Parental Empathy, Child Empathy and prosocial behaviour in early childhood: A systematic Review

Abstract

The ability to empathise and understand other's emotions have been shown to have a great impact on social interactions and prosocial behaviours. The objective of the review was to exploring the effect on parental empathy on the development of early childhood empathy and prosocial development. Seven Databases were search including Medline, CINAHL, PsycINFO, The Cochrane Library, Pubmed, Science direct and Google Scholar. A quality assessment rating showed studies relatively strong in methodology. The findings highlighted the association between empathetic parenting and the development of prosocial behaviour and empathy in early childhood. Research concluded that the quality parental empathy was important alongside the increasing age of the child. Clinical studies would aid understanding into parental empathy, child empathy and prosocial behaviours.

Key Words: Paternal. maternal. Parental. Child. Empathy. Prosocial development.

1.1 Introduction

The ability to empathise and understand other emotions has a great influential impact on social interactions and prosocial behaviours (Decety et al 2016, Stern and Cassidy 2017). Altruism, the ability to be concerned with the happiness of others, alongside the emergence of empathy can also influence the motivation towards prosocial behaviours in children (Farrant et al 2012, Eisenberg et al 2006). Empathy development has been shown to be promoted through the formation of bonds, with peers, primary caregiver and family members. Empathy has been reported in children as young as six to eight months (fussing in response to others distress), eight to ten months (emergence of awareness of other distress) and two to three years, emerging of prosocial behaviour, i.e. understanding and showing affections in response to parental distress (Lamb and Bornstein 2011, Decety 2014). In the second year of life, the cognitive and emotional conditions for the development of empathy and prosocial behaviour are set in place to allow observable differences between effects of parental empathy on 1) the emergence of empathy 2) prosocial behaviour in early childhood (White-Mansell et al. 2003, Blandon and Scrimgeour 2015). The importance of the first 5 years of development is widely known to be fundamental for learning, with parental interaction being of high importance in the development of security, empathy and confidence for the child. In this review the impact of parental empathy and the developmental of early childhood empathy and prosocial behaviour will be examined in children aged between nought and five years.

1.1. Empathy

The emergence of emotional awareness and understanding in early childhood (automatic empathy) has been shown to influence and lead to the emergence and understanding of sensitivity to the feelings of others, a development known as cognitive empathy (Stern et al 2015). This ability to understand and respond to other emotions, can be seen to develop through the observations, encouragement and interactions of others through early childhood (Stern et al 2015, Oguz and Akyol 2008); however, this is dependent on the quality and timely interactions between primary care givers in early childhood, within the first 5 years o d development, which has the greatest impact on the development of empathy (Lin et al 2016). Furthermore, empathy is a complex cognitive capacity, involving the adoption of subjective perspectives of another individual, with constructs closely related to "theory of the mind". Although automatic empathy does not require cognitive capacities, cognitive empathy requires the ability not only to react to other emotional states but to also understand them (Decety et al 2015, Farrant et al 2012, Eggum et al 2011). Empathy can be seen to influence and shape both antisocial and prosocial behaviour (Van-Noorrden et al 2015). Heightened empathy has been shown to result in higher prosocial behaviours including the ability to comfort and respond to behaviour between peers and family (Findlay et al 2006).

1.2. ***Prosocial behaviour***

Similar to empathy, prosocial behaviour is dependent on early interactions between infant and caregivers, with the reciprocity and responsiveness of caregivers determining the child's voluntary behaviour towards the benefits of peers, and family and society (William and Berthelsen 2017, Farrant et al 2012, Eisenberg et al 2006). Prosocial behaviour can include helping, emotional support, comforting, sharing, donating, co-operating and volunteering (Decety 2014). Not all prosocial behaviours are influenced by empathy, with some being

influenced by biological, environmental and hereditary mechanisms and neither should empathy and prosocial behaviour be viewed as one and the same (Brophy-Herb et al 2012, Upshaw et al 2015). Prosocial behaviour has been shown to be focused on family members, parents and close friends. It has been reported that parental warmth and non-hostile parenting can result in later prosocial behaviour due to the increase in early childhood self-regulation (William and Berthelsen 2017). To understand prosocial development in early childhood, is to examine the interactions and behaviours of those closest to the child, thus looking at prosocial behaviour of a child within a family system approach (McElwain et al 2007).

1.3. ***Parental Empathy and its effect on the development of children's empathy and prosocial behaviour in early childhood***.

Parental sensitivity and responsiveness, including empathetic parenting and social integration, can influence early childhood self-regulation, the fundamental building block of the emergency of empathy and prosocial behaviour (Williams and Berthelsen 2017, Shonkoff et al (2012). Empathy can be promoted through positive parental and nurturing care. However, a lack of empathy has been reported to result in poor peer relationships, negative externalising behaviour, hostility, bullying, increased antisocial behaviour in adolescence, and child abuse and psychopathy into adulthood (Stern and Cassidy 2017). Children deprived in paternal empathy and warmth have been reported to need encouragement and support from external sources (Masten and Obradovic 2006), but inbuilt resilience in children can help the emergence hypersensitivity of empathy in children (Martinez-Torteya 2009, McElwain et al 2007). These children, however, have also been observed to be more inhibited, less secure and displaying less empathic feelings toward an unfamiliar person at 2 years of age (Van de

Mark 2002). Furthermore, current literature has tended to neglect the links between paternal empathy and direct impacts on child development of empathy and prosocial behaviours (Stern et al 2015).

1.4. Methodological Considerations

The literature reflects a lack of unanimity concerning parental empathy and its effects on development of early childhood empathy and prosocial behaviour. Whereas a large body of research has shown that a child's empathy, secure attachment and positive development can be nurtured through the empathy, sensitive responses and attachment from their mothers, little is known about the effects of paternal empathy on early childhood development of empathy and prosocial behaviour. The purpose of the research is to provide the attention and understanding of existing research, while highlighting the impetus for additional research concerning parental empathy and the effects of childhood empathy and prosocial behaviours. Outcomes considered included judging the relative strength of existing research data, while providing a sound basis for future clinical studies/practice.

1.5. ***The present review***

Since there has not been a systematic review examining the relationship between Parental Empathy and the development of Empathy and prosocial behaviour in early childhood, this review seeks to address this unmet need by appraising the existing empirical evidence on the development of childhood empathy and prosocial behaviour of children aged between zero to

five years, with emphasis on the role Paternal empathy and sensitivity. Seeking to answer the following research questions.

Research questions included:

(A) Is parental empathy associated with higher levels of child empathy and prosocial behaviors in the early years (i.e., birth to five years of age)?

B) Does Parental absence or presence of empathy when interacting with children impact the child's development of their own empathy?

C) What governs the development of Childhood empathy, and prosocial behaviour?

2. Methods

2.1. Inclusion and Exclusion Criteria

Inclusion criteria as discussed and agreed with by the author/supervisor included studies that had (a) direct measures of childhood empathy, (b) quantitative/qualitative assessments of prosocial behaviour in association with parental empathy, (c) the children within the studies were aged five or below and were drawn from general populations, (d) the studies used

empirical designs that employed naturalistic observations or surveys, (e) the studies were published in English–language, peer-reviewed-journals.

Exclusion criteria included (a) studies involving parents and children with known learning difficulties and/or mental health difficulties and (b) whole book chapters (e) no intervention studies were included.

2.2. Outcomes

The Study employed systematic methods of identify, appraise and synthesise of findings within current literature, to explore outcomes relating to child empathy and prosocial behaviour development in association with parental empathy towards their children. Given the current unclear and unknown relationship this current study would allow a better understanding between parental empathy and child empathy/prosocial thus influencing further research and clinical studies.

2.3. Literature Search

Initial scoping searches were completed to the defined search terms of 'parents, mother OR fathers' related to the term 'empathy' and then combined with the Boolean operator 'And', alongside the following terms 'infant', 'child', 'empathy' and 'prosocial behaviour'. Search areas included titles, abstracts, keywords and topic areas. After duplicated references were removed, inclusion criteria and exclusion criterial were applied to titles, abstracts and then full texts, to establish study suitability. The remaining studies that satisfied the inclusion and exclusion criteria were reviewed in full, following PRISMA guidelines (BMJ 2009). The electronic search was performed on multiple databases including CINAHL, Medline, the

Cochrane Library, PsycINFO, ScienceDirect, PubMed and Google scholar. In addition, the reference lists and citations in all selected full text reports were scrutinized for relevant secondary sources of information. The selected studies covered different aspects of empathy and prosocial behaviour of children ages nought to five years and the association with parental empathy. Full details of the extraction process are given in Figure 1 – Prisma diagram and a detailed breakdown of the search findings are shown in table 1.

2.4. ***Quality Assessment***.

The PRISMA guidelines were adhered to and reported on (Mohen et al 2009). The author conducted all searches (title/abstract and full text screening). The Effective Public Health Practice Project (EPHPP) Quality Assessment Tool was used to assess risk of study bias (Jackson and Waters 2005). The author then conducted a broad quality assessment for all included studies and an independent quality assessment was performed by a suitably qualified second assessor on 20 % of the studies, selected randomly after data extraction was completed. Any disagreements between the author and second assessor were discussed and resolved. Data extraction included the study setting, the demographic details on participants, the assessment methods used and descriptive statistics (scores for parental and child empathy and child prosocial behaviour), and measures of effect. The systematic study was registered with Prospero, the international prospective register of systematic reviews.

3.1. ***Results***

3.1. ***Studies Characteristics***

A total number of 13 studies were included in the review (see figure 1 – Prisma Diagram). All studies were based on either the primary or secondary use of longitudinal study datasets with cohort designs and were published between 1999 and 2017. In 3 out of the 13 studies (Fields-Olivieri et al. 2017, Walker and Cheng 2007, Daniel et al. 2016), the study participants were recruited from birth announcements and community preschool flyers, with the main sampling method consisting of questionnaires and interviews completed at home. One study (Williams and Berthelsen 2017) employed database recruitment strategies, with Williams and Berthelsen 2017 sending out invites to a randomized selection of postcodes. Again, the main sampling method was by study questionnaires completed at home. The remaining studies were recruited using birth records and postal invitations (Van De Mark et al 2012), media advertisings, school's invitations, telephone contacts and paediatric referrals (Kim and Kochanska 2017, Waugh et al 2015, Kochanska et al 2013, Kochanska et al 2004, Spinrad and Stifter 2006, Brownell et al 2013). The Study by Lindsey et al (2010) and Lindsey et al (2013) did not report on the recruitment process. All seventeen studies were conducted in primary, secondary care clinic and or home settings.

The studies were conducted mainly in developed countries, with 8 being carried out in the USA, (Spinrad and Stifter 2006, Brownell et al 2013, Waugh et al 2015, Fields- Olivieri et al 2017, Lindsey et al 2013, Kochanska et al 2004, Lindsey 2010, Walker and Cheng 2007), two with USA and Korean collaboration (Kochanska et al 2013, Kim and Kochanska 2017), one using data from a Canadian longitudinal cohort study (Daniel et al 2016), one study based in the Netherlands (Van de Mark et al 2002), one in Australia (Williams and Berthelsen 2017). Two studies were conducted in countries where English was not the first language (Netherlands) (Van de Mark 2002) and two were performed in collaboration with counties

where English was the not the first language (Korean with USA English speaking collaboration (Kochanska et al 2013, Kim and Kochanska 2017).

3.2. ***Sample Population***

The review identified a combined total of 4326 children, with study sample sizes ranging from n 46 (Waugh et al 2015) to 4007 (Williams and Berthelsen 2017). Children ages ranged from 2 months (Daniel et al 2015) to 100 months (Kochanska et al 2013). The review identified a verifiable total number of 1234 of parents surveyed within these studies, with 4 studies providing no information on the number of parent participants (Williams and Berthelsen 2017, Kim et al. 2017, Fields- Olivieri et al 2017, Walker and Cheng 2007, Kochanska et al 2004). A total of n= 824 mothers was specifically identified with a mean age ranging from 25 (Lindsey et al 2013) to 34 (Daniel et al 2016). A total of n= 452 fathers was surveyed, with the mean age per study ranging from 32 (Kochanska et al 2004) to 37 (Daniel et al 2016).

3.3.1. ***Measurements of parental empathy***

A range of tests were used to measure Parental empathy (Table 1), including Child rearing questioners (Williams and Berthelsen 2017), Mutually Responsive orientation observations coding (Kochanska et al 2013), Observational blind coding (Lindsey et al 2013, Kim and Kochanska 2017, Brownell et al 2013, Spinrad and Stifter 2006, Waugh et al 2015, Lindsey et al 2010), Erickson Scales for supportive Presence (Van De Mark et al 2002), NEO Factor inventory, Perspective Taking Scale (Kochanska et al 2004), Parent-child interaction Rating

system (PCIRS) (Fields – Olivieri et al 2017), Stress scales, maternal empathy scales (MES) (Walker and Cheng 2007) and Positive Scale (Daniel et al. 2016).

3.3.2. ***Measurements of child's empathy***

Child Empathy was measured using a variety of tests (Table 1), of which the most frequently used measurement was Observational coding, employed by 6 studies (Lindsey et al 2010, Kochanska et al 2004, Brownell et al 2013, Spinrad and Stifter 2006, Kim and Kochanska 2017). The Empathy coding system (Van Der Mark et al 2012), the inventory of Callous Traits (ICU) (Kochanska et al 2013) was also used.

3.3.3. ***Measurements of child's prosocial behaviour***

Child Prosocial behavioural traits were assessed using twelve different measurement methods including Toddles behaviour assessment questionnaires (TBAQ-R), (Fields-Olivieri et al. 2017), Infant Temperamental questionnaire and observational coding, Child-Peer interaction (Lindsey et al. 2010), Observational coding (Waugh et al. 2015, Brownell et al. 2013, Lindsey et al. 2013), The Child behavioural checklist (Walker and Cheng 2007), the Prosocial questionnaire (Daniel et al. 2016), the Laboratory Temperament Assessment Battery (LAB-TAB) (Kochanska et al 2004), the Empathy coding system (Van Der Mark et al 2012), the Strengths and difficulty questionnaires (SDQ) (Williams and Berthelsen 2017), Prosocial Behaviour Scales (Health behavioural questionnaires) and Toddlers social and emotional assessments (ITSEA) (Kim and Kochanska 2017).

3.4. Parental empathy and child empathy and prosocial development

As seen in Table 2**,** virtually all studies revealed statistically-significant positive correlations (P=0.05) between empathetic parental interactions and the development of empathy and positive prosocial behaviour in children aged between nought and five years. These correlations were shown to be to be linked with both maternal and paternal empathetic interactions (Lindsey et al 2010). Insecurity and variations in parental empathetic responses were also shown to negatively affect the development of prosocial behaviours in infants (Kochanska et al 2004, Kim and Kochanska 2017). Insecure and unempathetic infants were more likely to possess negative prosocial behaviours (Kim and Kochanska 2017).

The quality of parental interactions and socialisation were found to be a key driver in the development of child empathy, including the importance of parental exploration of infant emotions in the development of infant empathic understanding and prosocial behaviour (Brownell et al 2013, Waugh et al 2015 Lindsey et al 2010). More specifically, parental emotional traits were shown to affect the emergence of empathetic infants (0.13) and parental elicitation of emotional traits on the emergence of the prosocial child (0,5 P= <0.05) (Brownell et al 2013).

3.5. Mothers empathy and child empathy development

An apparent contradiction was evident in the studies when examining the relationship between maternal empathy and the establishment of empathetic traits in the child. Though Van De Marks et al (2002) and Williams and Berthelsen (2017) acknowledged that a secure attachment to the mother was an important prerequisite for the development of empathy in infants, they nonetheless concluded that maternal responsiveness and empathetic sensitivity

were not in themselves important factors in the development of infant empathy. By contrast, three studies observed that maternal responsivity (empathy) and infant security were predictive markers for the development of the ability of infants to show high concern towards their mother's wellbeing, a key infant empathetic trait. (Spinrad and Stifter 2006, Blandon and Scrimgeour 2015). Kim and Kochanska 2017 also reported that maternal responsiveness when the child was nine months was a predictive indicator for the establishment of positive child empathy at 22 months.

3.5.2. Fathers empathy and child empathy development

Paternal sensitivity (empathy) and warmth was also noted to result in children with higher sensitivity, secure paternal attachment and positive emotions towards others (empathy) and prosocial behaviour towards peers (Fields – Olivieri et al 2017, Kim and Kochanska 2017). The development of infant empathy between the ages of two and seven was also shown to be dependent on paternal empathy in early infancy (Williams and Berthelsen 2017).

3.6.1. Mothers empathy and child prosocial behavioural development

As with child empathy, the studies produced contradictory findings when examining the relationship between maternal empathy and prosocial behavioural traits in children. Maternal responsiveness was not associated with the emergence of prosocial behaviour in two studies by Spinrad and Stifter 2006, Walker and Cheng 2007. Instead Walker and Cheng (2007) reported a stronger correlation ($t=1.95$, $p=0.5$) between positive prosocial behaviour in infants and maternal stress or rather the absence of maternal stress. (Walker and Cheng 2007). However, Daniel et al (2016) observed that displays of maternal warmth and affection at eighteen months was positively correlated with the development of prosocial behaviour at

thirty-six months and fifty-four months, respectively. Mother-child mutual orientation was also shown to correlate with infant prosocial development (Kochanska et al 2013). While Williams and Berthelsen (2017) reported positive prosocial behaviour in children age six to seven years with maternal warmth (empathy) and infant empathy when the child was two to three years. Maternal expression of positive or negative emotions was shown to hold significant importance in the externalising behavioural issues of infants and reduced aggression between infants and peers (Lindsey et al 2013).

3.6.2. Fathers empathy and child prosocial behavioural development

In general, paternal warmth and positive parenting were found to be predictive markers for increases in positive infant prosocial behaviours, with fathers' and mothers' parenting practice having a combined effect on the development of prosocial behaviours in infants (Daniel et al 2016, (paternal hostility and infant prosocial behaviour 0.9) (Williams and Berthelsen 2017). Conversely, Kim and Kochanska (2017), found that fathers with low empathy was predictive of low empathetic and prosocial behaviours in insecure infants ($b=0.23$, $se=0,9$, $p<0.5$). However no statistically significant correlation was reported between secure attachment and infant empathy and prosocial behaviours in this study. Mutual responsiveness between infant and father and paternal expression and sharing of positive or negative emotions were also shown to in the externalising behavioural issues of infants (Kochanska et al 2013, Lindsey et al 2013).

3.7. Mediators

Several risk factors were associated with reduced empathy and prosocial behaviour in children, including Maternal Stress, number of siblings, family income, parental educational levels and ethnicity (Walker and Cheng 2007, Waugh et al 2015, Williams and Berthelsen 2017, Kochanska et al 2013). The sex of the infant was also reported to affect the emergence of empathy and prosocial development, as was the maternal response to the child (Kochanska et al 1999, Waugh et al 2015, Lindsey et al 2013), This may be due to cultural expectations, while other studies have reported biological difference between male and females (Lindsey et al 2013). However, 3 studies showed there was no correlation between maternal age or sex of the infant (Van De Mark et al 2002, Spinrad and Stifter 2006, Brownell et al 2013,). Conversely, the increases in the age of the child and educational care setting were associated with increased empathy levels and prosocial behaviours (Van De Mark et al 2002, Williams and Berthelsen 2017, Lindsey et al 2010).

3.8. Study Quality

The effective public health practice project (EPHPP) quality assessment tool scores ranged between medium and strong (Jackson and Waters 2006). There were common features of these studies that affected the quality scores, including sample size, the adoption of measures to mitigate against study bias by both participants and assessors, the use of both inclusion and exclusion criteria and biases in the recruitment of participants. Walker and Cheng (2007), commented on the justification of sample size in relation to the statistical analysis being reliant of the represented population with optimal population for reliant outcome of 30 or more. The use measures to eliminate study bias, such as blinding the scores to both assessors and participants, were not declared in seven studies. Only three studies confirmed the

blinding of assessors but did not specify the blinding of participants. However, these studies could have used other measures to reduce bias, such as the external assessors that are blinded to the objectives of the study or use of clinic questioning/observations rather than home completed questionnaires by parents. One study blinded both assessors and participants (Daniel et al 2002).

The use of both inclusion and exclusion criteria was confined to only two studies (Fields – Oliveri et al (2017) and Lindsey et al (2013) with a further 5 studies only adopting inclusive criteria (Kim and Kochanska 2017 and Kochanska et al 2013, Van De Mark 2002, Lindsey et al 2010, Daniel et al 2015), This may be a reflection of most studies using secondary data from larger longitudinal study datasets and, as a consequence, were bound by previous study protocols (National Institute of Child Health and Human development (NICHD) Lindsey et al 2010), Mail Survey secondary data (Walker and Cheng 2007), Growing Up in Australia, The longitudinal study of Australian children (LSAC). Lindsey et al (2013), Fields-Olivieri unspecified data set used. The highest rated study contained 5 strong results and one medium result, both scoring medium of study designs due their use of longitudinal and longitudinal cohort studies design (Lindsey et al 2010). Many studies used biased methods in recruiting participants. For instance, several studies imposed geographical constraints on recruitment through the reliance of flyers and the word of mouth targeted to specific clinics, nurseries and hospital settings (Spinrad and Stifter 2006, Kim and Kochanska 2017, Kochanska et al 2013, Lindsey et al 2013). Because of using longitudinal datasets, all studies had at least one follow-up study of a minimum of 6 months to maximum of 100 months (Kochanska et al

2013) after the collection of baseline data. Dropout rates were reported in all but three of the studies.

Whereas an assessment of parental empathy/warmth was performed in all studies reported on paternal empathy, only 12 reported on child prosocial behaviour, 8 on child empathy development and only four studies discussed both empathy and prosocial development in children. Only 3 studies contained weak scores, due to 1 study failing to report on dropout rates (Kochanska et al 2013,) and 2 not reporting on blinding within the study (Van Der Mark et al 2002, Walker et al 2007).

Most of studies were classified as having strong quality, however little research detailed paternal empathy and child prosocial and empathy development. Statistical analysis of the studies provided details of comprehensive outline of effective sizes and confidence intervals. Statistical tests included Chi Sq. analysis, normal fit index power calculations (Daniel et al 2016). ANOVA (Waugh et al 2015), Fisher's Z test (Lindsey et al 2010), regression analysis (Van De Mark et al 2002, Kockanska et al 2013, Fields – Olivieri 2017), PROCESS (Kim and Kochanska 2017), Pearson correlation, Structural equation modelling (SEM) (Walker and Cheng 2007 and Williams and Berthelsen 2017). Williams and Berthelsen 2017 Weight least square mean variance Root mean square error of approximation, comparative fit index), t testing (Spinrad and Stifter 2006). Only one study did not use statistical analysis (Lindsey et al 2013),

Reliability tools were detailed and scored highly the studies, with one study using Kappas reliability (Kochanaska et al 2013) for coding reliability, further studies used independent coding/agreed coding throughout (Lindsey et al 2010, Kim and Kochanska 2017, Brownell et al 2013) excluding Lindsey et al (2013).

Discussion

This review explored the current empirical evidence on the association between parental empathy and the development of empathy and prosocial behaviour in young children. In doing so, the review uncovered an association between responsive and empathetic parenting and the development of prosocial behaviour in children and, conversely, harsh and intrusive parenting resulted in children with negative prosocial behaviours, in line with previous findings by White-Mansell et al (2003) and Engle et al (2011). The reviewed studies also showed the connection between the quality of parental interactions (Lindsey et al 2010, Brownell et al 2013) and prosocial behaviour. Covariates were shown to impact the quality of parental empathy, including social economic status, the care giving context, parental emotional availability, increased age and gender of the child, socialisation of family (Lindsey et al 2010, Spinard et al 2006). The parents own childhood history of security were also shown to impact on parental empathetic interactions with their own children (Kim and Kochanska (2017).

One study showed no association between maternal sensitivity and development of empathetic children, but is maternal sensitivity a component of empathy? (Van de Mark 2002). If understanding and compassion towards others can manifest itself as sensitivity and warmth, surely parental sensitivity is a component of empathy and therefore associated with the child development of empathy and prosocial behaviours. Spinard et al (2006) reported that Maternal sensitivity was not only associated with the development of empathy in children, but also with the development of prosocial behaviours with the increasing age of the child.

The association between paternal empathy and the development of child empathy and prosocial behaviour remains unclear, with limited studies on the subject. However, the ability of a father to be open and accessible to their child's emotional needs has been shown to be associated with children's temperament development (Kochanska et al 2004).

The second aim was to examine whether parents have an absence or presence of empathy when interacting with children. Lindsey et al (2010) and Waugh et al (2015) reported a mutuality in empathy between parent and child, when in a play and care giving context with Daniel et al (2016) also reporting the positive effects of parental warmth on a child's prosocial development. However, is the show of parental empathy towards children learnt behaviour or innate?

In addressing the third question on how children develop empathy, and prosocial behaviour, the studies reported on several mechanisms including learnt behaviour from parents, peers and caregivers, the emergence of child and caregiver relationship in early childhood, and also biological and evolutionary development of empathy and prosocial behaviour in children. (Eggum et al 2011, Strayer and Roberts 2004, Koster et al 2016). Figure 2, shows the association of Parental empathy and development of child empathy and prosocial behaviour.

4.1. Limitations

Limitations of the review included the almost exclusive use of parental questionnaires to report parental and child empathy and child prosocial behaviours, which could lead to reporting bias amongst parents and children on self-reporting empathy values (Treutler and Epkins 2003, Yu and Kirk 2009). Limited research has been performed on paternal empathy and its impact of child developmental of empathy and prosocial behaviours. Moreover, other

studies have looked at the impact of father interpretations their own children's characteristic (temperament), prosocial (helping) and empathetic behaviours (responding to distress), with the research showing child characteristics can affect fathers own emotional and sympathetic availability with their children (Dave et al 2008, Chopik et al 2016).

The use of observational coding in 12 of the studies reviewed could have led to a clinical generalisation of observed behaviour, rather than a real-world interaction between parents and children (Kerig and Lindahl 2008). Subjectivation amongst coders due to non-blinding may have created biasing and the choice of setting to conduct studies has also been shown to affect both parental and child behaviours (Kerig and Lindahl 2008).

The current review followed protocols as set out by University and was informed by PRIMA guidelines (Liberati et al 2009) and the use of EPHPP (Jackson and Waters, Armijo-Olivo 2012) to ensure a rigorous approach. The review avoided studies with interventions and those with mix methodology, descriptive data and or implications. This research may have enhanced the review, by providing an insight into parental understanding of empathy. Including teaching and enhancement of empathy and its implications into the development of empathy and prosocial behaviours in children.

Furthermore, limitations of the current systematic review include the exclusion of non-English studies due to time restrictions Three studies were conducted in countries with English as a foreign language indicating the possibility that further relevant non-English studies may be available. An English language bias has been avoided to a degree by using three non-English translated studies (Wilkinson et al 2013). However, with eight studies being conducted in the USA, Canada and Australia this limited the cross-cultural generalising

of the finding, since the role of parents varies across the world, as does the interpretation of empathy and prosocial behaviours (Chopik et al 2016)

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4.2.Implications for clinical practice

The main finding of this review was that parental empathy does have an impact on the development of children's empathy and prosocial behaviour. The evidence highlights the impact of parental availability on the quality of empathetic response to the child (Lyubchik and Schlosser 2010, Brownell et al 2013). Therefore, interventions within the antenatal period, and postnatally, could be utilised as a way of helping parents to understand and identify their own empathetic nature, as well help parents to support and encourage the development of prosocial behaviour and empathy in their own children. (Marvin et al 2002)

A greater understanding of the mechanisms of transmission of empathy and prosocial behaviour between parent and child is still required, especially in association with paternal empathy which could be sought through research using the two-year ages and stages questionnaires and parental empathy questions conducted within a clinic setting to prevent parental bias. (Denham et al 2014)

An increased understanding of the relationship between parental empathy and the development of child empathy and prosocial behaviours is still required by clinic and children service staff, to help identify families requiring support with family empathetic interactions (Yu and Kirk 2009). Future research could also investigate how empathy can be nurtured and enhanced both with parents and with children developmental stages.

4.3.Implications for research

As previously reported, most of the studies included in the review utilised longitudinal surveys, with either primary or secondary data. While the review has shown an association between parental empathy and the development of child empathy and prosocial behaviour, evidence is still lacking in the paternal role of empathy. Many studies acknowledge the paucity of data for the developmental effects of paternal empathy. Difficulties remain in conducting longitudinal primary data collection and analysis, including the recruitment of fathers to studies and the retention of participants, Methodological improvements could include blind research for parental empathy and less reliance of self-reporting of parental and child empathetic and prosocial values. Further research into the definition of cognitive and emotional empathy within measurements for parental empathy and its effects of child empathy and prosocial behaviours would supplement already existing knowledge

5. Conclusion

The findings of our review have underlined that there is still much to be understood with regards to the relationship between parental empathy and the emergence of childhood empathy and prosocial behaviours. This review has indicated that parental empathy, along

with the quality of parental interaction play a substantial role in childhood prosocial behaviours.

As with any complex development of behaviours within childhood, parental empathy availability is also dependent on the parent's experiences of childhood. This along with economic status and gender play a greater role in the emergence of prosocial behaviour and empathy in childhood than is understood at present. These considerations can only be addressed by further research including a clinic study, involving the measurement of parental empathy and childhood empathy and prosocial behaviours at 1- and 2-year reviews.

Conflict of interest

The author declares no conflict of interest in conduction with review.

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Table 1. Characteristics Table

First Author Year Location	Parental Characteristics N, mean age	Infant Characteristics, N, Age, Gender	Parental Empathy Assessment	Infant Prosocial outcome measurement	Infant Empathy outcome measurement	Covariates *social economic status (1), Ethnicit status (3), age of mother (4), age of fathers (5), ag gender of child (7) education (8), number of children (9) Language (10), employment (11)*
Williams (2017) **(Longitudinal Study of Australian Children)**	Unknown N, of parents Mothers age 33.7yrs Fathers age 36.13yrs Indigenous = 101	Infancy, 2-3 years, 6-7 years 4007 F 1965 M 2043	Child rearing Questionnaire, 5 scales questionnaire – hostility	Strengths and Difficulties Questionnaire (SDQ, Goodman 2001) (aged 6-7yrs)		1,6,2,3,4,5,6,10
Kochanska (2013) **(Longitudinal Study)** **Korea & USA**	204 Parents	102 36, 52, 67, 80, 100 months 99, F 50, M 50	Observational coding Mutually Responsive orientation (and positive affect MRO)		Inventory of Callous Unemotional Traits (ICU)	1,2,6,7,8
Lindsey (2013) **USA** **(Longitudinal Cohort Study)**	Mothers = 62 Age, 25.69yrs Fathers =, 62yrs Mexican Americans	Mean age range 18.25 months and 36.32 months M = 33 F = 29 First Born N = 38	Observational blind coding	Observational blind coding Child – peer interactions Observational coding. (prosocial behaviour/aggressive behaviour)		1,2,3,4,6,7,8,9

Kim (2017) **Korea and USA Longitudinal Study)**	**Family Study,** Mothers and fathers **Play Study,** Mothers **Parent – child Study.** Mothers	**Family Study,** 101 F 51, M 50) **Play Study,** 186 F 90, Males 96 Age = 30 months **Parent – child Study.** 108	Observational coding	Prosocial Behaviour Scales (Health behavioural questionnaire) Infant/toddlers social and emotional assessment (ITSEA)	Observational Coding	1, 2, 4, 6, 7.
Kochanska (2004) USA **Cohort, Longitudinal Studies**	Study 1 Mothers age = 31yrs Fathers age = 32yrs	**Study 1** 102 7 months **Study 2** 112 between 9 – 45 months	NEO Five – Factor Inventory (NEO – FFI) – 60 item self-reporting index, Perspective Taking Scale Observational Coding	Laboratory Temperament Assessment Battery (LAB- TAB)	Observational Coding	1, 2, 3, 4, 5, 6, 7,8, 9.
Waugh (2015) USA **Longitudinal Studies**	Mothers = 42 Fathers = 4 Age of parent's unknown	18 – 24 months 46 children 18 months = 19 Females = 9, Males = 10 24 months = 27, Females = 12, Males 15	**Observational Coding** Action orientated, or action abstract need orientated. social approval, attention elicit	**Observational Coding** 5-point Likert scale MacArthur communicative Development inventory (CDI), Emotional word checklist (EWCL)		1,3,6,8,11

Fields – Olivieri (2017) USA (**longitudinal – data extraction**)	Mothers mean age = 31.03yrs (only mothers reported on). Fathers mean age 32.64yrs	18 months 120 children	Parent- child interaction Rating System (PCIRS) (1-5 Likert scale)	Toddles Behaviour Assessment Questionnaire (TBAQ – R) (1-7 Likert scale)		1,2,4,5,6,7,8,11
Lindsey (2010) USA **(Longitudinal study)**	Mothers and fathers = 62yrs Mothers Mean age = 27.2yrs	62 Children visits at 6, 14, 18, 24 months) Females = 31 Males – 32	Observational Coding (positive emotion, responses (parent/child)	Infant Temperament Questionnaire (ITQ) Observational Coding (positive emotion, responses (parent/child) Child – peer interactions = OCRE childcare observations.	Observational Coding	1,2,3,4,6,7,8,11.
Walker (2007) USA **(Data extraction from Longitudinal study)**	Mothers mean age = 28.8yrs	122 children M 58% F 42% 6-12 months, 12- 18 months, 30-36 months	Stress scale Maternal Self-Confident Scale Maternal Empathy Scale (MES)	The Child Behavioural checklist		1,2,4,6,7,8,9,11.
Daniel (2015) Canada (**Longitudinal study, Healthy**	360 = two parent families 21 = one parent families Mothers average age = 34.54yrs	360 2, 18, 36, 54 months	Positive scale from national longitudinal survey of children and Youth	Prosocial questionnaire		1,2,3,4,5,6,7,8,9,11.

BABIES, HEALTHY CHILDREN)	Fathers average age = 37.82yrs		Negative scale from national longitudinal survey of children and Youth			
BROWNELL (2013) USA **LONGITUDINAL STUDIES**	81 female's caregivers 10 male caregivers	Helping Study – 31 18, 30 months. M 15 F 16 Sharing Study 29 10 children aged 18 months M 4, F 6 19 24 months M 8 F 11	Observational Coding	Observational Coding prosocial behaviour	Observational Coding empathy	1,2,6,7,8,9,11
VAN DER MARK (2002) NETHERLANDS **LONGITUDINAL STUDIES COHORT STUDY**	Mothers = 131 Mothers mean age 32.6yrs	131 females 16 months, 125 females 22months	Erickson scales for supportive presence	Empathy coding system (Zahn-Waxler et al 1992)	Empathy coding system (Zahn-Waxler et al 1992)	1,2,4,6,7,8,11
SPINRAD (2006) **USA LONGITUDINAL**	Mothers = 98 Mothers mean age = 30.4yrs	98 M 55 = F 43= 10, 18 months	Observational Coding prosocial behaviour		Observational Coding prosocial behaviour	1,2,3,4,5,6, 7, 8,11

Table 2: Summary of results from systematic reviews articles.

First Author Year	Main Findings	Parental empathy	Children's Empathy	Children's Prosocial Behaviour	Covariates
Williams (2017)	**Maternal and paternal non-hostile parenting and warmth made significant and indirect contributions to later prosocial development at children's age six to seven**		**Maternal** warmth (EW) predicts emotional regulation behaviours between two and 3 years, .12 **Maternal** hostility (MH) emotional regulation behaviours 2 and 3 years, -.45, p<.01 **Paternal** warmth (PW) emotional regulation behaviours between 2 and 3 years, .09 **paternal** hostility (PH) emotional regulation between 6 and 7 years, -.28, p<.01	**MW** – Prosocial behaviours between six and seven years, .04 **MH** – Prosocial behaviours between six and seven years, -.10, p<.01 **PW** – Prosocial behaviours between six and seven years, .03 **PH** – Prosocial behaviours between six and seven years, -.9, p<. 01	**Social economical position** Emotional regulation .15 p<.01 Prosocial behaviour .05 p<.01 six to seven years MW -.04 MH -.03 PW .03 PH -.5 p< .01 **Child aged two – three years** Emotional regulation -.02 Prosocial behaviour .03 six to seven years MW -.04 MH .06 PW - .04 PH .05 p< .01

Kochanska, Kim (2013)	**Children callous unemotional (CU) traits, moderated links between early positive parent- child relationships and children future externalising behaviours. Children with elevated CU traits**	higher mother – child mutually responsive orientation (MRO) and father child shared positive affect were shown to predict a decrease in mother reported behavioural problems.	Mother child mutually responsive orientation (MRO) = 2.97 at 38 months father child MRO 2.84 at 38 months Mother child MRO ,3.08 at 52 months father child MRO 2.95 at 52 months Mother child shared positive effect = .85 at 38 months father child shared positive effect = .80 at 38 months Mother child shared positive effect = .77 at 52 months father child shared positive effect = .71 at 52 months	Child CU traits (mother related) at 67 months .80 Child CU traits (mother related) at 67 months .80	**Child gender** Boys slightly higher on CU traits (m= .18, f = -.17) **Family income** m = 8.7 related to MRO **Externalizing behaviours at sixty-seven months –** externalizing behaviours at 67 months positively correlated with externalising behaviours at 80 and 100 months .74 and .75, ps<.001) and CU traits (rs .35 and .40), negative correlation with MRO – (-.21, -.32)
Lindsey, (2013)	**Mother and father' expression of positive and negative emotions where shown to be related to children prosocial and aggressive behaviour with peers**. Children expression of negative emotion with	Father – child shared positive emotions predicted more prosocial behaviour and less aggression mother – child shared positive emotions predicted	Parental expressiveness children aggressive behaviour towards peers= 2.12, p<0.05 Mothers positive ß -0.18 Fathers positive ß -0.24 Fathers negative ß 0.24	Parental expressiveness children prosocial behaviour towards peers = 6.11, p<0.05 Aggression Mothers positive ß -0.47 p<0.01	Child gender – prosocial behaviour – 3.34 p<0.05 Parent education ß-0.34

	mother and fathers was also shown to be related to higher peer aggression.	more prosocial behaviour and less aggression	Mother negative ß 0.36 Children expressiveness children positive towards mother relation to prosocial behaviour = 3.71,	Fathers positive ß -0.38 p<0.05 Fathers negative ß –0.32 Mother negative ß 0.10	
Kim, Kochanska (2017)	**The research showed that mothers and fathers security was linked to infant's empathy and prosocial behaviour.** Insecurity resulted and variations in parental empathy was shown to be related to infant's prosocial behaviours. Insecure and unempathetic infants were also shown to be low in prosociality.	Infants security with father showed no significant impact of infant empathetic response to father's distress. Infants security with mother showed positive significant in the impact of infant empathetic response to mother's distress **However, Infants security with mother and father showed a direct effect of infant's empathy and prosocial development.**	**Fathers** with low empathy– child empathy and low prosocial behaviours lower in **insecure infants** B = 0.23, se = 0.9, p<0.5 **Secure infant's** B = 0.20, se = 0.6, p<0.5 **Mothers** with high empathy– child empathy and high prosocial behaviours lower in **insecure infants** B = 0.7, se = 0.4, p<0.5 **Secure infant's** B = 0.1, se = 0.2, p<0.5	**Security with mother = a positive link between infant empathy and infant prosocial behaviours** r (90 = o,25p<0. 25) Security with fathers = a positive link between infant empathy and infant prosocial behaviours No significance reported	
Kochanska, (2004)	**Study reported infant temperament related to the emerging parent -infant relationship**	No significant relationship between fathers and infant temperaments. Mothers – infant	Empathetic mothers – infant better focused (r (101) = .30, P< .01 and prone to anger (r (101) - -.26, p<0,1		

		traits = increased focus attention (r (101) = .24, p<0.5 More fearful (r (101) – .25 p<.05)	More joyful infants received more responsiveness parenting, more empathetic mother and openness in father correlated with responsive parenting		
WAUGH (2015)	**Results showed parental approach to supporting prosocial behaviour, can result in empathy and prosocial emergence in children aged two years**.	Social approval approach, observational study reporting on parental hugs, hugs fives, verbal praise and physical signs of affection. Parents reported to use 91.3 % social approach to supporting infants 97.8% action orientation approach, abstract approach 100% and Attention evicting approach 93.5%		Social approach resulted in prosocial behaviour at eighteen months 1.59 (mean 1.34) 24 months 1.78 (mean 1.16) F = 4.67 P = 0.04 Results showed infants understanding of prosocial behaviour increase with an empathetic response from parents	
FIELDS – OLIVIERI (2017)	The study reported that toddler's temperament traits would moderate association with parenting sensitivity and positive affect. Only main effects of temperament and/or emotions expression	Lower level of **maternal sensitivity** was reported to be associated with negative affectivity (ß = -0.15, p=0.094) higher	Child positive emotional expression mother's sensitivity 0.11 Mother positive affects 0.24 Mothers negative effects 0.00 Father sensitivity 0.31		**Child gender mother sensitivity** mother's sensitivity – 0.12 Mother positive affects -0.02 Mothers negative affects 0.12 Father sensitivity -0.07 Fathers negative affects -0.02 father's positive affects 0.08 **Maternal education**

	accounted for variance in parenting.	levels of **paternal sensitivity** was shown to result in children with higher sensitivity and positive emotions	Fathers negative affects 0.01 father's positive affects – 0.044 Child negative emotional expression mother's sensitivity -0.09 Mother positive affects - 0.26 Mothers negative effects 0.13 Father sensitivity 0.03 Fathers negative affects 0.21 father's positive affects – 0.11		mother's sensitivity – 0.43 Mother positive affects 0.32 Mothers negative affects -0.10 Father sensitivity 0.13 Fathers negative affects -0.12 father's positive affects 0.03 **Paternal education** mother's sensitivity – 0.39 Mother positive affects 0.34 Mothers negative affects - 0.09 Father sensitivity 0.23 Fathers negative affects 0.10 father's positive affects 0.13 **Children present** mother's sensitivity – 0.30 Mother positive affects -0.29 Mothers negative affects - 0.02 Father sensitivity -0.27 Fathers negative affects -0.11 fathers positive affects - 0.16
LINDSEY (2010)	**Results of the study showed Parental and infant mutuality Empathy) is a quality of parent and infant interactions** that has consistent links to infant's peer competence regardless of the context in which it occurs		**Play context**, Mother – infant empathy mutual compliance/prosocial behaviour= 0.17 p<0.05 Mother – infant empathy shared positive emotion/prosocial behaviour= 0.29 p<0.01 father – infant empathy mutual compliance/prosocial behaviour= 0.25 p<0.01 Father – infant empathy shared positive emotion/prosocial behaviour= 0.20 p<0.05 **Caregiving context**, Mother – infant empathy mutual compliance/prosocial behaviour= 0.09		**Play context, Partial r = child temperament, individual parent and family income** Mother – infant empathy mutual compliance/prosocial behaviour= 0.22 p<0.01 Mother – infant empathy shared positive emotion/prosocial behaviour= 0.24 p<0.05 father – infant empathy mutual compliance/prosocial behaviour= 0.32 p<0.01

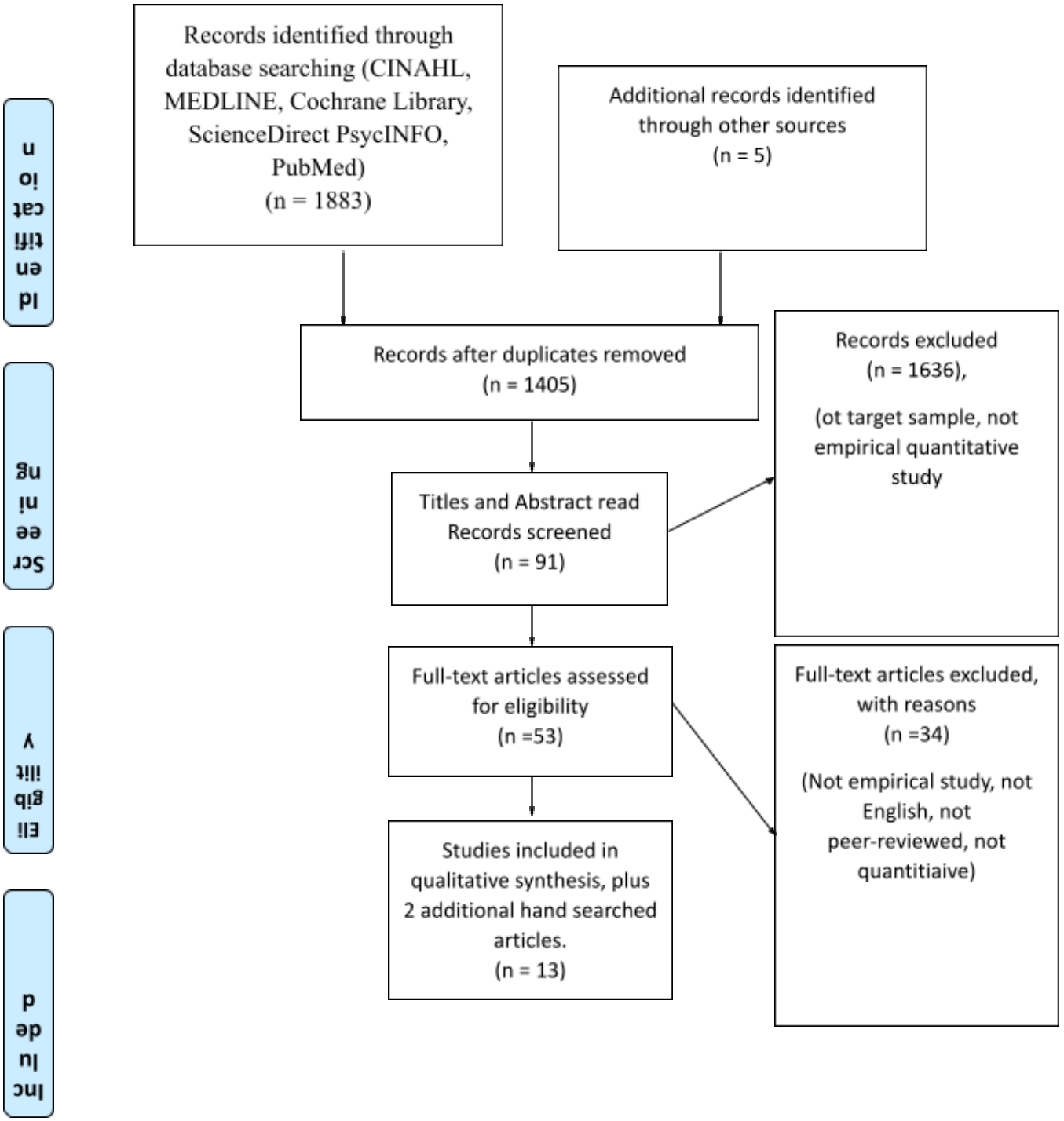
			Mother – infant empathy shared positive emotion/prosocial behaviour= 0.15 father – infant empathy mutual compliance/prosocial behaviour= 0.15 Father – infant empathy shared positive emotion/prosocial behaviour= 0.13		Father – infant empathy shared positive emotion/prosocial behaviour= 0.15 p<0.05 **Caregiving context**, Mother – infant empathy mutual compliance/prosocial behaviour= 0.03 p<0.05 Mother – infant empathy shared positive emotion/prosocial behaviour= 0.11 p<0.01 father – infant empathy mutual compliance/prosocial behaviour= 0.28 p<0.01 Father – infant empathy shared positive emotion/prosocial behaviour= 0.06
WALKER (2007) USA	**Maternal empathy with infant self-confidence and stress was shown to have an adverse effect on infant's prosocial behaviour**. The research showed that stress, not maternal empathy was directly related to child behaviour (t=1.95, p=0.5).	Pearson's Correlations Maternal Empathy t = - 1.3, p=0.5, Infants showing internalizing behaviours t = - 1.4, p=0.5, infants showing externalizing behaviours		Pearson's Correlations Maternal Empathy t = - 0.92, p=0.5, Infants showing prosocial behaviours	
DANIEL (2016)	**Results showed that paternal and maternal warmth predicts increases in infant prosocial**, infant	Positive parenting fathers 18 months = 4.14 (=.18, p<.01)		Prosocial behaviour 8 months = 2.22 (=80.02, p<.01)	

	prosocial behaviour however; did not predict subsequent parenting. Father and mothers parenting practices were reciprocally interrelated,	36 months = 4.17 (= .18, p<.01) 54 months = 4.12 (=18, p<.01) Positive parenting mothers 18 months = 4.61 (=22.16, p<.01) 36 months = 4.5 (= 22.16, p<.01) 54 months = 4.46 (= 22.16, p<.01) Negative parenting fathers 18 months = 2.44 (=14.12, p<.01) 36 months = 2.66 (= 14.12, p<.01) 54 months = 2.66 (= 14.12, p<.01) Negative parenting mothers 18 months = 2.46 (=71.18, p<.01) Thirty-Six months = 2.80 (= 71.18, p<.01) 54 months = 2.80 (= 71.18, p<.01) **Parental warmth results at eighteen months was related to parental warmth at thirty-six months**		36 months = 2.47 (= 80.02, p<.01) 54 months = 2.55 (= 80.02, p<.01) **Maternal warmth at 18 months was related to prosocial behaviour at 35 months which in turn was related to prosocial behaviours at 54 months**	

		and fifty-four months			
Brownell (2013)	**Quality of parent's emotional interactions result in earlier prosocial behaviours.** Results showed parents exploring emotions with children, results in prosocial behaviour in infants quicker and with more infant emotional understanding.	Parents emotional traits = 0.13 empathetic infants. **Parent's elicitation of emotional traits = 0.25 p<0.05. Emergence of empathetic, prosocial child.**		Pro PERT, results showed infants sharing = **0.28 p<0,05** Elicitation o sharing 0.43 <0.05	
Van Der Mark (2002)	**mother's sensitivity was not shown to not to play an importance role in guiding empathetic concern in infants**. However Empathetic concerns towards mother did increase with increased age of the infant. Research showed that insecure and fearful infants express less empathy concerns for strangers.	Research showed at twenty-two months mothers' sensitivity and structuring resulted in negative empathetic concern to wards parents (r (123) = -24, p=0.08)	Empathetic concerns towards mothers increased from sixteen months to twenty-two months (t (124) = 2.3, P=0.2) and empathic responses towards experimenter decreased oved the same age period (t (124) = -9,89 p<. 001		However, the infants increased ages was shown to be associated with increased empathy towards mothers.
Spinrad (2006)	**Maternal responsivity (Empathy) was predicted to be associated with infant's high concern attention towards mothers, and lower personal distress = empathetic concern and**	Maternal responsivity reported no to be related to children fear and or anger, and prosocial behaviour. (r (93) = 0.01, -14, ps = ns. Maternal	**0.08 p<0.5 = mother sensitivity and infant** 0.39 p<0.5 = baby doll sensitivity and prosocial behaviour in infant	**0.23 p<0.5 = mother sensitivity and empathy in infant** 0.16 p<0.5 = baby doll sensitivity and empathy in infant	Research showed no significant association between sex of the infant and maternal responsivity.

	related response to distress. Maternal responsivity did not show any correlation towards infant's prosocial behaviour	responsivity was shown to positively correlated with high infant empathy and attention.	1.15 $p<0.5$ = stranger sensitivity and prosocial behaviour in infant	-0.23 $p<0.5$ = stranger sensitivity and empathy in infant	

Figure 1. An adapted PRISMA flow diagram of the literature search and selected process for inclusion within the systematic review.



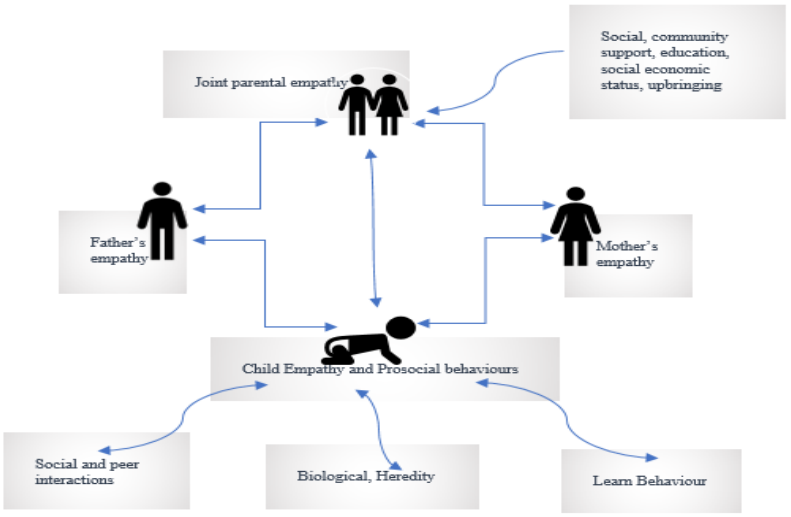


Figure 2: Model showing association of Parental empathy and development of child empathy and prosocial behaviour.