent reported peer relationship problems. All *t*-test and correlational analyses were run using SPSS (v27) and mediation models using (v3.5, Hayes, 2012).

3.3 Results

3.3.1 Descriptive Statistics

Table 4 presents the descriptive statistics and psychometric properties of the child empathy variables and Table 5 shows the descriptive statistics and psychometric properties of the peer relations variables. No gender effects were found for parent report data for either child empathy or peer relationship problems. Accordingly, all subsequent analyses using parent report data were run for the total sample. In contrast, there were gender effects on child reported behavioural empathy and total empathy. When compared to girls, boys scored higher on behavioural empathy ($t(19) = 3.22$, p = .004, $d = 1.42$), and total empathy ($t(19) = 2.81$, p = .011, $d = 1.24$).

Also, there were group differences between non-maltreated children ($n = 14$) and maltreated children ($n = 7$) on two-sub-test measure of cognitive ability of the WASI-II. Non – maltreated children ($M = 114.36$, $SD = 14.92$) scored higher than maltreated children ($M = 95.00$, $SD = 18.12$), $t(19) = 2.61$, $p = .017$, $d = 1.21$.

Table 4

Descriptive and Psychometric Properties of the Child Empathy Variables

	Total			Boys			Girls			
Variable	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*α*
Parent report										
Affective	105	53.00	5.87	57	51.71	9.71	48	52.21	8.30	.67
Cognitive	105	40.16	6.75	57	39.18	8.28	48	37.22	10.20	.76
Total	105	148.63	15.82	57	144.08	24.40	48	144.48	24.06	.87
Child report										
Affective	21	22.58	3.98	9	24.11	3.48	12	21.17	4.04	.68
Cognitive	21	46.89	6.34	9	49.78	6.28	12	44.75	5.64	.75
Behavioural	21	28.21	3.61	9	30.67	2.12	12	26.58	3.32	.64
Total	21	103.00	11.40	9	110.00	10.20	12	97.75	9.64	.85

Table 5

Descriptive and Psychometric Properties of the Peer Relations Variables

	Total			Boys			Girls		
Variable	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	α
Parent report										
Acceptance	100	10.32	4.33	55	8.78	3.83	45	9.40	3.88	.91
Rejection	99	.74	1.37	54	1.69	2.14	45	1.74	2.94	.92
Parental Concern	100	1.16	2.09	55	2.93	3.81	45	2.36	3.89	.93
Negative behaviour	100	1.26	1.24	55	2.79	2.34	45	2.36	3.89	.82
Prosocial skills	99	4.78	2.82	54	6.24	3.72	45	5.89	3.02	.82
Total	98	18.25	6.17	53	22.20	11.17	45	21.86	11.73	.92
Child report										
Total	21	61.61	7.10	9	64.33	4.72	12	59.58	8.06	.79

3.3.2 Differences between Maltreated and Non-Maltreated Children

3.3.2.1 Empathy

Table 6 shows the results of *t*-tests comparing maltreated and non-maltreated children on parent-reported empathy. The mean scores show maltreated children were scored lower on affective empathy and cognitive empathy than their non-maltreated counterparts. Additionally, when scales are combined to create a unidimensional score of empathy, maltreated children scored lower on overall empathy than non-maltreated children.

Exploratory analyses were also run on the sub-sample where WASI-II data was available. When controlling for children's WASI-II Composite Score, group differences within the sub-sample were all non-significant (*n*=21) – Total empathy: $F(1, 16) = .360$, $p = .557$, partial $\eta^2 = .002$; Cognitive empathy: $F(1, 16) = .006$, $p = .937$, partial $\eta^2 = .000$ and Affective empathy: $F(1, 16) = .103$, $p = .753$, partial $\eta^2 = .006$ suggesting that within this smaller sub-sample any differences in empathy between groups were explained by differences in cognitive ability.

Table 6.

Means (with Standard Deviations) on the Griffith Empathy Measure (GEM), by Group

GEM	Maltreated *n* = 27	Non-maltreated *n* = 78	*t*	*d*
Affective empathy	48.79 (8.17)	53.03 (9.14)	2.13*	.48
Cognitive empathy	33.91 (10.45)	39.80 (8.29)	2.97**	.66
Total empathy	132.62 (24.66)	148.29 (22.74)	3.02**	.67

† p ≤ .10 * p ≤ .05 ** p ≤ .01 *** p ≤ .001

Table 7 shows the results of *t*-tests comparing maltreated and non-maltreated children on empathy using child behavioural data. Maltreated children score lower on cognitive empathy and overall empathy than non-maltreated children. However, contrary to predictions, there were no significant differences between the groups on either affective or behavioural empathy.

Using data from the sub-sample, exploratory one-way ANCOVAs were also run controlling for children's scores on the WASI-II. Similar to the whole sample, group differences were found for Total empathy $F(1, 18) = 5.215$, $p = .035$, partial $\eta^2 = .225$ and Cognitive empathy $F(1, 18) = 5.207$, $p = .035$, partial $\eta^2 = .224$.

Table 7

Means (with Standard Deviations) on the Kids' Empathic Development Scale (KEDS) by Group

KEDS	Maltreated *n* = 7	Non-maltreated *n* = 14	*t*	*d*
Affective empathy	23.36 (4.05)	20.57 (3.46)	1.55 *ns*	.72
Cognitive empathy	41.57 (3.99)	49.57 (5.56)	3.38**	1.56
Behavioural empathy	26.86 (2.54)	29.07 (3.73)	1.41 *ns*	.65
Total empathy	94.00 (4.80)	107.50 (11.22)	3.85***	1.40

† p ≤ .10 * p ≤ .05 ** p ≤ .01 *** p ≤ .001

3.3.2.2 Peer Relations

Table 8 shows the results of *t*-tests comparing maltreated and non-maltreated children's peer relations using parent report measures. In line with previous research, maltreated children experience more peer relationship problems relative to non-maltreated children. According to parents, they are also less accepted by their peers, display more negative behaviours and are less prosocial than non-maltreated children. Moreover, the parents of maltreated children have greater concerns about their child's peer relations than the parents of non-maltreated

children. However, contrary to predictions, parents did not report that maltreated children experienced greater peer rejection than their non-maltreated peers.

Using data from the sub-sample (n = 21), exploratory one-way ANCOVAs were also run controlling for children's scores on the WASI-II. No group differences were detected in the sub-sample across all scales – Total peer relation problems: $F(1, 16) = .014$, $p = .906$; Peer acceptance: $F(1, 16) = .975$, $p = .338$; Peer rejection: $F(1, 16) = .168$, $p = .687$; Expressed parental concern: $F(1, 16) = 2.268$, $p = .152$; Negative social behaviours: $F(1, 16) = 4.097$, $p = .060$, and Low social behaviours: $F(1, 16) = .415$, $p = .528$.

An independent-samples t-test was run to determine if there was a difference in child-reported peer relationship problems on the PROMIS measure between maltreated (n = 7) and non-maltreated children (n = 14). In contrast to parent-report data, children in the maltreated and non-maltreated groups did not differ in terms of their own reporting of peer relationship problems (M = 61.00, SD = 9.40 and M = 61.93, SD = 6.04, respectively) $t(19) = .276$, $p = .786$, $d = .13$. This difference remained non-significant after controlling for children's scores on the WASI-II, $F(1, 18) = 10.711$, $p = .212$.

Table 8

Means (with Standard Deviations) on the Friendships and Social Skills Test, by Group

FASST	Maltreated	Non-maltreated	*t*	*d*
Low peer acceptance	11.42 (3.38) *n* = 26	8.23 (3.67) *n* = 74	-3.89***	-.89
Peer rejection	2.41 (3.52) *n* = 25	1.48 (2.06) *n* = 74	-1.26 *ns*	-.37
Expressed parental concern	4.73 (4.33) *n* = 26	1.95 (3.39) *n* = 74	-2.97**	-.76
Negative social behaviours	4.33 (2.92) *n* = 26	2.06 (1.93) *n* = 74	-3.68***	-1.02
Low prosocial skills	7.88 (3.61) *n* = 26	5.44 (3.11) *n* = 73	-3.29***	-.75
Total peer relationship problems	30.38 (12.65) *n* = 25	19. 19 (9.41) *n* = 73	-4.06***	-1.09

† p ≤ .10 * p ≤ .05 ** p ≤ .01 *** p ≤ .001

3.3.3 Relations between Child Empathy and Peer Relations

3.3.3.1 Between Measures

Table 9 shows the zero-order correlations between the parent and child report measures of empathy and peer relationship problems for the total sample. As hypothesised, based upon parent report, there is a negative association between child empathy and peer relationship problems. This link is most evident for cognitive empathy and total empathy, which both have significant negative relationships with peer acceptance, peer rejection, expressed concern, negative social behaviours, prosocial skills, and total peer relationship problems. Given that higher scores on the FASST indicate greater peer problems, higher cognitive and total empathy are linked with fewer peer relationship problems. With regards to affective empathy, it was only found to be significantly correlated to prosocial behaviours, with the direction of the association suggesting that higher affective empathy is related with more displays of prosocial behaviour.

In terms of the child report data, only one positive significant association was found between child report cognitive empathy and child report peer relations, which suggests that greater cognitive empathy is linked with fewer peer relationship problems.

Triangulation of data revealed no significant correlations between parent and child report empathy, including affective and cognitive empathy. However, parents' expressed concern with their child's peer relations was significantly linked with child report peer problem relationships. The direction of the association suggests the more positive children report their peer relations, the less concern parents express for their children's peer relations.

3.3.3.2 Between measures by Group

Table 10 shows the zero-order correlations between the parent and child report measures of empathy and peer relationship problems by group. When examining correlations by group, many of the significant correlations evident at a whole sample level were no longer significant within the maltreated group. For example, the relationship that exists between parent total

empathy and peer acceptance, peer rejection, negative social behaviours, and total peer relationship problems, only remained in the non-maltreated sample. This suggests that many of the correlations between variables within the total sample are largely driven by the associations within the non-maltreated group.

Table 9

Correlations between Empathy and Peer Relationship Variables for Total Sample

	Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1.	GEM - affective empathy														
2.	GEM - cognitive empathy	.32**													
3.	GEM - total empathy	.75**	.79**												
4.	KEDS - affective empathy	-.19	.34	.24											
5.	KEDS - cognitive empathy	-.23	-.24	-.28	.47*										
6.	KEDS - behavioural empathy	-.44	.04	-.37	.27	.58**									
7.	KEDS - total empathy	-.33	.01	-.17	.72***	.91***	.73***								
8.	FASST - peer acceptance	-.14	-.43***	-.36***	-.25	-.34	-.19	-.32							
9.	FASST - peer rejection	-.07	-.30**	-.22*	.44	.30	.39	.47*	.17						
10.	FASST - expressed concern	-.04	-.39***	-.26*	-.18	-.19	.14	-.13	.43***	.55***					
11.	FASST - negative behaviours	-.18	-.41***	-.35***	.15	-.02	.38	.16	.25*	.52***	.40***				
12.	FASST - prosocial skills	-.24*	-.61***	-.55***	-.41	.32	.36	.15	.36***	.34***	.37***	.47***			
13.	FASST - total	-.17	-.62***	-.49***	-.30	-.09	.25	-.06	.68***	.67**	.79***	.70***	.72***		
14.	PROMIS - total	-.01	.22	.08	.18	.46*	.28	.38	-.25	.04	-.46*	.14	-.00	-.29	

† p ≤ .10 * p ≤ .05 ** p ≤ .01 *** p ≤ .001

Table 10

Correlations between Empathy and Peer Relationship Variables by Group

	Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14
15.	GEM - affective empathy		.30**	.76***	-.39	-.38	-.42	-.47	-.07	-.14	-.02	-.22	-.19	-.15	-.34
16.	GEM - cognitive empathy	.21		.77***	-.12	-.14	-.12	.01	-.07	-.42***	-.28*	-.36**	-.56***	-.61***	-.05
17.	GEM - total empathy	.69***	.79***		.00	-.26	-.39	-.25	-.30*	-.29*	-.22	-.34**	-.49***	-.49***	-.23
18.	KEDS - affective empathy	.24	.91*	.75		.55*	.24	.72**	-.41	.44	.11	.46	-.37	-.23	.19
19.	KEDS - cognitive empathy	-.24	-.38	-.52	-.32		.63*	.93***	-.24	.44	-.04	.40	.45	.17	.62*
20.	KEDS - behavioural empathy	-.72	.03	-.45	-.03	.03		.75**	-.14	.33	.46	.52	.32	.28	.44
21.	KEDS - total empathy	-.42	.39	-.09	.55	.44	.52		-.31	.51	.17	.57*	.22	.11	.52
22.	FASST - peer acceptance	-.21	-.23	-.27	.37	-.63	-.21	-.27		.06	.39**	.09	.33**	.68***	-.27
23.	FASST - peer rejection	.16	-.25	-.02	.39	-.60	.70	.21	.26		.51***	.43***	.26*	.61***	.08
24.	FASST - expressed concern	-.03	-.28	-.12	-.44	.08	.06	-.17	.30	.58**		.33**	.20	.76***	.07
25.	FASST - negative behaviours	.06	-.33	-.17	.00	.15	.85*	.51	.17	.60**	.28		.28*	.55***	-.01
26.	FASST - prosocial skills	-.27	-.58**	-.54**	-.59	.36	.60	.15	.17	.40*	.49*	.58**		.65***	.31
27.	FASST - total	-.05	-.51**	-.32	-.31	-.25	.65	-.02	.52**	.78***	.80***	.77***	.75***		-.04
28.	PROMIS - total	.39	.48	.36	.16	.46	-.01	.38	-.20	-.13	-.83*	.39	-. 30	-.74	

Note. Non-maltreated group above the diagonal and maltreated group below the diagonal.† $p \leq .10$ * $p \leq .05$ ** $p \leq .01$ *** $p \leq .001$

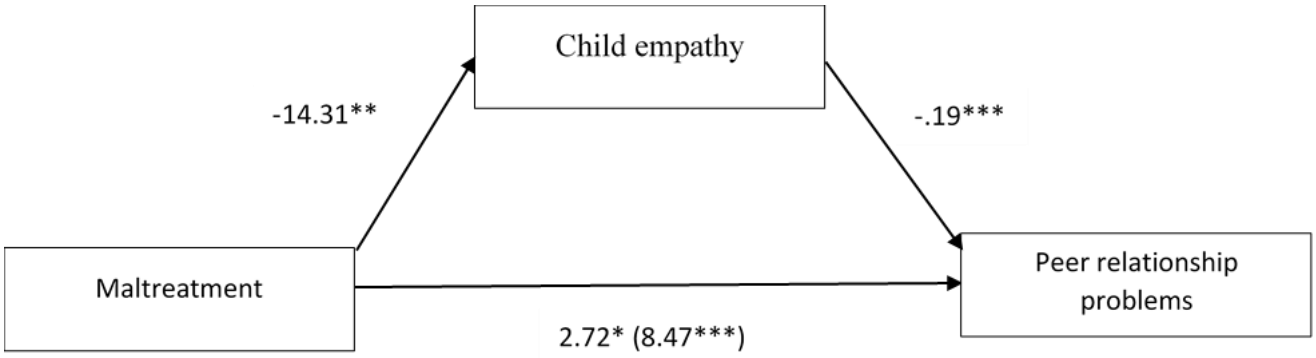
3.3.4 Mediation Model: Maltreatment to Empathy and Poor Peer Relations

Given that the child report data did not reveal significant differences on peer relationship problems by group (maltreated versus non-maltreated), a mediation model was constructed using parent report variables. For the purposes of parsimony, only total scores for child empathy and for peer relationship problems were entered into the model.

PROCESS (Model 4; Hayes 2018) was used to test whether child empathy mediated the effect of maltreatment on peer relationship problems. As expected, the total effect of maltreatment on peer relationship problems was significant, *b* = 11.19, *SE* = 2.39, 95% CI [6.45, 15.94]; maltreatment relative to non-maltreatment, predicted greater peer relationship problems. There was also a significant relationship between maltreatment and child empathy, *b* = -14.31, *SE* = 5.48, 95% CI [-25.28, -3.54]; suggesting that maltreated children score lower on empathy compared to their non-maltreated peers. There was also a significant relationship between empathy and peer relationship problems, with less empathy being associated with greater peer relationship problems; *b* = -.19, SE = .04, 95% CI [-0.27, -0.11]. There remained a significant relationship between maltreatment and peer relationship problems; *b* = 8.47, *SE* = 2.24, 95% CI [4.02, 12.93], even when accounting for the mediator, child empathy. The indirect effect was significant, suggesting that maltreatment can affect peer relationship problems via child empathy, *b* = 2.72, *β* = 0.24, bootstrapped *SE* = 1.17, bootstrapped 95% CI [0.58, 5.18]. Compared to non-maltreated children, maltreated children scored lower on empathy, which predicted greater peer problems. Overall, maltreatment and child empathy explained 34% of variance in peer relationship problems (see Figure 1).

Figure 4

Path model of the relationships between childhood maltreatment, child empathy, and peer relationship problems



Path coefficients are unstandardised regression coefficients. The value in parentheses is the direct effect (*c'*) of maltreatment on peer relationship problems. *$p < .05$, **$p < .01$, ***$p < .001$.

3.4 Discussion

In the literature, the negative developmental sequelae of childhood maltreatment have been well-evidenced (Strathearn et al., 2020). In childhood, it has been consistently associated with poor peer relations (Bolger et al., 1998; Bolger & Patterson, 2001; Dodge et al., 1994). Despite this link, the precise links between maltreatment and peer relations have yet to be specified. Additionally, it has been theorised that impaired empathy is a psychological consequence of child maltreatment, but there remains little empirical evidence to substantiate this hypothesis (Locher et al., 2014). The present study aimed to add to our understanding of how maltreatment affects both children's peer relations and empathy development by examining differences in empathy between maltreated and non-maltreated children. Additionally, it also sought to examine whether the relationship between maltreatment and poor peer relations is mediated by children's empathy.

Regarding the relationship between maltreatment and peer relations, significant group-level differences were found between maltreated and non-maltreated children on a parent report

measure of peer relations (FASST). Based on this multidimensional measure, parents reported that maltreated children are accepted less by their peers, display more negative social behaviours, and are less prosocial than non-maltreated children. However, no group-level differences were observed between the groups for peer rejection.

Surprisingly, in contrast to parent-report data, children in the maltreated and non-maltreated groups did not differ in terms of their own reporting of peer relationship problems (PROMIS). This difference remained non-significant even after controlling for children's cognitive ability.

In relation to empathy, significant differences were found between maltreated and non-maltreated children on both parent- and child-report measures of empathy (GEM and KEDS). Maltreated children scored significantly lower on both measures relative to non-maltreated children. Within a subsample, the differences in the child report measure of cognitive empathy and total empathy remained significant, even after controlling for children's cognitive ability scores.

The present study also offers support for a mediational model whereby empathy is the mechanism that links maltreatment and problematic peer relations. Using parent-report variables for empathy and peer relations, a mediational model confirmed that maltreatment predicted problematic peer relations and lower scores of empathy for maltreated children, and that empathy is linked to peer relations. The model also found that empathy is a potential mediator between maltreatment and problematic peer relations.

3.4.1 Maltreatment and Peer Relations

The present study found that parents report that maltreated children experience more peer relationship problems than non-maltreated children. These findings are consistent with previous research that found children subjected to maltreatment are less accepted by their peers and less prosocial, and more inclined to exhibit antisocial behaviours (Anthonysamy & Zimmer-Gembeck,

2007; Koenig et al., 2004; Teisl & Cicchetti, 2008). Interestingly, in contrast to prior findings (e.g., Bolger & Patterson, 2001), no relationship was found between maltreatment and increased risk of peer rejection. However, unlike previous research (e.g., Bolger and Patterson, 2001), the present study did not use sociometric data to measure peer rejection. Here, peer rejection was assessed according to the number of times that a child experiences teasing, bullying, and negative behaviours from other children. It is, therefore, conceivable that maltreated children do experience greater peer rejection in the form of being actively disliked by other children but are no more likely to experience overt forms of rejection (e.g., peer victimisation) than non-maltreated children.

Although the relationship between maltreatment and poor peer relations was not observed in our child-report data, this may be attributed to a lack of power due to small sample size. Alternatively, it could also reflect that maltreated children do not perceive problems with their peers in the same ways that adults do. There is research to suggest that some children who experience peer rejection, in particular those who act aggressively to their peers, underestimate how much they are disliked by their classmates (Zakriski & Coie, 1996). It has been speculated that although aggressive children are rejected by their peers, their peers do not demonstratively show their dislike to them for fear of retaliation.

3.4.2 Maltreatment and Empathy

The findings of the present study also lend further support to the existence of a relationship between child maltreatment and impaired empathy. While previous empirical studies have detected group-level effects among toddlers (Main & George, 1985), the present study found evidence of a significant difference in primary school-aged children. Looking at the adult-report data, there were significant group differences across all aspects of empathy with maltreated children scoring lower on cognitive empathy, affective empathy, and total empathy. These findings are further bolstered by data from child behavioural measures, where maltreated children scored significantly lower on measures of cognitive empathy and total empathy. While

scores for affective empathy and behavioural empathy were in a similar direction, they did not achieve levels of significance. The lack of findings on these dimensions of empathy may potentially be explained by the nature of the task administered, which relied heavily upon children's perspective-taking ability – a skill closely associated with cognitive empathy. For example, in both measures of affective empathy and behavioural empathy, children were asked 'How would you feel if you were this person?' and 'What would you do if you were this person?' As such, it is plausible that the assessment tool is not sensitive enough to adequately capture affective empathy or behavioural empathy as distinct concepts.

3.4.3 Empathy as a Mediator

Critically, the present study also provides empirical evidence in support of a mediational model where empathy explains the underlying mechanism of the relationship between maltreatment and poor peer relations. Specifically, primary-aged children who have been maltreated are more likely to have lower levels of empathy, which, in turn, leads to greater peer relation problems. This finding is consistent with McCrory's and colleague's theory of Latent Vulnerability (2015; 2017) and fits with Luke and Banerjee's (2012) qualitative research which initially proposed and supported such a conceptual model. Additionally, it is in line with previous findings that empathy mediates the relationship between parental socialisation styles and children's and adolescent's prosocial behaviour, which has been shown to be a contributing factor to peer relations (Knafo et al., 2008; Padilla-Walker et al., 2011; Wentzel, 2014).

Overall, the findings of the present study add to a growing body of literature that highlight the role parents play in the development of child empathy (e.g., Shaver et al., 2016; Stern & Cassidy, 2018). It also offers a distinctive contribution by looking at how empathy is affected by the experience of early childhood maltreatment. Importantly, it sheds light on why maltreated children are susceptible to poor peer relations and offers empathy as a potential mechanism that can be targeted for intervention.

3.4.4 Limitations

Inevitably, the present piece of research is not without its limitations. Firstly, given that the maltreated sample had all been adopted, it is not possible to solely attribute the observed effects of low empathy and greater peer relationship problems to their experiences of maltreatment. To mitigate the potential effects of adoption, the study would have benefitted from a control group of children who had been adopted but had no history of abuse or neglect.

Secondly, the analysis did not take into account the number of foster placements the children had prior to placement or the quality of their relationships with their adoptive parents or siblings, all of which may have had a bearing on their socio-emotional functioning (James, Landsverk, & Slymen, 2004).

Thirdly, in terms of how maltreatment is operationalised, the present study failed to examine how the severity, frequency, and subtype of maltreatment that children had experienced relates to their empathy and peer relationships. Previous research has shown that differential effects exist in psychological and social functioning dependent on the type and chronicity of child maltreatment (Manly et al., 2001). Therefore, future studies need to refrain from viewing maltreated children as a homogenous group and examine how differences in maltreatment affect empathy and peer relations.

Fourthly, although some attempts were taken to control for cognitive ability, particularly in relation to empathy, it was only possible to do this for a sub-sample. Given that exploratory analyses suggest that cognitive ability may account for some of the variance in empathy, future studies should ensure that mean differences between maltreated and non-maltreated empathy scores have been adjusted based upon their cognitive ability.

Fifthly, while the presented mediational model was grounded in theory and supported by empirical evidence, causality cannot be assumed due to cross-sectional design of the study. Moreover, it is not possible to establish whether observed effects on empathy in our maltreated

sample represent a development delay or a long-term deficit. Longitudinal studies are therefore much needed to establish the causal and temporal relationship between maltreatment and the development of child empathy.

Finally, although the study collected data from children, the final mediational model was based on data gathered from parent questionnaires. This raises the issue of shared method variance bias as parents reported on both child empathy and peer relations. In effect, the results may potentially be due to measurement method rather than the constructs the measures actually represent.

3.4.5 Implications

The findings of the present study have practical applications for supporting children with a history of maltreatment at school and home. As mentioned previously, empathy is not only important for developing high quality peer relationships, but a lack of empathy has also been shown to contribute to peer rejection. Therefore, interventions that foster empathy-related responding and prosocial behaviour are likely to result in improved peer relations for maltreated children. Roots of Empathy (ROE; Gordon, 2009) is an example of an evidence-based intervention that aims to increase empathy and prosocial behaviour in children.

The school environment represents an important context for developing social and emotional skills, such as empathy. Alongside parents, teachers are key socialising agents for children (Spinrad & Eisenberg, 2014). Children learn from what they observe and need adults to model how to behave in an empathic and prosocial manner. Therefore, schools should be encouraged to adopt trauma-informed approaches where teachers are encouraged to show empathy to children, resist punitive responses, and provide emotional support to vulnerable children. By demonstrating empathy and kindness, teachers not only help children to manage traumatic stress, but they are also modelling how to be empathic. Put simply, when children are shown empathy, they can then learn to empathise too.

At a universal level, whole-school social emotional and learning (SEL) programmes, which focus upon identifying and managing emotions, developing care and concern for others, and establishing positive relationships, have also been found to be effective in developing empathy (Durlak et al., 2011; K. Schonert-Reichl, 2020). Additionally, research on SEL programmes that integrate empathy throughout the curriculum (e.g., Roots of Empathy) or include it as a core component (e.g., Caring School Community) have also reported that they can improve peer relations, increase prosocial behaviours, and facilitate a greater sense of school belonging (Battistich, Schaps, & Wilson, 2004; Solomon, Battistich, Watson, Schaps, & Lewis, 2000). Therefore, the implementation of SEL programmes in schools are likely to be conducive in improving maltreated children's empathy and peer relations.

In addition to whole-school SEL curriculum, some maltreated children may require targeted support to better social understanding and promote empathy-related responding. Positive results from empathy-promoting interventions aimed at reducing levels of aggression in delinquent youths suggest that empathy can be learnt (Gibbs et al., 1995, 1996). Data from these studies suggest that focusing on the cognitive processes underlying empathy (e.g., perspective taking, causal attribution) can improve young people's empathic responses. Beyond empathy training programmes, there are also some novel, innovative approaches to promoting empathy in school children. For example, a school-based study teaching children compassion and responsibility for animals has shown that empathic responses can be generalised to humans (Ascione & Weber, 1996). Equally, volunteering programmes have been shown to increase empathy and prosocial behaviour (Eisenberg et al., 2009; Spinrad & Eisenberg, 2014).

3.4.6 Conclusion

In summary, the present study advances our understanding of how maltreatment relates to children's socio-emotional functioning. Not only does it lend further support to the negative impact of maltreatment upon empathy, but also shows that empathy mediates the relationship maltreatment and poor peer relations. These findings are encouraging as they suggest that

interventions that target empathy may help maltreated children to enjoy more positive and satisfying relationships with their peers.

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Appendix A Protocol

Dear [redacted],

Thank you for submitting amendments to your systematic review record CRD[redacted] on the PROSPERO register.

PROSPERO does not accept systematic reviews without an outcome of clear relevance to the health of humans. This means that the outcome of the review itself must be a health outcome and have direct clinical relevance. In the case of methodological reviews, submissions must state how your outcome has direct relevance to a health outcome. In recent times this definition has tightened due to a large number of systematic reviews that are received to the database in which are indirectly (often tenuously) linked to health.

Once rejected the record cannot be further amended and access to the record is not possible without contacting us by email at crd-register@york.ac.uk

We are sorry if this is disappointing news and hope that it will not discourage you from registering your next eligible systematic review at the protocol stage, with PROSPERO.

Yours sincerely,

[redacted]

PROSPERO Administrator

Centre for Reviews and Dissemination

Appendix B Search Terms

Search with OR		**Search with OR**		**Search with OR**		**Search with OR**
attach*		empath*		parent*		child*
sensitive*		“perspective taking”		mother*		girl
respons*		“emotion sharing		father*		boy
warmth				maternal		pre-school*
express*	**Search with AND**		**Search with AND**	paternal	**Search with AND**	toddler
secur*				caregiver		infan*
availab*						
relation*						
synchron*						
bond						
care						

Appendix C Excluded Articles and Reasons for Exclusion

Excluded Articles and Reasons for Exclusion following Full-text Assessment	
1. Dan, L., Yan, L., Aidong, Z., & Yuezeng, D. (2005). The Empathic Responsiveness of Children Aged 2: Associations with Child Spontaneous Helping, Temperament and Parent-childd Interaction [J]. Psychological Science, 4.	Unable to access full-text
2. Gomez, M. (2016). Empathy in early childhood. Psicodebate-Psicologia Cultura y Sociedad 16(2), 35-50.	No measure of the quality of the parent-child relationship/No child empathy measure
3. Davidov, M., & Grusec, J. E. (2006). Untangling the links of parental responsiveness to distress and warmth to child outcomes. Child development, 77(1), 44-58.	Child participants outside of age range (> 6 years)
4. Denham, S. A. (1994). Mother-child emotional communication and preschoolers' security of attachment and dependency. The Journal of genetic psychology, 155(1), 119-121.	Full details of study not provided – only brief description and results given
5. Denham, S. A. (1987). Child Competence and Maternal Emotion Socialization Correlates of Attachment Q-Sort Variables.	No child empathy measure/Conference paper
6. Eisenberg, N., Fabes, R. A., Carlo, G., Speer, A. L., Switzer, G., Karbon, M., & Troyer, D. (1993). The relations of empathy-related emotions and maternal practices to children' s comforting behavior. Journal of Experimental Child Psychology, 55(2), 131-150.	No measure of the quality of the parent-child relationship
7. Farrant, B. M., Devine, T. A., Maybery, M. T., & Fletcher, J. (2012). Empathy, perspective taking and prosocial behaviour: The importance of parenting practices. Infant and Child Development, 21(2), 175-188.	No measure of the quality of the parent-child relationship
8. Feldman, R. (2007). Mother-infant synchrony and the development of moral orientation in childhood and adolescence: Direct and indirect mechanisms of developmental continuity. American Journal of Orthopsychiatry, 77(4), 582-597.	Child participants outside of age range (> 6 years)
9. Jensen, L., Peery, C., Adams, G., & Gaynard, L. (1981). Maternal behavior and the development of empathy in preschool children. Psychological Reports, 48(3), 879-884.	No measure of the quality of the parent-child relationship
10. Knafo, A., Zahn-Waxler, C., Davidov, M., Van Hulle, C., Robinson, J. L., & Rhee, S. H. (2009). Empathy in early childhood: genetic, environmental, and affective	No measure of the quality of the parent-child relationship

contributions. Annals of the New York Academy of Sciences, 1167(1), 103-114.	
11. Kochanska, G., Forman, D. R., & Coy, K. C. (1999). Implications of the mother-child relationship in infancy for socialization in the second year of life. Infant Behavior and Development, 22(2), 249-265.	Child participants outside of age range (< 1 year)
12. Kochanska, G. (1997). Mutually responsive orientation between mothers and their young children: Implications for early socialization. Child development, 68(1), 94-112.	No child empathy measure
13. Laible, D. J., & Thompson, R. A. (1998). Attachment and emotional understanding in preschool children. Developmental psychology, 34(5), 1038.	No child empathy measure
14. Levy, J., & Feldman, R. (2019). Synchronous interactions foster empathy. Journal of Experimental Neuroscience, 13, 1179069519865799.	Background article
15. Liew, J., Eisenberg, N., Losoya, S. H., Fabes, R. A., Guthrie, I. K., & Murphy, B. C. (2003). Children's physiological indices of empathy and their socioemotional adjustment: Does caregivers' expressivity matter?. Journal of Family Psychology, 17(4), 584.	Child participants outside of age range (> 6 years)
16. Main, M., & George, C. (1985). Responses of abused and disadvantaged toddlers to distress in agemates: A study in the day care setting. Developmental Psychology, 21, 407–412.	No measure of the quality of the parent-child relationship
17. McHarg, G., Fink, E., & Hughes, C. (2019). Crying babies, empathic toddlers, responsive mothers and fathers: Exploring parent-toddler interactions in an empathy paradigm. Journal of experimental child psychology, 179, 23-37.	No measure of the quality of the parent-child relationship
18. Meins, E., Bureau, J. F., & Fernyhough, C. (2018). Mother–child attachment from infancy to the preschool years: Predicting security and stability. Child Development, 89(3), 1022-1038.	No child empathy measure
19. Ortiz, M. B., Apocada, P. U., Etxebarria, I. B., Fuentes, M. R., & López, F. S. (2008). Family predictors of moral internalization in childhood. Psicothema, 20(4), 712-717.	Child participants outside of age range (> 6 years)
20. Saba, J. F., & Tamis-LeMonda, C. (2003). Quality of Mothers' Engagement with Their Toddlers: The Roles of Childrearing History, Social Support, and Empathy.	No child empathy measure/Conference paper
21. Siegal, M. (1985). Mother-child relations and the development of empathy: A short-term longitudinal study. Child psychiatry and human development, 16(2), 77-86.	No measure of the quality of the parent-child relationship

22. Spinrad, T. L., Losoya, S. H., Eisenberg, N., Fabes, R. A., Shepard, S. A., Cumberland, A., ... & Murphy, B. C. (1999). The relations of parental affect and encouragement to children's moral emotions and behaviour. Journal of Moral Education, 28(3), 323-337.	No measure of the quality of the parent-child relationship
23. Spinrad, T. L., & Stifter, C. A. (2006). Toddlers' empathy-related responding to distress: Predictions from negative emotionality and maternal behavior in infancy. Infancy, 10(2), 97-121.	Child participants outside of age range (< 1 year)
24. Strayer, J., & Roberts, W. (2004). Children's anger, emotional expressiveness, and empathy: Relations with parents' empathy, emotional expressiveness, and parenting practices. Social development, 13(2), 229-254.	Child participants outside of age range (> 6 years)
25. Valiente, C., Eisenberg, N., Fabes, R. A., Shepard, S. A., Cumberland, A., & Losoya, S. H. (2004). Prediction of children's empathy-related responding from their effortful control and parents' expressivity. Developmental psychology, 40(6), 911.	Child participants outside of age range (> 6 years)
26. Vasilenko, V. E., & Sergunicheva, N. A. (2019). Family Predictors of Older Preschoolers' Interpersonal Emotional Cempetence. И ПСИХОТЕРАПИЯ, 45.	Could not access full text
27. Zhou, Q., Eisenberg, N., Losoya, S. H., Fabes, R. A., Reiser, M., Guthrie, I. K., ... & Shepard, S. A. (2002). The relations of parental warmth and positive expressiveness to children's empathy-related responding and social functioning: A longitudinal study. Child development, 73(3), 893-915.	Child participants outside of age range (>6 years)
28. Zahn-Waxler, C., Friedman, S. L., & Cummings, E. M. (1983). Children's emotions and behaviors in response to infants' cries. Child Development, 1522-1528.	Child participants outside of age range (>6 years)
29. Zahn-Waxler, C., Radke-Yarrow, M., & King, R. A. (1979). Child rearing and children's prosocial initiations toward victims of distress. Child development, 319-330.	No measure of the quality of the child-relationship (e.g., the study focuses upon "mother's rearing technique" which are akin to parenting practices)

Appendix D Data Extraction and Synthesis

Study	Population Demographics	Study Design and Analysis Model	Measure of the quality of the relationship between parent and child	Child empathy measure	Relevant results
1). Bischof-Köhler (2000).	- 41 mother-child dyads - 22 girls, 19 boys - T1 Age = between 14.6 and 18.6 months - T2 Age = between 22 and 23 months	- Part of a larger study - Longitudinal	Quality of attachment was assessed between 14.6 and 18.6 months with the Strange Situation Procedure (Ainsworth et al., 1978).	Child's empathy was measured between 22 – 23 months during a simulated distress paradigm with an experimenter.	Attachment security was found to be positively corrected with children's empathy ($K_{(xy)}$=.75, p =.003). Securely attached also demonstrated empathic concern that children with an insecure attachment profile (Z= 1.85, p = .060).
2). Carter, Little, Briggs-Gowan, & Kogan (1999).	- 91 mother-child dyads - 45 girls, 46 boys - *M* age of children= 12.2 months - *M* age of mothers = 32.7 years - *M* age of fathers = 34.7 years - 97% of parents married or living with partner	- Cross-sectional - Bivariate correlations - ANOVA	Quality of attachment was assessed at 12 months with the Strange Situation Procedure (Ainsworth et al., 1978).	Mothers reported on their child's empathy at 12 months using a 7-item empathy subscale from the Infant-Toddler Social and Emotional Assessment (ITSEA, Briggs-	Child empathy was not significantly correlated with child behaviour in the Strange Situation Procedure: avoidance (*r* = -.08, *n.s.*); contact maintenance (r = -.10, *ns*); proximity seeking (*r* = .02. *n.s.*), and resistance (*r* = -.14, *n.s.*). An analysis of variance on child empathy score found a non- significant main effect of attachment status (*F*(2, 82) = 2.98, n.s.).

	- 68% of the mothers had college or graduate degrees - 93% of the mothers Caucasian, 7% = African-American - US			Gowan & Carter, 2001).	
3). Iannotti, Cummings, Pierrehumbert, Milano, & Zahn-Waxler, (1992).	T1: - 49 mother-child dyads - 21 girls, 28 boys - *M* age of children = 2.4 years T2: - 43 mother-child dyads - 19 girls, 24 boys - *M* age of children = 5.0 years - Predominantly middle class - US	- Part of a larger study - Longitudinal - Bivariate correlations	Quality of attachment was assessed at 2 years of age with the Strange Situation Procedure (Ainsworth et al., 1978). Maternal warmth was rated during mother-child interactions at 2 years of age. Maternal warmth was coded when the mother made affectionate statements, made positive statements about the child's behaviour, or displayed affection in expression or behaviour.	Children's empathy was measured at 5 years of age using their responses to 16 photographs depicting situational and emotional cues (Iannotti, 1978; 1985). Children were scored on emotional matching, affective empathy and situational empathy.	Results indicate attachment quality in the Strange Situation at age 2 was not significantly correlated with emotional matching (*r* = -.12, *n.s.*), affective empathy (*r* = -.04, *n.s.*) and situational empathy (*r* = -.06, *n.s.*) in children's responses to emotional photographs at age 5. Maternal warmth at age 2 was not significantly correlated with emotional matching (*r* = -.14, *n.s.*), affective empathy (*r* = -.04, *n.s.*) and situational empathy (*r* = -.03, *n.s.*) in children's responses to emotional photographs at age 5.
4). Kestenbaum, Farber, & Sroufe, (1989).	- 24 pre-schoolers - 12 girls, 12 boys - *M* age of children = 48.7 months	- Part of a larger study - Longitudinal - ANOVA	Quality of attachment was assessed at 12 and 18 months with the Strange Situation Procedure (Ainsworth et al., 1978).	Children were video recorded in a nursery setting (50 hours) while engaged in free	There was a significant effect of attachment history on child empathy $F(2, 21) = 4.80$, $p < .05$. Follow-up tests indicated that children who had secure attachment histories scored higher on the

	- Mothers recruited from a larger sample (*N*=267) where the age ranged from 12 to 37. - Mothers' educational level ranged from junior high-school to post-college graduate level - Children were selected for the study based on their attachment history. Equal numbers of securely attached (B), anxious-avoidant (A) and anxious-resistant children were selected (C). The groups were matched on age, IQ, and race. Equal numbers of boys and girls were included in each group. - US		For children whose attachment classification changed between time points (*N* = 3), problem solving tasks (Matas, Arend, and Sroufe, 1978) were used to determine classification.	play. Their responses to emotional distress or injury were coded and used to determine their levels of empathic responding. Nursery teachers provided reports on children's empathy using the Block California 100-item Q-sort deck (Block and Block, 1979). There ratings were then summed to score a single empathy score.	empathy scale than children with anxious-avoidant histories. Empathy scores from the anxious-resistant group did not differ from scores for the other two groups.

5). Kiang, Moreno, & Robinson (2004).	- 175 mother-child dyads - 88 girls, 87 boys T1: - Age of children = 12 months T2: - Age = 15 months T3: - Age = 21 months T4: - Age = 24 months T5: - Age = 4 years - *M* age of mothers (at intake) = 19.7 years - 49% of the mothers were Latina, 18% = African-American, 31% = Anglo-American, 2% = Mixed Ethnicity - The highest school grade completed for 9.5% of the sample was 8th grade, 38.8% = completed some high school 38.3% = graduated from high	- Part of a larger study - Longitudinal - Path Analyses	Maternal sensitivity was rated during mother-child play episodes at 12 and 15 months using the Emotional Availability Scales (Biringen, Robinson, & Emde, 1994). The Sensitivity subscale was the focus of analyses.	Children's empathic responses towards two simulations of distress (one for mother and one for examiner) were collected and coded at 21 months, 24 months and four years (Zahn-Waxler et al., 1992). Ratings from 21- and 24-month simulations were aggregated to form 21- to 24-month constructs, one for the mother and one for the examiner. Subscales were standardized and then aggregated to form the	Maternal sensitivity was significantly correlated with empathy indices towards the mother, including Prosocial (r = .22, p < .01) and Inquisitiveness (r = -.20, p < .01). It was also significantly correlated with Indifference show towards the experimenter (r = -.19, p < .01).

	school,11.2% = completed some college, and 2.2% graduated from college - US			following empathy indices: The Prosocial Index, The Indifference Index, The Inquisitiveness Index.	
6). Kim & Kochanska (2017).	Study 1 (Family Study): T1: - 101 child-mother-father triads - 51 girls, 50 boys - Age of children = 15 months T2: - 100 triads - 50 girls, 50 boys - Age = 25 months T3: - 100 triads - 50 girls, 50 boys - Age = 38 months T4: - 99 triads - 49 girls, 50 boys - Age = 52 months T5: - 92 triads - 45 girls, 47 boys	- Data drawn from three studies - Longitudinal - Bivariate correlations - Path analyses	In the Play Study and Parent-Child Study, mothers and trained coders completed the Attachment Q-Set (AQS) (Waters & Deane, 1985). Quality of attachment with fathers/mother (Family Study) and mothers (Parent-Child Study) was assessed with the Strange Situation Procedure (Ainsworth et al., 1978).	Children's empathic responses to simulated maternal distress were collected and coded (Zahn-Waxler et al., 1992).	Children's empathy to maternal distress was significantly correlated with early maternal attachment security as observed in the SSP (Family Study: $r = .20$. $p < .05$) and in naturalistic observations (Play Study: $r = .24$, $p < .01$ and Parent Study: $r = .26$, $p < .01$). This effect was not found it the father-child relationship.

	- Age = 67 months T6: - 90 triads - 43 girls, 47 boys - Age of children = 80 months - Ninety percent of mothers were White, 3% = Hispanic, 2% = African American, 1% = Asian, 1% = Pacific Islander, and 3% = other non-White, 84% of fathers = White, 8% = Hispanic, 3% African American, = 3% Asian, and 2% other. - 25% of mothers had a high school education (or less), 54 % = had an associate or college degree, and 21% = had a postgraduate education. Among fathers, the respective figures				

	were approximately 30, 51, and 20%. Study 2 (Play Study): - 186 mother-child dyads - 90 girls, 96 boys - *M* age of children = 30 months - 11% of the mothers were Hispanic, 73% = White, 15% = African American, 2% = Asian, 2% =American Indian, and 8% more than one race or unreported. - 55% of mothers had no more than a high school education, and 45% had an associate, bachelors, or technical degree. Study 3 (Parent-Child Study): T1: - 108 mother-child dyads				

	- 53 girls, 55 boys - Age = 14 months T2: - 106 mother-child dyads - 53 girls, 53 boys - Age = 22 months T3: - 101 mother-child dyads - 49 girls, 52 boys - Age = 45 months - 97% of mothers and 92% of fathers were White - 26% of mothers had no education past high school, 15% = some college education, and 59% completed college or some postgraduate education - US				

7). Mark, IJzendoorn, & Bakermans-Kranenburg (2002).	- 125 mother-child dyads - All female sample - Age of children at T1 = 16 months and T2 = 22 months - *M* age of mothers = 32.6 years - 95% of the mothers were Dutch, 5% = came from abroad, but had been living in the Netherlands for > 7 years - Netherlands	- Longitudinal - Hierarchical multiple regression	Quality of attachment was assessed at both 16 and 22 months with the Strange Situation Procedure (Ainsworth et al., 1978). Maternal sensitivity was rated during a task where the child was asked to complete puzzles that were too difficult for them using the revised Erickson scales for Supportive presence, Clarity of instruction, and Sensitivity and Timing in instruction, (Egeland et al., 1990).	Children's empathic responses to an experimenter's simulated distress in both a home and laboratory environment, and to their mother's simulated distress in their home environment were collected and coded (Zahn-Waxler et al., 1992).	Correlations between empathy towards the mother at 16 months and 22 months, and attachment security at 16 months and 22 months were non-significant. Similarly, no significant correlations were found between empathy towards the experimenter and attachment security at either time points. Maternal sensitivity at 22 months was significantly correlated with empathy towards the experimenter at 22 months (r = -.24, p < .01). More sensitive structuring was associated with less empathic concern for the experimenter. Greater attachment security at 22 months was associated with more empathy for the experimenter (β =.19, p < .05 but not for the mother (β =.04, *n.s.*), when controlling for temperament. Maternal sensitivity at 22 months was found to have a negative association with empathy for the experimenter at 22 months (β =-.25, p < .01), when controlling for temperament.

8). Murphy & Laible (2013).	- 69 mother-child dyads - 36 girls, 33 boys - Age of children at T1 = 42 months and T2 = 48 months - 91.3% of children were Caucasian - 73.9% of mothers had at least a college degree - US	- Part of a larger study - Longitudinal - Hierarchical multiple regression	Mothers completed the Attachment Q-Set (AQS 3.0) (Waters & Deane, 1985) when their children were 42 and 48 months old.	Children's empathic responses were observed and coded following a baby-cry procedure at 42 and 48 months old (Zahn-Waxler et al., 1992).	Attachment at 42 months was significantly correlated with empathic concern at 48 months (r = .27, p < .05). Greater attachment security at 42 months predicted higher levels of observed empathic concern at 48 months (β =.30, p < .01), even when controlling for the effects of empathic concern at 42 months.
9). Panfile & Laible (2012).	- 63 mother-child dyads - 30 girls, 33 boys - Age = 36 months - 81% of children were Caucasian - 85.7% of mothers had at least a college degree - *M* age of mothers = 34.81 years - US	- Cross-sectional - Path analyses	Mothers completed the Attachment Q-Set (AQS 3.0) (Waters & Deane, 1985).	Mothers reported on their child's empathy using My Child (Kochanska, DeVet, Goldman, Murray, & Putnam, 1994) – a 100 item questionnaire and an adapted version of the Index of Empathy (Bryant, 1982) - a 22 item measure. Reported scores were then	Attachment security was significantly correlated to empathy (r =.41, p < .01) However, attachment did not predict empathy (β =.09, *n.s.*) Mediation analysis found that emotion regulation mediated the link between attachment and empathy.

				aggregated to create a single empathy variable.	
10). Robinson et al., (1994).	- 158 twin pairs - 83 girls, 75 boys - Age of children at T1 = 14 months and at T2 = 20 months - Children were selected for analysis if their initial global rating on empathy (which had been previously measured) was either high or low (+/-1 *sd*) or was in the middle (+/- 4*sd*) relative to their peers. - Low empathic responders (N) = 53 - Mid-range empathic responders (N) = 62 - High empathic responders (N) = 43 - 92% of the parents were Caucasian - US	- Part of a larger study - Longitudinal - ANOVA	Maternal warmth was assessed at 14 months from mother-child interactions during a task where the mother has to teach the twins simultaneously to complete a challenging task. Researchers completed five global ratings on maternal style towards each specific twin, assessing the relationship along the dimensions of control, interest in child's performance, warmth, responsiveness to child's expression of need, and tolerance of child's expression of needs. A score for maternal warmth was calculated based on the average of three scales: warmth, responsiveness to child's expression of need, and	Children's empathy was measures at 14 and 20 months of age using a series of distress simulations, including examiner feigning injury, mother feigning injury and the sound of a baby crying, in both in home and laboratory settings. This data was then used to categorise children into low, mid-range, and high empathic responders at both time-points.	Two of the tests for maternal warmth were significant. Maternal warmth differentiated between the children initially high in empathy, with those remaining high in empathy having mothers rated higher in maternal warmth than those who later dropped to the mean ($F(1.39)=8.02$, $p<.005$). Maternal warmth also discriminated among the children with an initial mid-range of empathy in interaction with gender ($F(2.56) = 3.11$. p =.05). The highest level of maternal warmth at 14 months was associated with girls who changed to high scores at 20 months, while lower warmth led to a drop of empathy for girls at the later age. For boys, the highest level of maternal warmth was associated with boys remaining in the central zone; boys who dropped or showed a marked increase in empathy had lower scores on maternal warmth.

			tolerance of child's expression of needs.		
11) Robinson & Little (1994).	- 100 twin pairs (50 monozygotic and 50 dizygotic pairs) - 50 girls, 50 boys - Age of children = 36 months - Families range in socioeconomic status from welfare assisted to upper-middle class; the majority would be considered middle class. - US	- Part of a larger study - Cross-sectional - ANOVA	Maternal sensitivity was rated during mother-child play episodes at 36 months using the Emotional Availability Scales (Biringen et al. 1990; Biringen and Robinson 1991). The scales included: Sensitivity; Lack of Intrusiveness; (Responsivity and Involvement of Mother.	Mothers reported each child's response during recent situations where the co-twin and mother have been distressed. Behaviours were then coded according to whether they ignored the person in distress; observed the person with no further action; offered comfort or became personally distressed. Behaviours were then scored as either absent (0) or present (1).	Empathic responses with both cotwins and mother were associated with maternal intrusiveness (F(l, 97) = 5.08, p < .05 and F(l, 95) = 3.81, p < .10). Children who aided mother or sib had mothers who were rated higher on intrusiveness than children who never aided. Children's empathic responses to cotwins' distress that were limited to just observing were associated with maternal sensitivity (F(l, 98) = 3.74, p < .10). Mothers who were rated less sensitive reported children to just observe their sibling's distress more often. Ignoring mother was associated with maternal intrusiveness (F(l, 95) = 4.10, p < .05). Less intrusive mothers were more likely to report their child to ignore her when mother was in distress.

12). Sroufe (1983).	- 40 pre-schoolers (recruited in two separate groups) - 18 girls, 22 boys Group 1 - (N) = 15 - *M* age of children = 48.7 months Group 2 - (N) = 25 - Age of children range from 47 to 57 months - US	- Part of a larger study - Cross-sectional - ANOVA	The paper does not specify how attachment security was measured.	Child empathy was measured using a teacher-rated subscale from the Block California 100-item Q-sort deck.	Teacher-reported empathic behaviour was most characteristic of secure children and least characteristic of avoidant children, with resistant children falling in between ($F(1.22) = 8.24$, $p < .01$). *No means provided.*
13). Ştefan & Avram (2018).	- 212 pre-schoolers - *M* age of children = 56.34 months - 110 girls, 102 boys - 91% of the children were Romanian, 0.9% = Hungarian, 0.9% = German, 0.5% Gypsy, and 6.7% = reported no ethnicity - Respondent education level varied with 2.8% having less than high school	- Cross-sectional - Bivariate correlations - Path analyses	Children's attachment security was measured using the Attachment Story Completion Task (ASCT; Bretherton et al., 1990).	Children's empathic perspective taking was measured using the Kid's Empathic Development Scale (KEDS; Reid, 2013), which assesses cognitive, affective and behavioural empathy according to	Child empathy was significantly correlated with attachment security ($r = .39$, $p < .01$). Mediation analysis found that attachment security was positively associated with empathic perspective-taking ($\beta = .82$, $p < .001$) but that this relationship was mediated by emotion regulation

	- Romania			children's responses to picture scenarios depicting a range of individual and interpersonal scenarios.	
14). Ştefan & Avram (2019).	- 212 pre-schoolers - *M* age of children = 56.34 months - 110 girls, 102 boys - 91% of the children were Romanian, 0.9% = Hungarian, 0.9% = German, 0.5% Gypsy, and 6.7% = reported no ethnicity. - Respondent education level varied with 2.8% having less than high school - Romania	- Cross-sectional - Multilevel regression	Children's attachment security was measured using the Attachment Story Completion Task (ASCT; Bretherton et al., 1990) which uses a story stem procedure to measure children's internal working models about attachment.	Children's empathic perspective taking was measured using the Kid's Empathic Development Scale (KEDS; Reid, 2013), which assesses cognitive, affective and behavioural empathy according to children's responses to picture scenarios depicting a range of individual and interpersonal scenarios.	A significant effect of attachment status was found on the affective component of empathic perspective-taking, $F(2, 207) = 3.62$, $p = 0.028$. Between group comparisons indicated that avoidantly attached children performed significantly lower on the affective perspective-taking task compared to securely attached children. A significant effect of attachment status was found on the cognitive component of perspective-taking, $F(2, 207) = 8.63$, $p < .001$. Children who were classified as avoidantly attached scored significantly lower on cognitive empathic perspective-taking compared to secure children. Also, avoidantly attached children scored significantly lower on this task compared to ambivalently attached children. For the behavioural component of empathic perspective-taking there was a

					significant effect of attachment status, $F(2, 207) = 17.59$, $p < .001$. Follow-up comparisons found that avoidantly attached children performed significantly lower on behavioral perspective taking compared to securely attached children. Ambivalently attached children scored significantly lower on this measure compared to the securely attached group.
15). Wagers & Kiel (2019).	- 117 child-parent dyads - 54 girls, 63 boys - Age of children at T1 = 24 months and T2 = 36 months - 87.2 % of the mothers were European American, 2.6% = African American, 0.9% = Hispanic, 6% = Asian American, 0.9% = American Indian 2.6% = Biracial. - 25% of mothers had a high school or two-year degree, 40% = four-year degree, 35% = advanced degree.	- Longitudinal - Bivariate correlations - Path analyses	Parental warmth was measured using the Parenting Practices Questionnaire (PPQ, Robinson, Mandleco, Olsen, & Hart, 1995), specifically the authoritative domain which includes subscales of warmth and involvement, reasoning, democratic participation, and good-natured behaviour.	Mothers reported on their child's empathy using a 7-item empathy subscale from the Infant-Toddler Social and Emotional Assessment (ITSEA, Briggs-Gowan & Carter, 2001) when children were aged 2 and 3 years of age.	Maternal warmth was significantly correlated with child empathy at aged 2 ($r = .28$, $p < .01$) and at aged 3 ($r = .31$, $p < .01$) Maternal warmth predicted empathy for children with low levels of inhibited temperament ($\beta = 0.43$, $p = .011$), but not those with mean ($\beta = 0.15$, $p = .284$) or high levels ($\beta = -0.13$, $p = .542$) of inhibited temperament.

	- US				
16). Waters, Wippman, & Sroufe. (1979).	- 32 mother-child dyads - 16 girls, 16 boys T1: - Age of children =15 months T2: - Age = 3.5 years - From a middle-class sample - US	- Part of a larger study - Longitudinal - T-test	Quality of child attachment to mother was assessed at 15 months in a variation of the Strange-Situation Procedure (toys were replaced with a single novel object and there was a single mother separation lasting 1 minute rather than 3).	Peer competence, including 'sympathetic to peer's distress' (empathy), was coded using a 12 item Q-scale (Vaughn & waters, 1979) by their mothers when they were 3.5 years old.	Children who were securely attached in infancy displayed greater empathy (*M* =8.4) toward their preschool peers compared to insecure/anxious infants (*M* = 4.2, $p < .01$).

Appendix E Quality Assurance

Study Number	1).	2).	3).	4).	5).	6).	7).	8).	9).	10).	11).	12).	13).	14).	15).	16).
Introduction																
1. Were the aims/objectives of the study clear?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y
Method																
2. Was the study design appropriate for the stated aim (s)?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
3. Was the sample size justified?	Y	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	N
4. Was the target/reference population clearly defined (was it clear who the research was about?)?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

5. Was the sample frame taken from an appropriate population base so that it closely represented the target/reference population under investigation?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
6. Was the selection process likely to select subjects/participants that were representative of the target/reference population under investigation?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

7. Were measures undertaken to address and categorise nonresponders?	Y	Y	N	N	Y	Y	Y	N	N	N	N	N	N	N	Y	N
8. Were the risk factor and outcome variables measured appropriate to the aims of the study?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
9. Were the risk factor and outcome variables measured correctly using instruments/measurements that had been trialled, piloted or published previously?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

10. Is it clear what was used to determine statistical significance and/or precision estimates (e.g. p values, CIs)?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	N
11. Were the methods (including statistical methods) sufficiently described to enable them to be repeated?	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	N
Results																
12. Were the basic data adequately described?	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	N

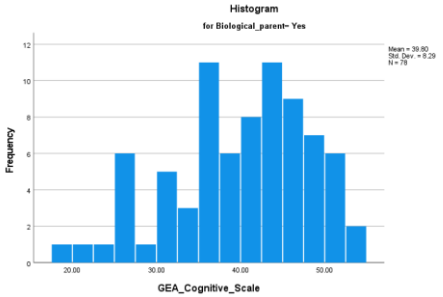
13. Does the response rate raise concern about non-response bias?	Y	N	N	N	N	N	N	N	Y	Y	N	N	N	Y	Y	N
14. If appropriate was information about non-responders described?	Y	Y	N	N	N	N	Y	Y	Y	Y	NA	N	N	N	Y	N
15. Were the results internally consistent?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	N
16. Were the results for the analyses described in the methods presented?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	N
Discussion																

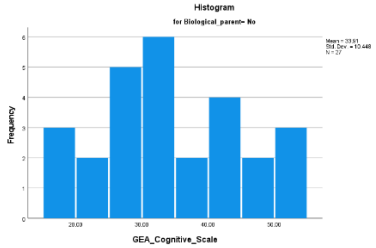
17. Were the authors' discussions and conclusions justified by the results	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
18. Were the limitations of the study discussed?	Y	N	N	N	Y	Y	Y	Y	Y	Y	N	N	Y	Y	Y	N
Other																
19. Were there any funding sources or conflicts of interest that may affect the authors' interpretation of the results	DNK	DNK	DNK	DNK	DNK	DNK	DNK	DNK	DNK	N	DNK	DNK	N	N	N	DNK
20. Was ethical approval or consent of participants attained?	DNK	DNK	DNK	DNK	Y	DNK	Y	Y	Y	DNK	DNK	DNK	Y	Y	Y	DNK

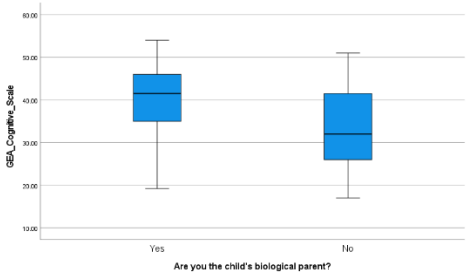
Longitudinal design																
21. Was the sample size justified?	N		N	N	N	N	N	N		N					N	N
22. Was follow-up described?	Y		Y	Y	Y	Y	Y	Y		Y					Y	Y
23. Was follow-up long enough for outcomes to occur?	Y		Y	Y	Y	Y	Y	Y		Y					Y	Y
24. Was the selection process likely to select representative sample?	Y		Y	Y	Y	Y	Y	Y		Y					Y	Y
25. Did the study use a precise definition of the outcome?	Y		Y	Y	Y	Y	Y	Y		Y					Y	Y
Overall Quality	H	M	M	L	H	H	H	H	H	M	M	L	H	H	H	L

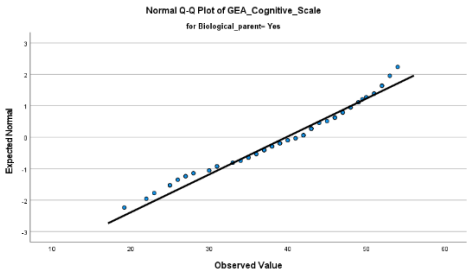
Appendix F Normality Checks

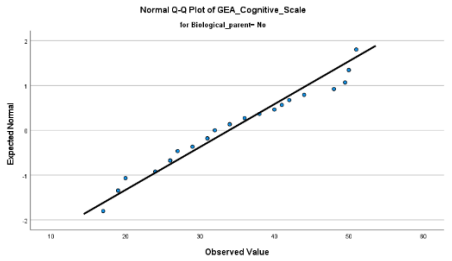
Stick stuff here







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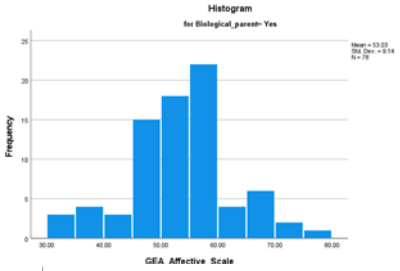
Observed Value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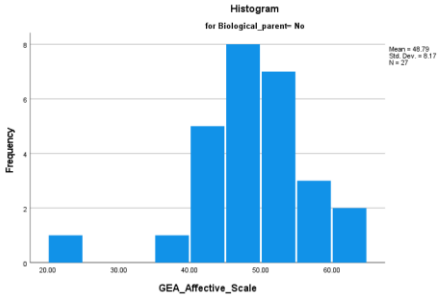
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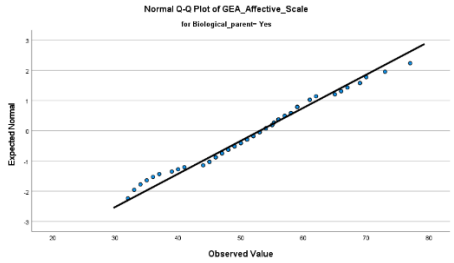
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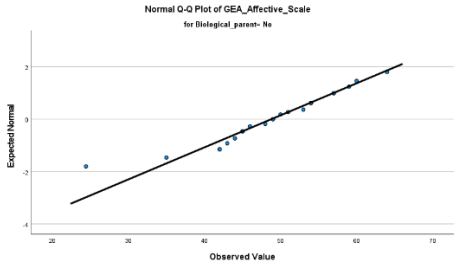
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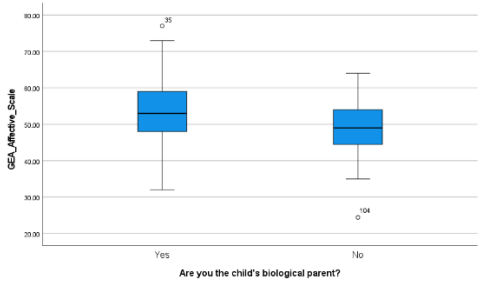
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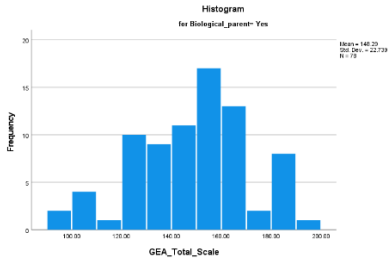
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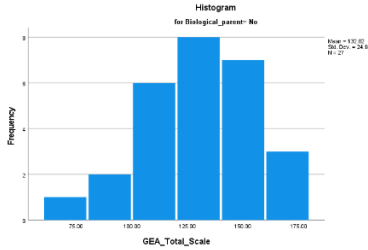
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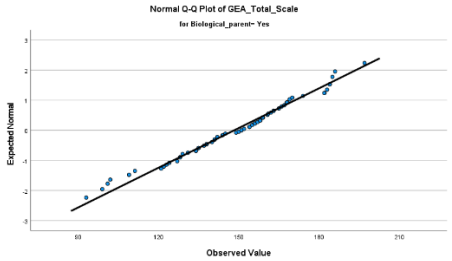
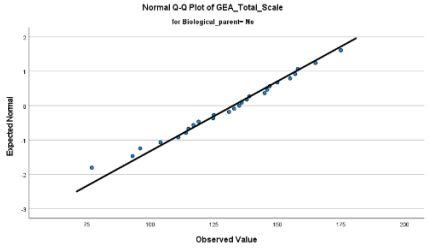
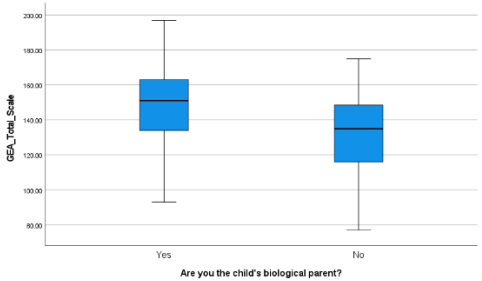
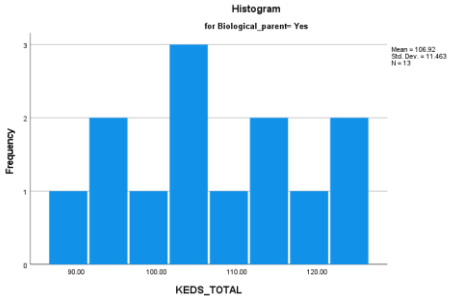
Frequency
GEA_Total_Scale

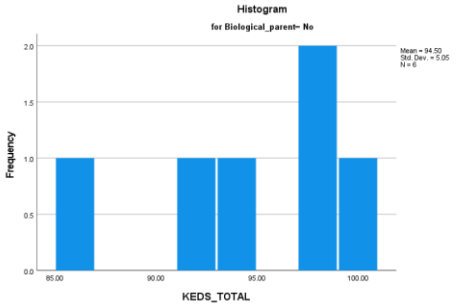

Normal Q-Q Plot of GEA_Total_Scale
for Biological_parent= Yes
Expected Normal
Observed Value

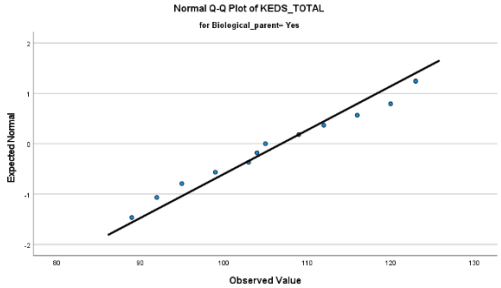

Normal Q-Q Plot of GEA_Total_Scale
for Biological_parent= No
Expected Normal
Observed Value

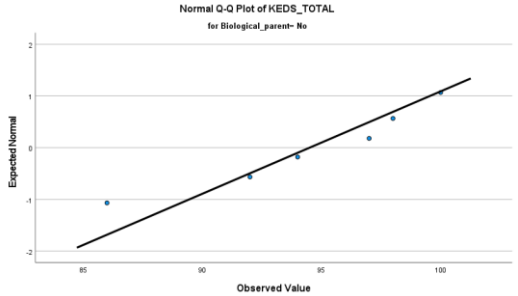

GEA_Total_Scale
Yes
No
Are you the child's biological parent?

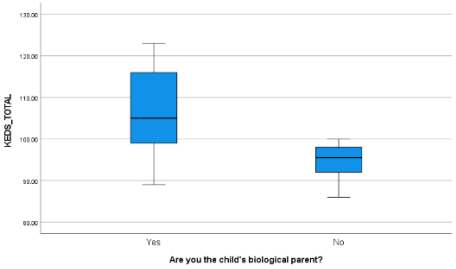

Histogram
for Biological_parent= Yes
Frequency
KEDS_TOTAL

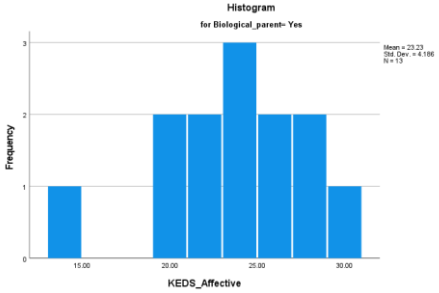
Appendix F

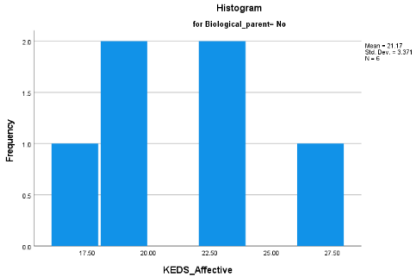

Histogram
for Biological_parent= No
Mean = 94.50
Std. Dev. = 5.05
N = 6
Frequency
KEDS_TOTAL

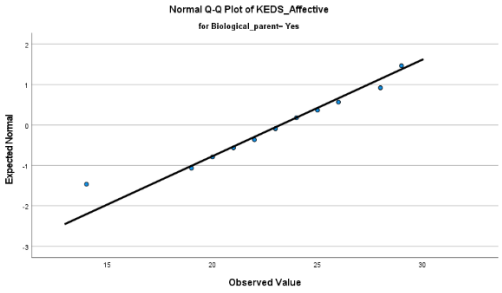

Normal Q-Q Plot of KEDS_TOTAL
for Biological_parent= Yes
Expected Normal
Observed Value

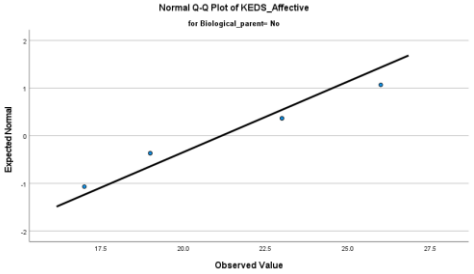

Normal Q-Q Plot of KEDS_TOTAL
for Biological_parent= No
Expected Normal
Observed Value

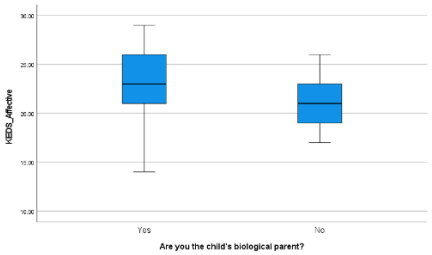

KEDS_TOTAL
Yes
No
Are you the child's biological parent?

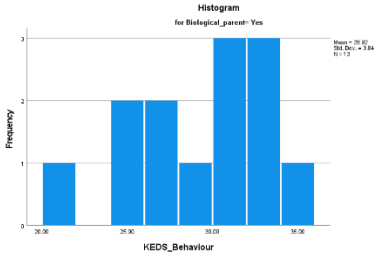

Histogram
for Biological_parent= Yes
Mean = 23.23
Std. Dev. = 4.166
N = 13
Frequency
KEDS_Affective

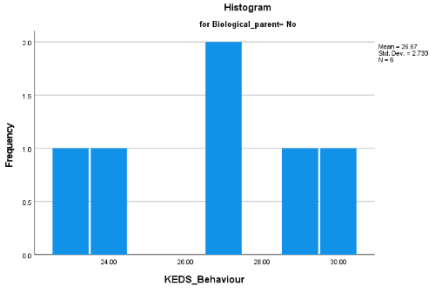

Histogram
for Biological_parent= No
Mean = 21.17
Std. Dev. = 3.371
N = 6
Frequency
KEDS_Affective

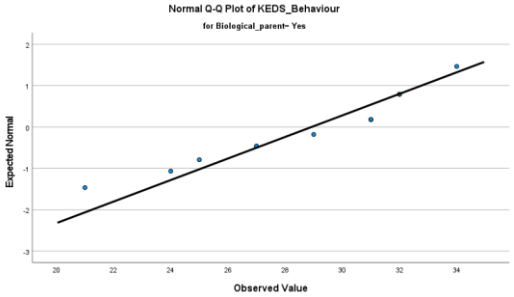

Normal Q-Q Plot of KEDS_Affective
for Biological_parent= Yes
Expected Normal
Observed Value

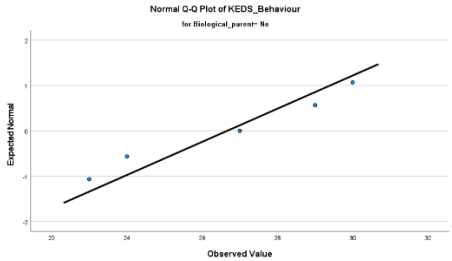

Normal Q-Q Plot of KEDS_Affective
for Biological_parent= No
Expected Normal
Observed Value

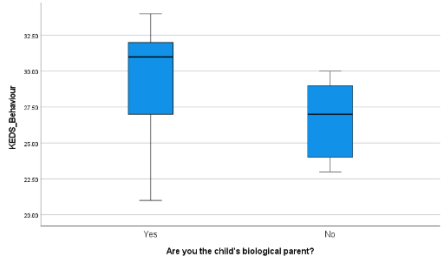

KEDS_Affective
Yes
No
Are you the child's biological parent?

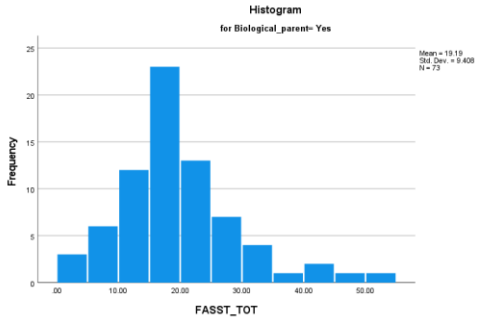

Histogram
for Biological_parent= Yes
Mean = 28.92
Std. Dev. = 3.84
N = 13
Frequency
KEDS_Behaviour

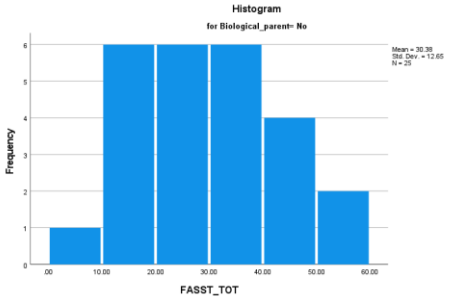

Histogram
for Biological_parent= No
Mean = 26.67
Std. Dev. = 2.733
N = 6
Frequency
KEDS_Behaviour

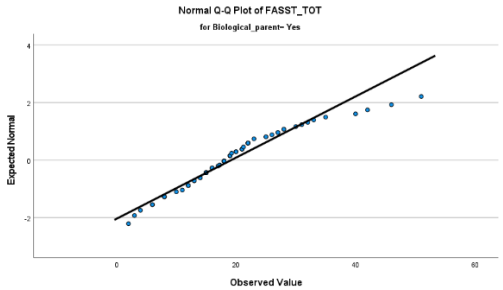

Normal Q-Q Plot of KEDS_Behaviour
for Biological_parent= Yes
Expected Normal
Observed Value

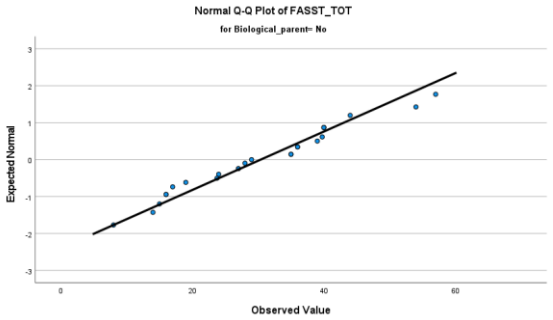

Normal Q-Q Plot of KEDS_Behaviour
for Biological_parent= No
Expected Normal
Observed Value

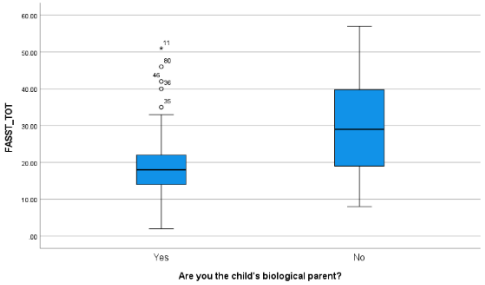

KEDS_Behaviour
Yes
No
Are you the child's biological parent?

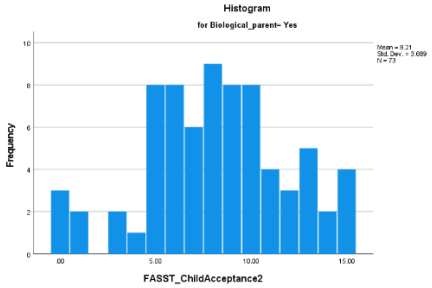

Histogram
for Biological_parent= Yes
Mean = 19.19
Std. Dev. = 9.408
N = 73
Frequency
FASST_TOT

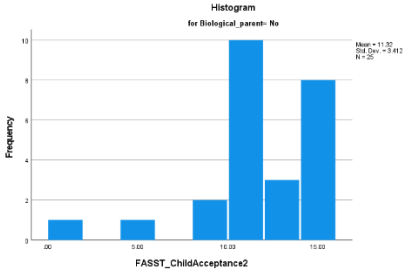

Histogram
for Biological_parent= No
Mean = 30.38
Std. Dev. = 12.65
N = 25
Frequency
FASST_TOT

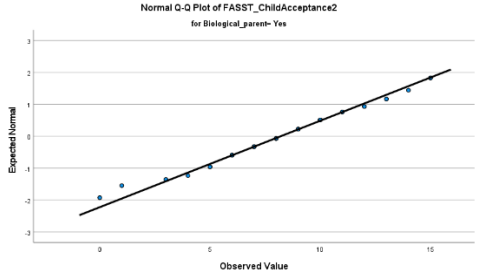

Normal Q-Q Plot of FASST_TOT
for Biological_parent= Yes
Expected Normal
Observed Value


Normal Q-Q Plot of FASST_TOT
for Biological_parent= No
Expected Normal
Observed Value

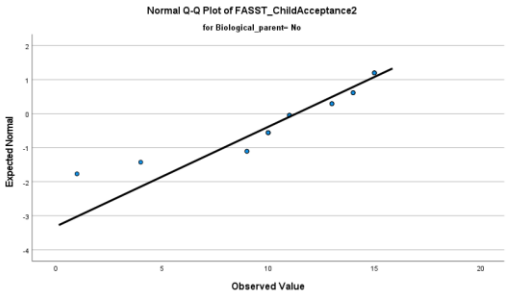

FASST_TOT
Yes
No
Are you the child's biological parent?

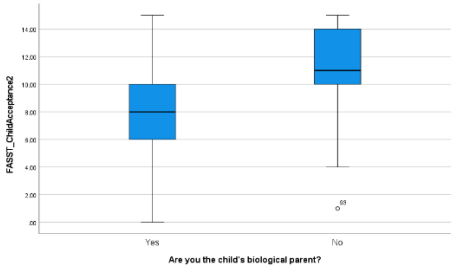

Histogram
for Biological_parent= Yes
Mean = 8.21
Std. Dev. = 3.689
N = 73
Frequency
FASST_ChildAcceptance2

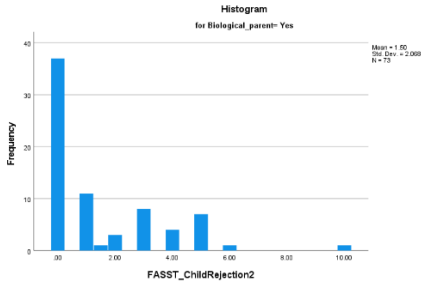

Histogram
for Biological_parent= No
Mean = 11.32
Std. Dev. = 3.412
N = 25
Frequency
FASST_ChildAcceptance2

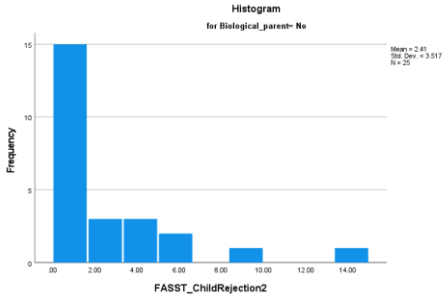

Normal Q-Q Plot of FASST_ChildAcceptance2
for Biological_parent= Yes
Expected Normal
Observed Value

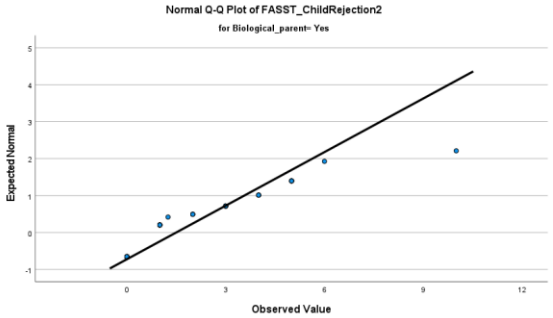
Appendix F

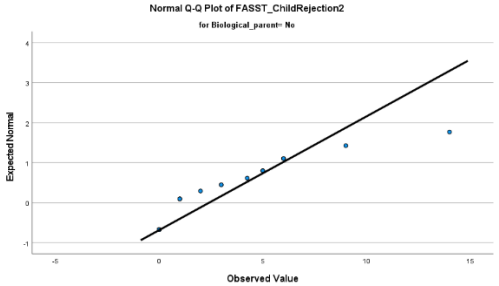

Normal Q-Q Plot of FASST_ChildAcceptance2
for Biological_parent= No
Expected Normal
Observed Value

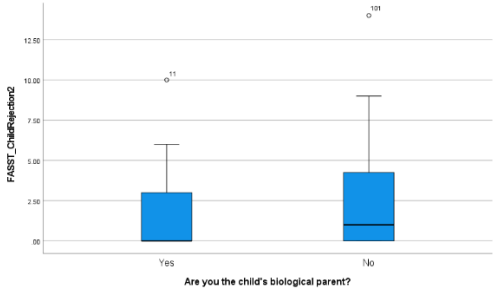

FASST_ChildAcceptance2
Yes
No
Are you the child's biological parent?

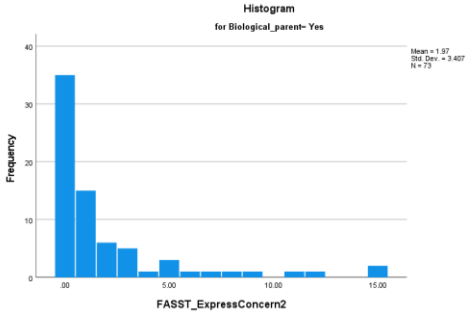

Histogram
for Biological_parent= Yes
Frequency
FASST_ChildRejection2

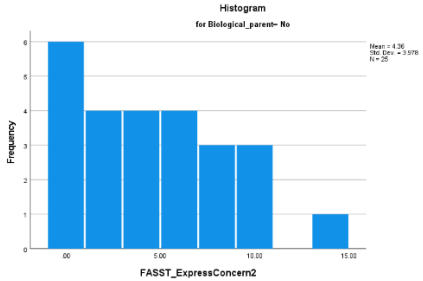

Histogram
for Biological_parent= No
Frequency
FASST_ChildRejection2

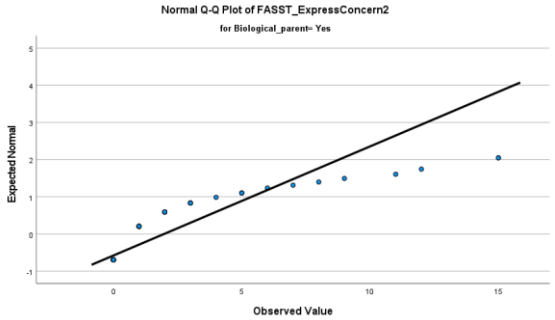

Normal Q-Q Plot of FASST_ChildRejection2
for Biological_parent= Yes
Expected Normal
Observed Value

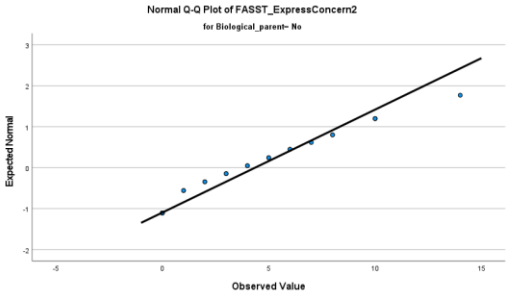

Normal Q-Q Plot of FASST_ChildRejection2
for Biological_parent= No
Expected Normal
Observed Value

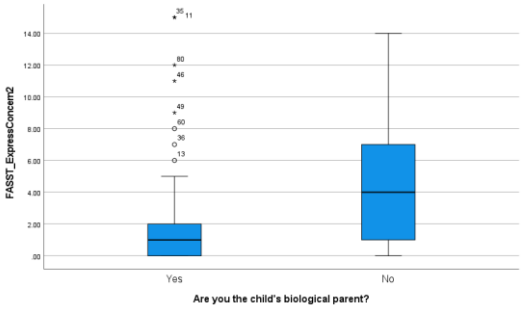

FASST_ChildRejection2
Yes
No
Are you the child's biological parent?

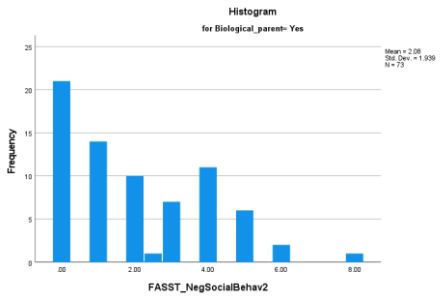

Histogram
for Biological_parent= Yes
Frequency
FASST_ExpressConcern2

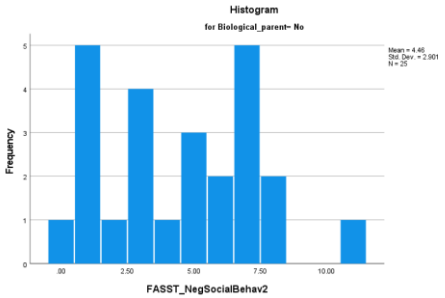

Histogram
for Biological_parent= No
Frequency
FASST_ExpressConcern2

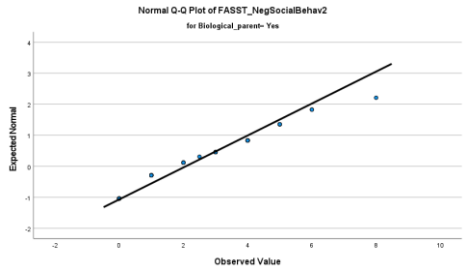

Normal Q-Q Plot of FASST_ExpressConcern2
for Biological_parent= Yes
Expected Normal
Observed Value

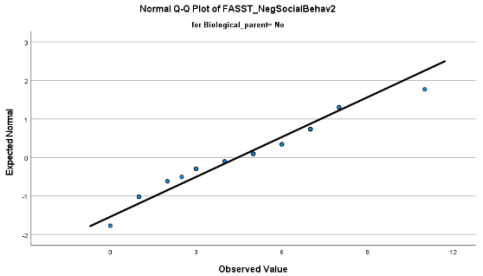

Normal Q-Q Plot of FASST_ExpressConcern2
for Biological_parent= No
Expected Normal
Observed Value


FASST_ExpressConcern2
Yes
No
Are you the child's biological parent?

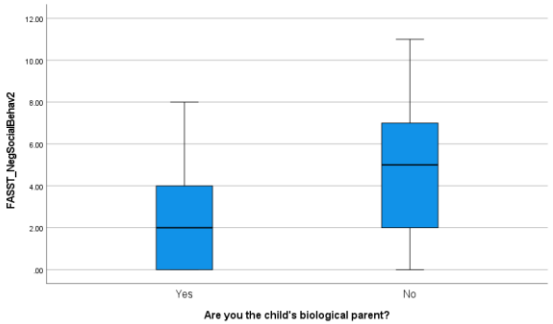

Histogram
for Biological_parent= Yes
Frequency
FASST_NegSocialBehav2

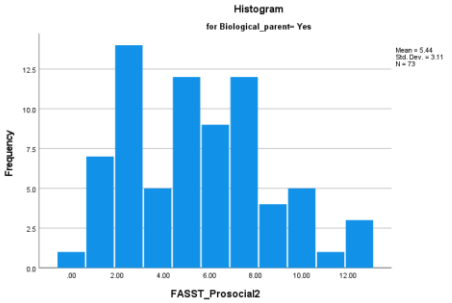

Histogram
for Biological_parent= No
Frequency
FASST_NegSocialBehav2

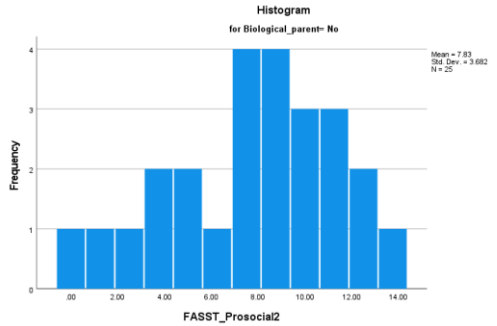

Normal Q-Q Plot of FASST_NegSocialBehav2
for Biological_parent= Yes
Expected Normal
Observed Value

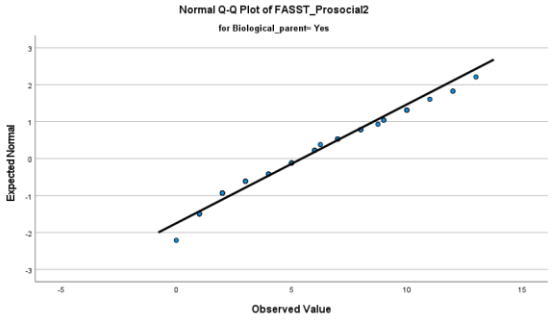

Normal Q-Q Plot of FASST_NegSocialBehav2
for Biological_parent= No
Expected Normal
Observed Value

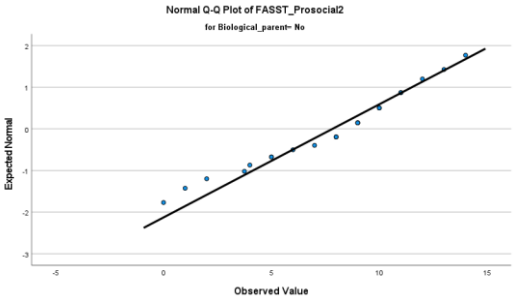
Appendix F

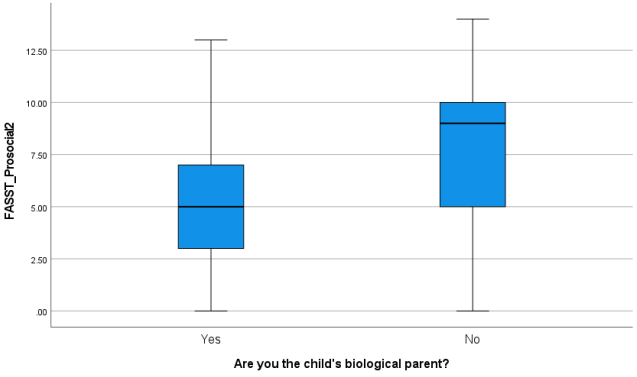

FASST_NegSocialBehav2
Yes
No
Are you the child's biological parent?


Histogram
for Biological_parent= Yes
Mean = 5.44
Std. Dev. = 3.11
N = 73
Frequency
FASST_Prosocial2


Histogram
for Biological_parent= No
Mean = 7.83
Std. Dev. = 3.682
N = 25
Frequency
FASST_Prosocial2


Normal Q-Q Plot of FASST_Prosocial2
for Biological_parent= Yes
Expected Normal
Observed Value


Normal Q-Q Plot of FASST_Prosocial2
for Biological_parent= No
Expected Normal
Observed Value


FASST_Prosocial2
Yes
No
Are you the child's biological parent?

Appendix G Data

G.1 T-tests

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
GEA_Affective_Scale	Equal variances assumed	.432	.513	2.130	103	.036	4.23565	1.98850	.29194	8.17937
	Equal variances not assumed			2.250	50.225	.029	4.23565	1.88242	.45513	8.01618

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
GEA_Cognitive_Scale	Equal variances assumed	2.866	.093	2.972	103	.004	5.89644	1.98376	1.96211	9.83076
	Equal variances not assumed			2.657	37.959	.011	5.89644	2.21898	1.40420	10.38868

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
GEA_Total_Scale	Equal variances assumed	.149	.700	3.021	103	.003	15.67353	5.18887	5.38263	25.96443
	Equal variances not assumed			2.903	42.323	.006	15.67353	5.39887	4.78062	26.56644

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
KEDS_TOTAL	Equal variances assumed	6.231	.022	3.017	19	.007	13.50000	4.47487	4.13400	22.86600
	Equal variances not assumed			3.852	18.797	.001	13.50000	3.50471	6.15920	20.84080

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
KEDS_Affective	Equal variances assumed	.017	.898	1.554	19	.137	2.78571	1.79262	-.96628	6.53771
	Equal variances not assumed			1.642	14.013	.123	2.78571	1.69676	-.85315	6.42458

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
KEDS_Behaviour	Equal variances assumed	1.843	.190	1.406	19	.176	2.21429	1.57442	-1.08101	5.50958
	Equal variances not assumed			1.598	16.845	.129	2.21429	1.38538	-.71066	5.13923

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
KEDS_Cognitive	Equal variances assumed	2.755	.113	3.379	19	.003	8.00000	2.36788	3.04396	12.95604
	Equal variances not assumed			3.778	16.221	.002	8.00000	2.11768	3.51570	12.48430

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
FASST_TOT	Equal variances assumed	5.946	.017	-4.682	96	.000	-11.19164	2.39015	-15.93605	-6.44723
	Equal variances not assumed			-4.056	33.552	.000	-11.19164	2.75922	-16.80182	-5.58147

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
FASST_ChildAcceptance2	Equal variances assumed	.500	.481	-3.892	98	.000	-3.19335	.82052	-4.82165	-1.56505
	Equal variances not assumed			-4.047	47.165	.000	-3.19335	.78900	-4.78046	-1.60623

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
FASST_ChildRejection2	Equal variances assumed	8.507	.004	-1.613	97	.110	-.93365	.57874	-2.08230	.21500
	Equal variances not assumed			-1.256	29.764	.219	-.93365	.74310	-2.45177	.58448

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
FASST_ExpressConcern2	Equal variances assumed	5.174	.025	-3.342	98	.001	-2.78482	.83318	-4.43824	-1.13141
	Equal variances not assumed			-2.973	36.352	.005	-2.78482	.93658	-4.68365	-.88600

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
FASST_NegSocialBehav2	Equal variances assumed	12.094	.001	-4.466	98	.000	-2.26611	.50741	-3.27304	-1.25918
	Equal variances not assumed			-3.682	32.987	.001	-2.26611	.61544	-3.51825	-1.01397

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
FASST_Prosocial2	Equal variances assumed	.594	.443	-3.285	97	.001	-2.43664	.74178	-3.90887	-.96442
	Equal variances not assumed			-3.058	38.984	.004	-2.43664	.79692	-4.04859	-.82470

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
PROMIS_TOTAL	Equal variances assumed	.989	.333	.276	19	.786	.92857	3.36657	-6.11774	7.97488
	Equal variances not assumed			.238	8.569	.818	.92857	3.90238	-7.96738	9.82452

G.2 Correlations

Correlations

		GEA_Affective_Scale	GEA_Cognitive_Scale	GEA_Total_Scale	KEDS_Affective	KEDS_Cognitive	KEDS_Behaviour	KEDS_TOTAL	FASST_ChildAcceptance2	FASST_ChildRejection2	FASST_ExpressConcern2	FASST_NegSocialBehav2	FASST_Prosocial2	FASST_TOT	PROMIS_TOTAL	PROMIS_Parent_Total
GEA_Affective_Scale	Pearson Correlation	1	.316**	.754**	-.186	-.230	-.435	-.325	-.142	-.068	-.044	-.183	-.238*	-.171	-.011	.131
	Sig. (2-tailed)		.001	.000	.447	.344	.063	.175	.160	.501	.664	.068	.018	.093	.963	.593
	N	105	105	105	19	19	19	19	100	99	100	100	99	98	19	19
GEA_Cognitive_Scale	Pearson Correlation	.316**	1	.790**	.338	-.240	.044	.009	-.430**	-.296**	-.393**	-.408**	-.606**	-.623**	.215	.281
	Sig. (2-tailed)	.001		.000	.157	.323	.858	.972	.000	.003	.000	.000	.000	.000	.376	.243
	N	105	105	105	19	19	19	19	100	99	100	100	99	98	19	19
GEA_Total_Scale	Pearson Correlation	.754**	.790**	1	.237	-.281	-.372	-.170	-.355**	-.215*	-.255*	-.349**	-.545**	-.488**	.075	.391
	Sig. (2-tailed)	.000	.000		.329	.245	.117	.487	.000	.033	.011	.000	.000	.000	.761	.098
	N	105	105	105	19	19	19	19	100	99	100	100	99	98	19	19
KEDS_Affective	Pearson Correlation	-.186	.338	.237	1	.471*	.265	.715**	-.253	.438	-.179	.148	-.409	-.299	.182	.099
	Sig. (2-tailed)	.447	.157	.329		.031	.246	.000	.296	.061	.464	.546	.082	.214	.431	.696
	N	19	19	19	21	21	21	21	19	19	19	19	19	19	21	18
KEDS_Cognitive	Pearson Correlation	-.230	-.240	-.281	.471*	1	.580**	.906**	-.342	.304	-.187	-.017	.322	-.093	.460*	.020
	Sig. (2-tailed)	.344	.323	.245	.031		.006	.000	.151	.206	.442	.943	.179	.706	.036	.938
	N	19	19	19	21	21	21	21	19	19	19	19	19	19	21	18
KEDS_Behaviour	Pearson Correlation	-.435	.044	-.372	.265	.580**	1	.734**	-.189	.394	.143	.384	.361	.245	.276	-.289
	Sig. (2-tailed)	.063	.858	.117	.246	.006		.000	.439	.095	.561	.105	.129	.311	.226	.245
	N	19	19	19	21	21	21	21	19	19	19	19	19	19	21	18
KEDS_TOTAL	Pearson Correlation	-.325	.009	-.170	.715**	.906**	.734**	1	-.321	.474*	-.126	.157	.148	-.063	.381	-.084
	Sig. (2-tailed)	.175	.972	.487	.000	.000	.000		.181	.040	.607	.520	.545	.796	.088	.739
	N	19	19	19	21	21	21	21	19	19	19	19	19	19	21	18
FASST_ChildAcceptance2	Pearson Correlation	-.142	-.430**	-.355**	-.253	-.342	-.189	-.321	1	.172	.431**	.248*	.363**	.676**	-.246	-.414
	Sig. (2-tailed)	.160	.000	.000	.296	.151	.439	.181		.089	.000	.013	.000	.000	.311	.078
	N	100	100	100	19	19	19	19	100	99	100	100	99	98	19	19
FASST_ChildRejection2	Pearson Correlation	-.068	-.296**	-.215*	.438	.304	.394	.474*	.172	1	.547**	.520**	.339**	.671**	.035	-.375
	Sig. (2-tailed)	.501	.003	.033	.061	.206	.095	.040	.089		.000	.000	.001	.000	.886	.114
	N	99	99	99	19	19	19	19	99	99	99	99	98	98	19	19
FASST_ExpressConcern2	Pearson Correlation	-.044	-.393**	-.255*	-.179	-.187	.143	-.126	.431**	.547**	1	.397**	.369**	.789**	-.463*	-.757**
	Sig. (2-tailed)	.664	.000	.011	.464	.442	.561	.607	.000	.000		.000	.000	.000	.046	.000
	N	100	100	100	19	19	19	19	100	99	100	100	99	98	19	19
FASST_NegSocialBehav2	Pearson Correlation	-.183	-.408**	-.349**	.148	-.017	.384	.157	.248*	.520**	.397**	1	.468**	.703**	.136	-.214
	Sig. (2-tailed)	.068	.000	.000	.546	.943	.105	.520	.013	.000	.000		.000	.000	.578	.379
	N	100	100	100	19	19	19	19	100	99	100	100	99	98	19	19
FASST_Prosocial2	Pearson Correlation	-.238*	-.606**	-.545**	-.409	.322	.361	.148	.363**	.339**	.369**	.468**	1	.715**	-.001	-.606**
	Sig. (2-tailed)	.018	.000	.000	.082	.179	.129	.545	.000	.001	.000	.000		.000	.997	.006
	N	99	99	99	19	19	19	19	99	98	99	99	99	98	19	19
FASST_TOT	Pearson Correlation	-.171	-.623**	-.488**	-.299	-.093	.245	-.063	.676**	.671**	.789**	.703**	.715**	1	-.294	-.820**
	Sig. (2-tailed)	.093	.000	.000	.214	.706	.311	.796	.000	.000	.000	.000	.000		.221	.000
	N	98	98	98	19	19	19	19	98	98	98	98	98	98	19	19
PROMIS_TOTAL	Pearson Correlation	-.011	.215	.075	.182	.460*	.276	.381	-.246	.035	-.463*	.136	-.001	-.294	1	.369
	Sig. (2-tailed)	.963	.376	.761	.431	.036	.226	.088	.311	.886	.046	.578	.997	.221		.132
	N	19	19	19	21	21	21	21	19	19	19	19	19	19	21	18
PROMIS_Parent_Total	Pearson Correlation	.131	.281	.391	.099	.020	-.289	-.084	-.414	-.375	-.757**	-.214	-.606**	-.820**	.369	1
	Sig. (2-tailed)	.593	.243	.098	.696	.938	.245	.739	.078	.114	.000	.379	.006	.000	.132	
	N	19	19	19	18	18	18	18	19	19	19	19	19	19	18	19

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

G.3 Mediation Model

```
Run MATRIX procedure:

*************** PROCESS Procedure for SPSS Version 3.5.3 ***************

          Written by Andrew F. Hayes, Ph.D.       www.afhayes.com
    Documentation available in Hayes (2018). www.guilford.com/p/hayes3

**************************************************************************
Model  : 4
    Y  : FASST_TO
    X  : groupab
    M  : GEATONE

Sample
Size:  99

**************************************************************************
OUTCOME VARIABLE:
 GEATONE

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .2853      .0814   608.7596     8.5927     1.0000    97.0000      .0042

Model
             coeff         se          t          p       LLCI       ULCI
constant   163.9591     7.5346    21.7608      .0000   149.0049   178.9133
groupab    -16.5180     5.6350    -2.9313      .0042   -27.7019    -5.3341

Standardized coefficients
            coeff
groupab     -.6450

**************************************************************************
OUTCOME VARIABLE:
 FASST_TO
```

```
Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .5723      .3275    88.3530    23.3801     2.0000    96.0000      .0000

Model
              coeff         se          t          p       LLCI       ULCI
constant    36.0596     6.9615     5.1799      .0000    22.2411    49.8781
groupab      8.3659     2.2398     3.7351      .0003     3.9199    12.8119
GEATONE      -.1711      .0387    -4.4245      .0000     -.2479     -.0944

Standardized coefficients
             coeff
groupab      .7374
GEATONE     -.3864

Test(s) of X by M interaction:
          F        df1        df2          p
      .4625     1.0000    95.0000      .4981

************************ TOTAL EFFECT MODEL ****************************
OUTCOME VARIABLE:
 FASST_TO

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .4364      .1904   105.2729    22.8152     1.0000    97.0000      .0000

Model
              coeff         se          t          p       LLCI       ULCI
constant     7.9989     3.1333     2.5529      .0122     1.7803    14.2176
groupab     11.1928     2.3433     4.7765      .0000     6.5420    15.8436

Standardized coefficients
             coeff
groupab      .9866

************** TOTAL, DIRECT, AND INDIRECT EFFECTS OF X ON Y **************

Total effect of X on Y
     Effect         se          t          p       LLCI       ULCI       c_ps
```

```
    11.1928     2.3433     4.7765      .0000     6.5420    15.8436      .9866

Direct effect of X on Y
     Effect         se          t          p       LLCI       ULCI      c'_ps
     8.3659     2.2398     3.7351      .0003     3.9199    12.8119      .7374

Indirect effect(s) of X on Y:
            Effect     BootSE   BootLLCI   BootULCI
GEATONE     2.8270     1.1316      .7296     5.1467

Partially standardized indirect effect(s) of X on Y:
            Effect     BootSE   BootLLCI   BootULCI
GEATONE      .2492      .0998      .0666      .4527

************************ ANALYSIS NOTES AND ERRORS ************************

Level of confidence for all confidence intervals in output:
  95.0000

Number of bootstrap samples for percentile bootstrap confidence intervals:
  5000

NOTE: Standardized coefficients for dichotomous or multicategorical X are in
      partially standardized form.

------ END MATRIX -----
```

Appendix H Non-Parametric Tests

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.[a,b]	Decision
1	The distribution of GEA_Affective_Scale is the same across categories of Are you the child's biological parent?.	Independent-Samples Mann-Whitney U Test	.028	Reject the null hypothesis.
2	The distribution of GEA_Cognitive_Scale is the same across categories of Are you the child's biological parent?.	Independent-Samples Mann-Whitney U Test	.010	Reject the null hypothesis.
3	The distribution of GEA_Total_Scale is the same across categories of Are you the child's biological parent?.	Independent-Samples Mann-Whitney U Test	.006	Reject the null hypothesis.
4	The distribution of KEDS_Affective is the same across categories of Are you the child's biological parent?.	Independent-Samples Mann-Whitney U Test	.110[c]	Retain the null hypothesis.
5	The distribution of KEDS_Cognitive is the same across categories of Are you the child's biological parent?.	Independent-Samples Mann-Whitney U Test	.003[c]	Reject the null hypothesis.

6	The distribution of KEDS_Behaviour is the same across categories of Are you the child's biological parent?.	Independent-Samples Mann-Whitney U Test	.110[c]	Retain the null hypothesis.
7	The distribution of KEDS_TOTAL is the same across categories of Are you the child's biological parent?.	Independent-Samples Mann-Whitney U Test	.007[c]	Reject the null hypothesis.
8	The distribution of FASST_ChildAcceptance2 is the same across categories of Are you the child's biological parent?.	Independent-Samples Mann-Whitney U Test	.000	Reject the null hypothesis.
9	The distribution of FASST_ChildRejection2 is the same across categories of Are you the child's biological parent?.	Independent-Samples Mann-Whitney U Test	.421	Retain the null hypothesis.
10	The distribution of FASST_ExpressConcern2 is the same across categories of Are you the child's biological parent?.	Independent-Samples Mann-Whitney U Test	.001	Reject the null hypothesis.
11	The distribution of FASST_NegSocialBehav2 is the same across categories of Are you the child's biological parent?.	Independent-Samples Mann-Whitney U Test	.000	Reject the null hypothesis.
12	The distribution of FASST_Prosocial2 is the same across categories of Are you the child's biological parent?.	Independent-Samples Mann-Whitney U Test	.002	Reject the null hypothesis.

13	The distribution of FASST_TOT is the same across categories of Are you the child's biological parent?.	Independent-Samples Mann-Whitney U Test	.000	Reject the null hypothesis.

a. The significance level is .050.

b. Asymptotic significance is displayed.

c. Exact significance is displayed for this test.

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