

MASTER'S DEGREE

PSYCHOLOGY

Parental relationships and prosocial behaviour: the mediating role of empathy

Sara Tavares Pinto

M

2026



University of Porto
Faculty of Psychology and Educational Sciences

**PARENTAL RELATIONSHIPS AND PROSOCIAL
BEHAVIOUR: THE MEDIATING ROLE OF
EMPATHY**

Sara Tavares Pinto

June 2026

Thesis submitted for the Master's degree in Psychology, Clinical and Health Psychology, Faculty of Psychology and Educational Sciences, University of Porto, supervised by Professor ***Tiago Ferreira***, PhD (FPCEUP).

LEGAL NOTICES

The content of this dissertation reflects the author's perspectives, work and interpretations at the time of its submission. This dissertation may contain errors, both conceptual and methodological, which may have been identified after its submission. Consequently, any use of its contents should be exercised with caution.

By submitting this dissertation, the author declares that it is the result of their own work, contains original contributions, and that all sources used are acknowledged, with such sources duly cited in the body of the text and identified in the references section.

The author further declares that they do not disclose in this dissertation any content whose reproduction is prohibited by copyright or industrial property rights.

Without prejudice to the foregoing, the author declares that they have used Artificial Intelligence tools during the preparation of this thesis. In particular, DeepL Translate to assist with translation and ChatGPT to help statistical analysis. The use of these tools was limited to the purposes described, whilst the ideas, analysis, interpretation of the results, scientific development and initial drafting of the Dissertation remain entirely the responsibility of the author.

ACKNOWLEDGEMENTS

Este mestrado representa uma das etapas mais desafiantes, exigentes e marcantes da minha vida. A conclusão desta tese simboliza não apenas o término de um percurso académico, mas também o culminar de um caminho de crescimento pessoal, superação e aprendizagem. E por isso, torna-se impossível não agradecer a quem caminhou comigo.

Aos meus pais, o meu mais profundo agradecimento pelo exemplo, pelas oportunidades e pelo abraço de casa. Obrigada por estarem sempre presentes e por me fazerem acreditar que este objetivo era possível. À minha família por me incentivarem sempre a continuar e a aplaudirem todos os passos.

Ao Gonçalo, obrigada por seres porto seguro, pela companhia durante horas infindáveis de trabalho, pelo incentivo constante e por nunca me deixares esquecer que era capaz de chegar até aqui.

À Raquel, à Cátia, à Sara e à Lara, as melhores companheiras de curso que poderia ter desejado, obrigada por cada momento partilhado, pela amizade e força ao longo deste percurso. Esta caminhada foi muito mais leve por vos ter ao meu lado.

A todos os meus amigos, obrigada por celebrarem cada pequena conquista e pela força que me deram.

Ao meu orientador, Dr. Tiago Ferreira, agradeço a disponibilidade, a orientação, o rigor e a partilha de conhecimento que tornaram possível o desenvolvimento deste trabalho.

A mim, por não desistir, pela dedicação e resiliência ao longo deste caminho.

RESUMO

O comportamento pró-social desempenha um papel fundamental no desenvolvimento das crianças e é essencial para a qualidade das interações sociais. Embora a literatura existente saliente a importância das relações parentais precoces, as contribuições específicas das figuras materna e paterna para o comportamento pró-social das crianças continuam a ser insuficientemente exploradas, tal como os mecanismos subjacentes a estas associações, como a empatia. O presente estudo teve como objetivo examinar um modelo de mediação no qual a qualidade das relações pai-filho e mãe-filho está associada ao comportamento pró-social das crianças, considerando a empatia como variável mediadora. A amostra consistiu em 247 crianças com idades entre os 3 e os 7 anos que frequentavam a educação pré-escolar. Os dados foram recolhidos utilizando um desenho multi-informante, com base em instrumentos empiricamente validados. Os resultados mostraram que níveis mais elevados de calor parental, tanto materno como paterno, estavam associados positivamente à empatia e ao comportamento pró-social das crianças. Além disso, verificou-se que a empatia media parcialmente a associação entre o calor parental e o comportamento pró-social. Estas conclusões contribuem para uma compreensão mais integrada dos processos socioemocionais subjacentes ao comportamento pró-social na primeira infância. Também destacam a importância de fomentar o calor parental como um caminho para promover o desenvolvimento empático das crianças e, conseqüentemente, o seu comportamento pró-social.

Palavras-chave: comportamento pró-social, empatia, relação pai-filho, relações mãe-filho, educação pré-escolar, mediação

ABSTRACT

Prosocial behaviour plays a fundamental role in children's development and is essential for the quality of social interactions. Although existing literature highlights the importance of early parental relationships, the distinct contributions of maternal and paternal figures to children's pro-social behaviour remain insufficiently explored, as do the mechanisms underlying these associations, such as empathy. The present study aimed to examine a mediation model in which the quality of father-child and mother-child relationships is associated with children's prosocial behaviour, considering empathy as a mediating variable. The sample consisted of 247 children aged 3 to 7 years attending preschool education. Data were collected using a multi-informant design, based on empirically validated instruments. The results showed that higher levels of parental warmth, both maternal and paternal, were positively associated with children's empathy and prosocial behaviour. Furthermore, empathy was found to partially mediate the association between parental warmth and prosocial behaviour. These findings contribute to a more integrated understanding of the socio-emotional processes underlying prosocial behaviour in early childhood. They also highlight the importance of fostering parental warmth as a pathway to promote children's empathic development and, consequently, their prosocial behaviour.

Keywords: prosocial behaviour, empathy, father-child relationship, mother-child relationships, pre-school education, mediation

INTRODUCTION

Prosocial behaviour, defined as voluntary actions intended to benefit others, is a central component of children's development and plays a key role in social functioning (Eisenberg et al., 2015). These behaviours, including helping, sharing and comforting, emerge early in life and are essential for the establishment of positive relationships and successful adaptation to social contexts (Brownell, 2013). Importantly, they do not represent a single, uniform construct, but rather distinct forms of responding to others' needs (Hay, 2023). Moreover, their expression is closely linked to socio-emotional processes, particularly emotions such as empathy, which play a central role in motivating prosocial actions (Thompson, 2023).

Empathy has been widely identified as a fundamental skill for social interactions, as it enables individuals to understand and respond to the emotional states of others (Decety & Jackson, 2004; Spinrad & Eisenberg, 2014; Thompson, 2023) and is considered a key driver of prosocial behaviour (Eisenberg & Miller, 1987; Paulus, 2018). Empirical evidence further supports this association, showing that higher levels of empathy are linked to greater engagement in prosocial behaviours, such as helping, sharing and comforting (Eisenberg & Miller, 1987; Brownell, 2013; Paulus, 2018).

The quality of family relationships plays a central role in children's socio-emotional development, namely empathy and prosocial behaviour. Early interactions with caregivers, particularly those characterised by warmth, responsiveness and meaningful interactions, can contribute to the emergence of prosocial behaviours (Brownell, 2013). Thus, affective and responsive family contexts have been shown to promote children's ability to recognise and respond to the needs of others, facilitating the development of empathy and prosocial behaviour (Farrant et al., 2012).

Although the previous research has demonstrated associations between parental relationships and empathy, empathy and prosocial behaviour, and parental relationships and prosocial behaviour, the mechanisms underlying these associations remain insufficiently explored. Limited research has examined whether empathy functions as an explanatory pathway linking the quality of parental relationships to children's prosocial behaviour.

This gap is relevant because theoretical and empirical work suggests that warm and responsive caregiving environments foster children's emotional understanding and

empathic responsiveness and promote prosocial actions (Brownell et al., 2013; Farrant et al., 2012).

Therefore, rather than operating independently, these variables are likely part of a developmental process in which family relationships shape children's empathy, which subsequently influences their engagement in prosocial behaviour.

Therefore, gaining a deeper understanding of how the quality of parental relationships influences children's prosocial behaviour, as well as the mediating role of empathy in this process, is a relevant objective of this study. By integrating emotional and relational dimensions in a multidimensional approach, this research seeks to contribute to a more complex and integrated understanding of early childhood development.

Empathy and prosocial behaviour

Empathy has been consistently identified as an important factor associated with prosocial behaviour (Carlo et al., 2011; Eisenberg & Miller, 1987). This ability to understand and share the feelings of others plays a fundamental role in social interactions, as it enables children to recognise others' emotional states, interpret their needs, and respond in ways that are appropriate to the situation (Rieffe et al., 2010).

Empathy is commonly conceptualised as a multidimensional construct, and several authors distinguish cognitive empathy - the ability to understand the emotions of others - from affective empathy - the ability to feel those emotions (Stevens & Taber, 2021). This distinction is particularly relevant as early manifestations of empathy, such as emotional contagion and attention to the feelings of others, can already be observed from the first year of life (Rieffe et al., 2010; Hay, 2023). These early emotional responses are associated with basic forms of prosocial behaviour such as comforting, sharing and helping. From the second year of life, children begin to recognize the emotional states and desires of others, which supports the emergence of more intentional and differentiated responses, forming the basic internal processes at the roots of prosocial behaviour (Brownell et al., 2013; Paulus, 2018).

Although empathy and prosocial behaviour are closely related, they are not equivalent constructs. Individuals may experience empathic responses without engaging in helping behaviours and may also act prosocially without being primarily motivated by empathy (Thompson, 2023; Paulus, 2018). In early childhood, this distinction is particularly relevant, as empathic arousal does not always result in prosocial action due to limitations

in behavioural competence and social understanding (Thompson, 2023).

Research has consistently shown a significant positive association between empathy and prosocial behaviour, particularly when empathic responses are directed towards individuals in need (Eisenberg & Miller, 1987). In this context, prosocial behaviour can be understood as a multifaceted construct that encompasses different types of actions, such as helping, sharing and comforting, each directed at addressing specific forms of others' needs (Dunfield, 2014). Importantly, engaging in prosocial behaviour requires not only the ability to recognise that another individual is experiencing a negative state, but also the capacity to understand the nature of that state and determine an appropriate response (Dunfield, 2014). These processes are closely linked to empathic abilities, particularly the capacity to attend to and interpret others' emotional and mental states.

However, the relationship between empathy and prosocial behaviour is not entirely consistent. This inconsistency may be explained by the distinction between different emotional responses to others' distress. Empathy is conceptually related to, but distinct from, constructs such as sympathy and personal distress (Thompson, 2023). Some studies suggest that, while empathy involves sharing or resonating with another's emotional state, sympathy reflects an other-oriented concern that may be more directly linked to helping behaviours, whereas self-focused emotional distress may lead to withdrawal rather than assistance (Thompson, 2023). In this sense, high levels of emotional arousal may not necessarily promote prosocial responding, as "empathic overarousal" can result in avoidance rather than helping behaviour (Thompson, 2023).

These distinctions suggest that different emotional processes may have distinct implications for prosocial responding, helping to explain variability in empirical findings. Importantly, empathic responses are also shaped by developmental and socialisation processes, as children's interpretations of others' distress and their behavioural responses are influenced by factors such as emotional understanding and parental modelling of empathic behaviour (Thompson, 2023). However, despite these nuances, findings across studies remain inconsistent, highlighting the need for further research to better understand the role of empathy in prosocial behaviour. In this sense, examining empathy within a broader socio-emotional framework may contribute to clarifying the mechanisms underlying prosocial development in childhood.

Given the early emergence of prosocial behaviours and their close association with empathic processes, it becomes essential to consider the contextual factors that shape their

development, particularly considering the complexity of the underlying emotional mechanisms. In this regard, social interactions with primary caregivers have been identified as key influences, as parenting practices play a central role in fostering both empathy and prosocial behaviour (Brownell et al., 2013; Farrant et al., 2012). More specifically, parenting can be understood as a key mechanism through which prosocial tendencies are socialised, with different parental practices contributing to the development of empathy and prosocial behaviour (Davidov & Grusec, 2023).

Parental relationships and prosocial behaviour

Attachment theory, originally developed by Bowlby (1969) and further elaborated by Ainsworth (1989) defined attachment as a child's affective bond with their caregiver, characterised by being enduring, emotionally meaningful, person-specific, and involving the child's attempts to use the caregiver as a secure base from which to explore the world, and as a safe haven in times of threat.

The quality of attachment is shaped by the consistency and sensitivity of caregivers in responding to the child's needs (Ainsworth et al., 1978). These attachment patterns contribute to the development of internal working models, defined as cognitive representations of the expected behaviour of others and the perception of oneself (Bowlby, 1969). Secure internal models promote the expectation that suffering will be met with care and a view of others as worthy of attention, encouraging prosocial behaviour (Gross et al., 2017). In contrast, insecure internal models are associated with negative expectations and interpretations that may hinder such behaviours (Gross et al., 2017).

Among infants, toddlers and preschoolers, a growing body of research supports a positive association between attachment security and prosocial behaviour (Martins et al., 2022, Gross et al 2017). A systematic review by Martins et al. (2022) found that, despite some variability, the overall pattern of results suggests that attachment is significantly associated with prosocial behaviour in most of the studies.

More recent approaches have expanded the conceptualisation of parental relationship quality beyond attachment, incorporating dimensions such as affective warmth, conflict and inconsistent discipline as relevant indicators (Krousorati et al., 2022). Parental warmth characterised by emotional responsiveness, support and positive engagement has been consistently linked to children's prosocial behaviour (Krousorati et al., 2022). Parenting can be understood as a key mechanism through which socio-emotional competencies are

socialised, with different parental practices contributing to the development of empathy and prosocial behaviour (Davidov & Grusec, 2023). Empirical research further reinforces that parental practices marked by warmth and the absence of hostility promote prosocial behaviour. For example, Williams & Berthelsen (2017), in a longitudinal study, found that higher levels of hostile parenting were associated with poorer self-regulation in children, which in turn was linked to lower levels of prosocial behaviour over time. In contrast, Farrant et al. (2012), in a study with children aged 47 to 76 months, showed that warm and responsive parenting predicted higher levels of prosocial behaviours, particularly helping and sharing.

The effects of parenting on children's prosocial behaviour may differ depending on the parental figure in question. Although some studies with older samples suggest that both maternal and paternal warmth are positively associated with prosocial behaviour (Carlo et al., 2011), research in early childhood remains more limited and has predominantly focused on the maternal figure. For example, a recent study conducted in China with preschool children aged 5 to 6 years showed that maternal warmth positively predicted children's subsequent prosocial behaviour (Sun et al., 2024). There are, although some prior studies that investigated the unique contributions of mother and father-child relationships to prosocial behaviour. Van Der Storm et al. (2021) conducted a meta-analysis of 29 studies showing that both maternal and paternal parenting are positively and independently associated with children's prosocial behaviour. Importantly, the strength of these associations did not significantly differ between mothers and fathers, suggesting that both parental figures play comparable roles in the development of prosocial behaviour.

Similarly, Ferreira et al. (2016), in a study with children (aged 3 to 6), observed significant associations between the quality of the father-child relationship and prosocial behaviour, and non-significant associations between mother-child relationships, the latter being mediated by other relational variables. The authors suggest that this difference may be related to the type of involvement characteristic of each carer: while mothers tend to focus more on direct care tasks, fathers, especially in contexts where family responsibilities are shared equally, are more often involved in play activities (Ferreira et al., 2016). This type of interaction, marked by high levels of responsiveness, cooperation and positive affectivity, has been associated with the development of prosocial behaviour in childhood. Despite these contributions, the literature remains inconsistent and continues to focus

predominantly on the maternal figure, leaving the role of the father relatively unexplored. These limitations highlight the need for a more comprehensive examination of how both mothers and fathers influence the development of empathy and, consequently, prosocial behaviour in childhood. The present study seeks to address this gap by simultaneously examining the influence of maternal and paternal relationships on children's prosocial behaviour, while adopting a multidimensional approach to this construct.

Parental relationships and prosocial behaviour: the mediating role of empathy

Within this framework, empathy may represent a key psychological mechanism through which early relational experiences influence the development of prosocial behaviour. Empathy has been associated with both sensitive and warm parenting practices (Farrant et al., 2012) and prosocial behaviour (Carlo et al., 2011; Paulus, 2018). Thompson (2023) emphasises that these early interactions with caregivers, characterised by responsibility and discussions about emotions, are essential for the development of emotional understanding and empathy in children.

In line with this perspective, parenting can be understood as a key mechanism through which socio-emotional competencies are socialised, with different parental practices shaping children's emotional understanding and responsiveness to others (Davidov & Grusec, 2023). According to these authors, prosocial behaviour involves a range of biological, motivational, cognitive, affective mechanisms, as well as developmental pathways (Davidov & Grusec, 2023). Empathy emerging as a key socio-emotional competence, given its essential role in enabling children to recognise, understand and respond to the emotional states of others.

As such, empathy can be understood as a potential mediating process linking parental relationships and prosocial behaviour. Children who experience supportive and emotionally responsive caregiving may be more likely to develop empathic competences, which, in turn, increase the likelihood of engaging in prosocial actions.

Thus, although the literature directly examining the mediating role of empathy in this relationship is still developing, existing empirical evidence supports the relevance of further exploring this mechanism. These gaps justify the need to analyse the extent to which empathy acts as a mediating variable between the quality of parental relationships and prosocial behaviour in childhood.

The current study

The present study aims to examine a mediation model in which the quality of parental relationships is associated with children's prosocial behaviour, considering empathy as a potential mediating variable. The focus is on children aged 3-6 years, corresponding to preschool stage, a period in which socio-emotional competencies are rapidly emerging. This study addresses an important gap in the literature, as research integrating these variables within a mediation framework, while simultaneously considering the distinct roles of mothers and fathers, remains limited, particularly in early childhood.

Based on previous research, it is expected that higher-quality parental relationships, characterised by high levels of warmth, will be positively associated with children's prosocial behaviour. Furthermore, empathy is expected to be positively associated with both parental relationship quality and prosocial behaviour, and to mediate the association between these variables. Accordingly, the study aims to address the following research questions (1) Is parental warmth associated with children's prosocial behaviour? (2) Is parental relationship quality associated with children's empathy? (3) Is empathy associated with children's prosocial behaviour? (4) Does empathy mediate the association between parental relationship quality and children's prosocial behaviour?

METHODOLOGY

Participants

The sample consisted of 247 pre-school children (54% male), with a mean age of 4.67 years ($SD = 0.96$). These children were randomly selected from 11 pre-schools, chosen for convenience, in the Porto Metropolitan Area and central Portugal. The inclusion criteria covered children aged 3 to 7 years enrolled in pre-school education. Children with identified disabilities were not included in the sample.

The study employs a multi-informant approach, involving mothers ($n = 153$), fathers ($n = 129$) and preschool teachers ($n = 22$). A total of 121 children (49% of the sample) had data from all three informants. An informant was considered present if, at least, one valid response was provided. The remaining participants had missing data from at least one of the informants.

The mothers' ages ranged from 24 to 50 years ($M = 37.26$, $SD = 5.16$), whilst the fathers' ages ranged from 23 to 60 years ($M = 39.24$, $SD = 6.18$). Regarding educational attainment, 58.78% of mothers and 47.66% of fathers had completed higher education, 21.62% of mothers and 28.13% of fathers had completed secondary education, and 12.84% of mothers and 20.31% of fathers had educational attainment at or below primary level. 4.73% of mothers and 3.13% of fathers hold a PhD. 2.03% of mothers and 0.78% of fathers reported the category 'other'.

Procedures

This quantitative study adopts a cross-sectional design, using data from a broader research project titled "PLAY2GLOBAL – From Playground to Global Citizenship: Developing Preschoolers' Skills for a Better World", funded by the Foundation for Science and Technology (FCT, 2021.00706.CEECIND). The PLAY2GLOBAL project received approval from the Ethics Committee of the Faculty of Psychology and Educational Sciences at the University of Porto, ensuring compliance with the University's ethical standards, the code of ethics for psychology professionals, and international ethical guidelines. Participation was voluntary, and the anonymity and confidentiality of the data were ensured throughout the entire process.

The participating preschools were recruited through direct contact with their administration. Thirteen kindergartens were contacted, of which 11 agreed to participate in the study, corresponding to a participation rate of 84.60%. Following institutional approval, informed consent was obtained from the teachers and from the parents or legal guardians of the participating children. A multi-informant approach was adopted, with the aim of gathering information on the same constructs from different sources (mothers, fathers and teachers). To this end, the same measures were used to collect ratings from each informant, ensuring the assessment of the same dimensions through independently completed questionnaires. Subsequently, the completed questionnaires were returned in person to the researcher responsible at each school. This direct contact ensured rigorous monitoring of the data collection process. Data were gathered under natural conditions, reflecting a non-experimental design without variable manipulation.

Measures

The study uses a set of questionnaires to measure the study main variables, namely parent-

child warmth, empathy, and prosocial behaviour.

Parental Relationships

To measure mothers and fathers' warmth and emotional support we used the Home Learning Environment Questionnaire (HLEQ; Krousorati et al., 2022). The HLEQ is a self-report instrument comprising 32 items, developed to assess home learning environment in early childhood, focusing six dimensions, namely indoor learning activities (six items), outdoor learning activities (five items), digital learning activities (five items), support/warmth (six items), conflict (five items) and inconsistent discipline (five items). Responses are rated on a six-point Likert scale, ranging from 1 (never) to 6 (always). Parents indicate the frequency with which they implement a specific practice (Krousorati et al., 2022).

The present study focused on the warmth/support dimension, as reported individually by mothers and fathers. Warmth/support reflects the extent to which parents respond to the child's learning needs in a constructive manner (Krousorati et al., 2022) (e.g. "The father/mother: listens to and respects the child's opinion during activities"). This dimension showed very good internal consistency: "warmth" mothers' ($\alpha = .87$) and fathers' ($\alpha = .86$) ratings.

Empathy

Empathy was assessed using the Empathy Questionnaire (EmQue; Rieffe et al., 2010). The EmQue consists of a 20-item questionnaire capturing three facets of empathy that should be observed in young children: emotional contagion, attention to the feelings of others, and prosocial actions (Rieffe et al., 2010).

In the present study, the dimensions 'emotional contagion' and 'attention to others' feelings' were considered. Emotional contagion is the ability to mimic and synchronise affective expressions (Decety & Jackson, 2004) (e.g. 'When another child cries, my child also feels upset'). Attention to others' feelings is reflected when the individual becomes more aware of the other person's emotions and through concern for the other (Rieffe et al., 2010) (e.g. "When another child is upset, my child tries to cheer him/her up").

Both the "emotional contagion" dimension ($\alpha = .85$); ($\alpha_{\text{(fathers)}} = .84$); ($\alpha_{\text{(mothers)}} = .83$) and the "attention to others" dimension demonstrated very good internal consistency ($\alpha = .84$);

($\alpha_{\text{(fathers)}} = .84$); ($\alpha_{\text{(mothers)}} = .86$).

Prosocial behaviour

Prosocial behaviour was assessed using the Early Prosocial Behaviour Questionnaire (EPBQ; Torr ns & K rtner, 2016), based on mothers, fathers, and teachers' reports. The EPBQ is a 10-item instrument designed to assess children's prosocial behaviour across three core domains: helping (4 items) (e.g. "My child helps with household chores"), sharing (3 items) (e.g. "My child shares his/her things"), and comforting (3 items) (e.g. "My child takes care of others when they are hurt or sick"). Responses are rated on a four-point Likert scale indicating the frequency of the behaviour, where 1 corresponds to "almost never" and 4 to "almost always" (Torr ns & K rtner, 2016).

The dimensions "helping" ($\alpha = .92$); ($\alpha = .85$); ($\alpha = .84$), "sharing" ($\alpha = .91$); ($\alpha = .84$); ($\alpha = .85$) and "comforting" ($\alpha = .94$); ($\alpha = .79$); ($\alpha = .82$), show excellent consistency reported by the teachers, very good consistency reported by the fathers and very good consistency reported by the mothers, respectively.

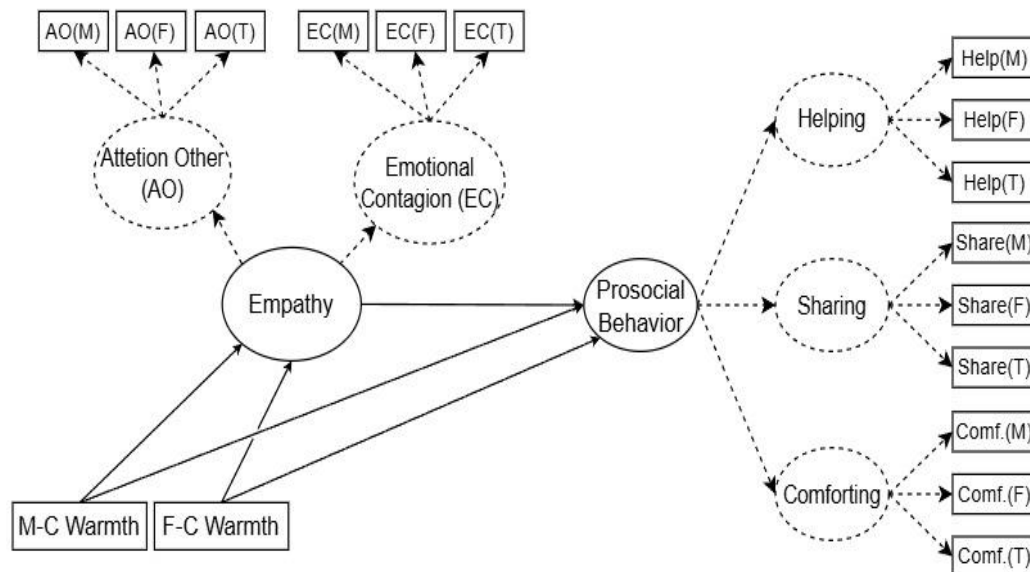
Data Analysis

Data analysis was performed using the R programming, with the *lavaan* package (Rosseel, 2012) for structural equation modelling (SEM). This approach allows for the simultaneous testing of relationships between observed and latent variables (Ferreira et al., 2025). The data analysis proceeded in four stages. First, the measures' psychometric properties were examined. The internal consistency of the scales was assessed using Cronbach's alpha. Construct validity was examined using Confirmatory Factor Analysis (CFA), allowing for the empirical testing of the fit of the proposed measurement model to the data. The latent variables (empathy and prosocial behaviour) were represented by multiple domains and items reflecting the construct, thereby incorporating both the true variance of the construct and measurement error. Next, we computed descriptive statistics - including means and standard deviations - for both sociodemographic variables and the primary variables of interest to explore the sample and describe data distribution. Subsequently, the correlations between the study's main variables—namely the quality of parental relationships, empathy and prosocial behaviour—were analysed. This stage made it possible to verify the strength, direction and statistical significance of the associations between variables, constituting a

preliminary step towards estimating the structural model. Finally, to test the study main hypothesis, a mediation model was estimated using structural equation modelling. In the specified model (Figure 1), the quality of parental relationships, operationalised through maternal and paternal warmth/support, was considered an exogenous variable. Empathy, considering both ‘attention to others’ feelings’ and ‘emotional contagion’, was included as a mediating variable. Prosocial behaviour, operationalised through the subscales ‘helping’, ‘sharing’ and ‘comforting’, constituted the endogenous variable. The model controlled for the potentially confounding effects of children’s gender and age.

Figure 1

Structural model of the associations between parental warmth, empathy, and prosocial behaviour.



Note. M = Mother; F = Father; T = Teacher; C = Child; AO = Attention to Others; EC = Emotional Contagion; Dashed lines represent the dimensions of the constructs, whereas solid lines represent the variables and their associations.

The specified model (Figure 1) tests the direct paths from parental warmth to both children’s empathy and prosocial behaviour, as well as the path from empathy to prosocial behaviour. In addition to these direct effects, the model estimates the indirect effect of parental warmth on prosocial behaviour through empathy, as well as the total effects. The significance of the indirect effects was tested using Monte Carlo simulation (2000

samples). Empathy and prosocial behaviour were defined as latent variables reported by multiple informants (mother, father and teacher), to reduce the bias associated with a single source of information. To account for shared method variance associated with the use of multiple informants, the model included correlations between the residuals of variables reported by the same informant.

Given the presence of missing data, the models were estimated *Full Information Maximum Likelihood* (FIML), which allows all available information to be utilised without resorting to case deletion, assuming that data are missing at random. Additionally, to account for the fact that children were grouped within classrooms, cluster-robust standard errors were estimated (Cameron & Miller, 2015) to adjust for the non-independence of observations.

Model fit was assessed based on multiple indices such as the chi-square (χ^2) test, the Comparative Fit Index (CFI), the Tucker-Lewis Index (TLI), the Root Mean Square Error of Approximation (RMSEA) and the Standardized Root Mean Square Residual (SRMR). The cut-off values used to indicate good model fit are as follows: $SRMR \leq .08$, CFI and $TLI \geq .95$, and $RMSEA \leq .06$ (Hu & Bentler, 1999).

RESULTS

Confirmatory Factor Analysis

We used Confirmatory Factor Analysis (CFA) to examine whether the proposed measurement models for parental relationships, empathy, and prosocial behaviour fit the data well. A CFA was conducted for each construct separately.

A dyadic measurement model of parental relationships was tested, in which maternal and paternal warmth were estimated simultaneously within the same model as two distinct latent factors, each comprising six parallel items. Correlations were also allowed between the errors of corresponding items for mother and father, to control for the variance associated with the identical wording of the items. The model showed an acceptable fit to the data, $\chi^2(47) = 84.58$, $p = .001$, CFI = .95, TLI = .93, RMSEA = .07, 90% CI [.05, .10], SRMR = .05. All standardised factor loadings were statistically significant ($p < .001$), ranging from .58 to .88 for the maternal factor and from .50 to .86 for the paternal factor,

indicating that the items are good indicators of their respective latent factors. A significant positive association was also observed between the maternal and paternal warmth/support factors ($r = .39, p < .01$), suggesting a moderate relationship between parental perceptions. The empathy measurement model was specified as a multi-informant model, in which the dimensions of attention to others (6 items per informant) and emotional contagion (5 items per informant) were estimated simultaneously within a single model for the three informants (mother, father and teacher), with each factor comprising multiple parallel items. Correlations were also allowed between equivalent factors across informants, as well as between the two dimensions of empathy within each informant, to capture the interrelationship between the constructs and control for the variance associated with the use of identical instruments.

Model adjustment was performed based on modification indices and theoretical considerations. In addition to allowing correlations between identical items across informants, correlations between the residuals of items with similar wording and overlapping emotional content were also included. In specific, residual correlations were introduced between the item pairs: 14 and 15 for fathers, 6 and 14 for mothers, 1 and 7 for teacher, 6 and 8 for teachers, and 4 and 1 for mothers. These adjustments resulted in an improvement in model fit. The final model showed an acceptable fit to the data: $\chi^2 (443) = 826.72, p < .001$, CFI = .90, TLI = .88, RMSEA = .06, 90% CI [.05, .07], SRMR = .08. All factor loadings were statistically significant ($p < .001$), ranging from .39 to .97.

Significant positive correlations were observed between informants, particularly between mother and father, whereas associations involving teachers were comparatively lower. Additionally, the dimensions of attention to others and emotional contagion were positively associated within each informant.

Regarding prosocial behaviour, a multi-informant model was specified, in which the dimensions of helping (4 items per informant), sharing (3 items per informant) and comforting (3 items per informant) were estimated simultaneously in a single model for the three informants (mother, father and teacher), with each factor comprising parallel items. Correlations were also allowed between equivalent factors across informants, as well as between the different dimensions of prosocial behaviour within each informant, to capture the interrelationship between the constructs and control for the variance associated with the use of identical instruments. The model showed an acceptable fit to the data, $\chi^2 (339) = 722.75, p < .001$, CFI = .91, TLI = .88, RMSEA = .07, 90% CI [.06, .08], SRMR

= .08. The factor loadings were all statistically significant ($p < .001$), ranging from .50 to .95. Positive associations were observed between the same dimensions of prosocial behaviour across informants, with stronger correlations between mothers and fathers than between parents and teachers. Additionally, positive associations were found between the dimensions of helping, sharing, and comforting within each informant.

Overall, the results of the confirmatory factor analyses support the adequacy of the measurement models, with all models presenting acceptable fit to the data.

Descriptive statistics and correlations

The descriptive statistics, computed using the item average scores for the variables under study, are presented in Table 1.

Regarding parental relationships, the reported levels of warmth/support were high, being slightly higher for mothers ($M = 5.26$, $SD = .69$) compared to fathers ($M = 4.95$, $SD = 0.81$). As for empathy, the 'attention to others' subscale showed higher mean scores when reported by mothers ($M = 4.55$, $SD = 1.13$) and fathers ($M = 4.36$, $SD = 1.06$) compared to teachers ($M = 4.09$, $SD = 1.6$). In turn, the emotional contagion subscale showed lower mean scores when reported by teachers ($M = 2.49$, $SD = 1.22$) compared to mothers ($M = 3.18$, $SD = 1.19$) and fathers ($M = 3.21$, $SD = 1.13$). In terms of prosocial behaviour, the comforting subscale showed mean values ranging from 4.65 and 5.26, the helping subscale from 4.41 to 4.85, and the sharing subscale from 4.44 to 4.74. The values for skewness and kurtosis did not indicate severe deviations from normality, although slight differences across informants were observed, with no consistent pattern.

Table 1*Descriptive statistics of study variables*

Variable	N	M	SD	Skewness	Kurtosis
<i>Parental Relationships</i>					
Warmth (M)	149	5.26	.69	-1.28	2.38
Warmth (F)	128	4.95	.81	-.78	.16
<i>Empathy</i>					
Emotional contagion (M)	153	3.18	1.19	.26	-.40
Emotional contagion (F)	129	3.21	1.13	.24	-.73
Emotional contagion (T)	239	2.49	1.22	.80	.20
Attention to others (M)	153	4.55	1.13	-.05	-.59
Attention to others (F)	129	4.36	1.06	-.16	.08
Attention to others (T)	239	4.09	1.60	.20	-.61
<i>Pro-social Behavior</i>					
Helping (M)	153	4.42	1.09	.12	-.23
Helping (F)	129	4.41	1.21	.16	-.60
Helping (T)	238	4.85	1.48	-.33	-.60
Sharing (M)	153	4.73	1.11	-.08	-.50
Sharing (F)	129	4.74	1.10	-.04	-.58
Sharing (T)	238	4.44	1.58	-.03	-.92
Comforting (M)	153	5.26	1.15	-.38	.13
Comforting (F)	129	5.09	1.15	-.52	.61
Comforting (T)	238	4.65	1.71	-.34	-.87

Note. N ranges from 128 to 247 due to missing data; M = Mother; F = Father; T = Teacher

The correlations between the variables under study are presented in Table 2. Overall, positive and statistically significant associations were observed between the quality of parental relationships, empathy and prosocial behaviour. Parental warmth showed a positive association with both empathy and prosocial behaviour. For example, maternal warmth was moderately correlated with attention to others as reported by the mother ($r = .22, p < .01$), as well as with prosocial dimensions such as helping ($r = .33, p < .01$) and comforting ($r = .26, p < .01$). Similarly, paternal warmth showed positive associations with attention to others as reported by the father ($r = .21, p < .05$) and with prosocial behaviour, including helping ($r = .35, p < .01$) and sharing ($r = .33, p < .01$). Regarding empathy, attention to others was positively associated with all dimensions of prosocial behaviour, with moderate correlations observed across informants although these associations were generally stronger when reported by teachers (e.g., comforting as reported by teachers, $r = .61, p < .01$). Emotional contagion also showed positive associations with prosocial behaviour, although generally of lower magnitude (e.g., comforting as reported by teachers, $r = .47, p < .01$). Moderate correlations were also found between informants for

the same constructs, particularly between mothers and fathers, indicating consistency across sources (e.g., sharing, $r = .61, p < .01$). In terms of sociodemographic variables, child age was positively associated with teacher-reported empathy (e.g., emotional contagion, $r = .42, p < .01$) and prosocial behaviour (e.g., helping, $r = .42, p < .01$), whereas no significant association was observed for gender. Overall, the correlations observed are consistent with the proposed theoretical framework, providing preliminary support for the mediation model tested.

Table 2
Correlations Among Study Variables

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1. Child Gender	—																		
2. Child Age	-.01	—																	
3. Warmth (M)	-.09	.06	—																
4. Warmth (F)	-.28**	-.04	.36**	—															
5. EC (M)	.00	.19*	.01	.06	—														
6. EC (F)	-.05	.14	.03	.06	.56**	—													
7. EC (T)	.03	.42**	.01	-.02	.19*	.14	—												
8. AO (M)	-.03	.03	.22**	.13	.54**	.37**	.09	—											
9. AO (F)	-.03	.08	.17	.21*	.40**	.58**	.00	.65**	—										
10. AO (T)	.02	.41**	.04	-.03	.15	.19*	.63**	.03	0.14	—									
11. Helping (M)	-.15	.11	.33**	.28**	.26**	.16	.10	.40**	.33**	.09	—								
12. Helping (F)	-.11	-.00	.28**	.35**	.11	.09	-.02	.28**	.29**	.06	.73**	—							
13. Helping (T)	-.17*	.42**	.14	.09	.12	.17	.37**	.07	.26**	.57**	.17*	.12	—						
14. Sharing (M)	-.13	.27**	.19*	.16	.23**	.07	.05	.21*	.14	-0.03	.32**	.21*	.02	—					
15. Sharing (F)	-.17*	.13	.18*	.33**	.15	.16	.05	.22*	.30**	0.05	.34**	.38**	.13	.61**	—				
16. Sharing (T)	-.11	.50**	.11	.06	.09	.15	.45**	-.03	.19*	.61**	0.15	.09	.75**	.06	.17	—			
17. Comforting (M)	-.20*	.29**	.26**	.36**	.26**	.27**	.18*	.45**	.41**	.19*	.43**	.35**	.24**	.37**	.46**	.12	—		
18. Comforting (F)	-.11	.17	.23*	.34**	.20*	.30**	.05	.33**	.47**	.10	.46**	.39**	.21*	.31**	.55**	.10	.72**	—	
19. Comforting (T)	-.19**	.43**	.04	.07	.18*	.20*	.47**	.02	.24**	.61**	.08	.11	.77**	.01	.19*	.77**	.21*	.20*	—

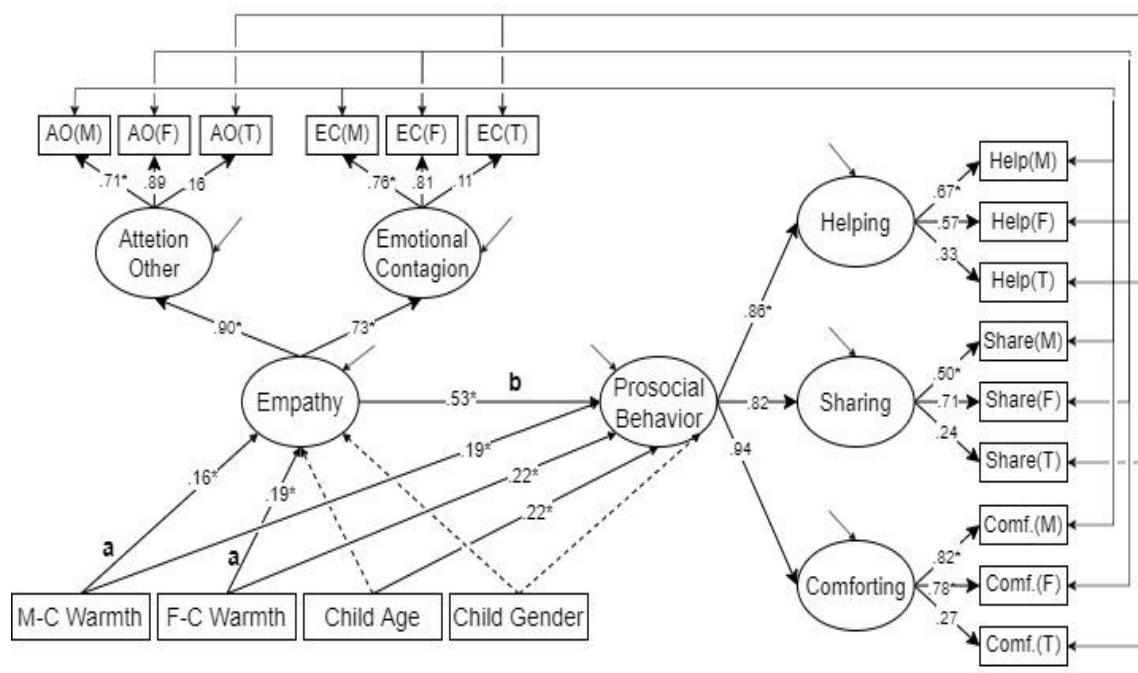
Note. * $p < .05$; ** $p < .01$; M = Mother; F = Father; T = Teacher; AO = Attention to Others; EC = Emotional Contagion.

Mediation analysis

To test the study's hypotheses, a structural equation model (SEM) was estimated, in which parental warmth (maternal and paternal) was specified as an exogenous variable, empathy as a mediating variable, and prosocial behaviour as an endogenous variable (Figure 2). The child's age and gender were also included as control variables. The model tests the direct and indirect associations between the variables under study.

Figure 2

Structural model of the associations between parental warmth, empathy, and prosocial behaviour



Note. Standardised coefficients (β) are presented. M = Mother; F = Father; T = Teacher; AO = Attention to Others; EC = Emotional Contagion. Solid lines represent statistically significant paths, whereas dashed lines represent non-significant paths

The structural model fit the data well, $\chi^2 (117) = 175.62, p < .001$, CFI = .96, TLI = .95, RMSEA = .05, 90% CI [.02, .07], SRMR = .07. Statistically significant positive effects of maternal warmth ($\beta = .16, p < .05$) and paternal warmth ($\beta = .19, p < .05$) on empathy were found. In turn, empathy had a significant positive effect on prosocial behaviour ($\beta = .53, p < .05$).

Furthermore, significant direct effects of maternal warmth ($\beta = .19, p < .05$) and paternal warmth ($\beta = .22, p < .05$) on prosocial behaviour were observed, indicating the presence of direct effects beyond the effect mediated by empathy.

The indirect effect of parental warmth on prosocial behaviour via empathy was tested. The confidence interval obtained using the Monte Carlo method did not include zero (95% CI [.03, .14]), suggesting the existence of a statistically significant indirect effect. Regarding the control variables, the child's age showed a significant positive association with prosocial behaviour ($\beta = .22, p < .05$), whilst the child's gender did not show any statistically significant effects. Overall, the results are consistent with the proposed theoretical model, showing that empathy partially mediates the association between parental warmth and prosocial behaviour.

DISCUSSION

The aim of this study was to analyse the association between the quality of parental relationships and prosocial behaviour in children attending pre-school, examining the mediating role of empathy. More specifically, the study sought to understand whether parental warmth, from both mothers and fathers, is associated with children's empathy and, in turn, with their prosocial behaviours. Furthermore, this study sought to address existing gaps in the literature by integrating these variables into a mediation model that considers maternal and paternal warmth separately in pre-school children. It also responded to the need to deepen our understanding of the role of empathy in prosocial behaviour, given the inconsistency in the literature.

To address the study's objectives, a quantitative study was conducted with pre-school children (aged 3–7 years), in which a mediation model was tested. In this model, parental warmth (both maternal and paternal) was considered the exogenous variable, empathy the mediating variable, and pro-social behaviour the endogenous variable. The analysis was carried out using a Structural Equation Model, enabling the examination of the relationships between the latent constructs, as well as the proposed direct and indirect

effects. A multi-informant approach was also adopted, integrating data from mothers, fathers and teachers, with the aim of obtaining a more comprehensive and contextualised assessment of the constructs under evaluation.

The results supported the proposed mediation model, in which parental warmth was associated with children's prosocial behaviour both directly and indirectly through empathy, as evidenced by the significant associations observed between these variables.

Specifically, it was observed that higher levels of parental warmth, both maternal and paternal, were associated with higher levels of empathy in children, as evidenced by the positive and statistically significant effects of the model (maternal warmth, $\beta = .16$; paternal warmth, $\beta = .19$). This finding is consistent with the existing literature, which supports the view that early interactions with caregivers characterised by sensitivity and responsiveness facilitate the development of socio-emotional skills (Brownell, 2013; Farrant et al., 2012), reinforcing the idea that warm parent-child relationships facilitate the child's ability to understand and respond to the emotional states of others. Furthermore, the results could also be interpreted in the light of developmental perspectives that postulate that empathy emerges in the first year of life (Rieffe et al., 2010; Hay, 2023) and is consolidated through social interactions (Decety & Jackson, 2004; Spinrad & Eisenberg, 2014). These findings are also consistent with Bowlby's attachment theory (1969), which posits that the quality of the attachment is shaped by consistency and sensitivity in responding to children's needs, and this attachment develops internal working models of the self and others. Children who develop secure internal working models perceive others as worthy of attention, as well as themselves as deserving of care. In this way, these secure internal representations may facilitate children's ability to interpret and respond to others, fostering empathic skills, as observed in the present findings.

Furthermore, the study highlighted a positive association between empathy and prosocial behaviour, as reflected by the statistically significant effect ($\beta = .53$). This result is consistent with the literature that identifies empathy as a fundamental competence for understanding and responding to the emotional state of others (Decety & Jackson, 2004; Spinrad & Eisenberg, 2014; Thompson, 2023). Furthermore, it is in line with the views of Eisenberg & Miller (1987), Brownell (2013) and Paulus (2018), who argue that higher levels of empathy are associated with greater engagement in prosocial behaviours. In this sense, prosocial behaviour is a multifaceted construct, which includes different types of

response such as helping, sharing and comforting, and which requires the recognition of others' needs (Dunfield, 2014), with empathy being fundamental to recognising and guiding the appropriate response. It is worth noting that the effect size of empathy ($\beta = .53$) is substantially greater than that of maternal warmth ($\beta = .19$) and paternal warmth ($\beta = .22$) on prosocial behaviour. This effect suggests that empathy is a more robust and proximal predictor of prosocial behaviour than parental warmth, reinforcing the role of empathy as a mechanism more directly associated with the engagement in prosocial behaviours.

The main contribution of this study lay in the significant indirect effect, demonstrating that empathy partially mediates the association between parental relationships and prosocial behaviour. This effect was evidenced by the confidence interval that does not include zero (95% CI [.03, .14]), suggesting that the impact of parenting on prosocial behaviour occurred, in part, through the development of empathic skills. In this sense, the results support the argument that parenting can be understood as a key mechanism through which prosocial tendencies are socialised, with different parental practices contributing to the development of empathy and prosocial behaviour (Davidov & Grusec, 2023).

It is also worth noting that the mediation observed was partial, as the direct effects of parental warmth on prosocial behaviour remained significant. Consequently, the results suggested that, although empathy explained part of the association between parental warmth and prosocial behaviour, it does not explain it in its entirety, indicating the possible existence of other socio-emotional mechanisms underlying this relationship. The literature has increasingly shown that different emotional processes may have distinct implications for prosocial behaviour. Empathy, for example, involves sharing or resonating with the emotional states of others, whilst sympathy reflects a concern oriented towards the other (Thompson, 2023). Sympathy may be more directly linked to prosocial behaviours than empathy, since high levels of emotional arousal do not always promote prosocial behaviours (Thompson, 2023). Thus, these nuances in the literature not only highlight the complexity of the processes involved but also support the findings that empathy does not fully explain the relationship between parental warmth and prosocial behaviours. It is important to note that the instrument used in this study to measure empathy (EmQue) does not include dimensions such as sympathy, which Thompson (2023) identified as being more directly associated with prosocial behaviours. This limitation may have contributed

to the mediation being only partial.

Finally, the results suggested that maternal and paternal warmth played similar roles. The study showed that both parents contributed to the development of empathy and prosocial behaviour, as they had significant effects of similar magnitude. This finding is consistent with the literature by Van der Storm et al. (2021), which highlights positive and independent associations between maternal and paternal parenting and prosocial behaviour, as well as the absence of significant differences between the two parental figures in this domain. According to these authors, this pattern may be explained by the increasing convergence of maternal and paternal roles in contemporary families, with both parents becoming more similarly involved in caregiving practices. Furthermore, the meta-analytic findings suggest that the strength of the association between parenting and prosocial behaviour depends more on the specific parenting dimension, such as warmth, control, or harsh parenting, than on whether the behaviour is enacted by the mother or the father. From this perspective, the present findings reinforce the idea that the quality of parenting, particularly in terms of warmth and responsiveness, plays a more central role in children's socio-emotional development than the specific parental role.

These results provided answers to the research questions formulated earlier. It was found that parental warmth is positively associated with children's prosocial behaviour. Secondly, we found that parental warmth was also positively associated with empathy. The results further show that empathy was positively associated with prosocial behaviour. Finally, it was found that empathy partially mediated the association between parental warmth and prosocial behaviour, confirming the mediation model.

This study does, however, have some limitations: (1) It was a cross-sectional study, which does not allow for the establishment of causality between the variables; (2) With regard to confirmatory factor analysis, although the measurement models showed acceptable fits, a higher degree of agreement was observed between mothers and fathers than between parents and teachers. This limitation may reflect not only a bias associated with social desirability but also variations in the expression of the child's behaviour across different contexts; (3) This study did not consider cultural factors that may influence how parental warmth is expressed and perceived. The literature shows that cultural differences may be reflected in the way parents demonstrate affection and responsiveness towards their children (Lansford, 2022); (4) The study variable of parental relationships was

operationalised solely through a single dimension, namely parental warmth. This decision was theoretically grounded in attachment theory (Bowlby, 1969) which emphasises the importance of early interactions with caregivers, characterised by warmth and responsiveness in development of internal working models, which promote children's ability to attend to and respond to others' emotional states; (5) The instrument HLEQ was originally developed and validated in Greek, which may limit the generalisability of its use to the present sample; (6) The instrument used (EmQue) did not capture constructs such as sympathy, which have been shown to be more directly related to prosocial behaviour. This limitation may have accounted for the partial mediation observed.

Despite these limitations, the present study offers significant potential: (1) the multi-informant approach stood out, integrating data from mothers, fathers and educators, which not only reduced the bias associated with a single source of information but also captured the contextual variability in the child's behaviour. Differences between informants should not be interpreted exclusively as measurement error, as they may reflect legitimate variations in the expression of behaviours across different observation contexts (De Los Reyes et al., 2015); (2) the constructs of empathy and prosocial behaviour were operationalised across several dimensions, which allowed for the complexity of the construct to be captured; (3) the distinction between maternal warmth and paternal warmth constitutes an important contribution to the literature, as it allows the role of caregivers to be studied separately in children's development; (4) the use of structural equation models was noteworthy, as these allowed for the simultaneous analysis of relationships between observable and latent variables based on a theoretical model; (5) Finally, the application of a mediation model enabled an integrated analysis of the relationships between parental warmth, empathy and prosocial behaviour.

Future studies could deepen our understanding of these relationships through a longitudinal study, allowing examinations of causal pathways between parental warmth, empathy, and prosocial behaviour. Furthermore, we suggest including variables that consider the social and cultural context of parents and children. They could also include measures that separate empathy and related constructs such as sympathy, to deeply understand the differential contributions to prosocial behaviour. Finally, adopting a multi-method approach that incorporates direct observation of prosocial behaviour, could enrich the assessment of the construct under study.

In summary, the present study provides a more integrated understanding of socio-emotional processes in childhood, exploring the role of maternal and paternal warmth in the development of empathy and the promotion of prosocial behaviour. The results highlight the importance of parental relationships characterised by warmth, sensitivity and empathy, as a central mechanism, in promoting prosocial behaviours. The study corroborates the complexity of the mechanisms underlying prosocial behaviour, contributing to a deeper understanding of childhood development.

These findings suggest that interventions aimed at promoting prosocial behaviour could benefit from a reorientation, focusing initially on investing in parental relationships characterised by warmth and responsiveness. This lays the foundation for fostering the development of empathy in children, which will subsequently lead to prosocial behaviours. Furthermore, it highlights the importance of involving both mothers and fathers in these interventions, given their similar contributions to the child's development. Interventions should adopt an integrated approach, involving not only the child but also the family and the school environment.

REFERENCES:

- Ainsworth, M. S., Blehar, M. C., Waters, E., & Wall, S. (1978). *Patterns of attachment: A psychological study of the strange situation*. Erlbaum
- Ainsworth, M. S. (1989). Attachments beyond infancy. *American Psychologist*, 44, 709–716. <https://doi.org/10.1037/0003-066X.44.4.709>
- Bowlby, J. (1969). *Attachment and loss: Vol. 1. Attachment*. Basic Books
- Bronfenbrenner, U. (1979). *The ecology of human development: Experiments by nature and design*. Harvard University Press.
- Brownell, C. A. (2013). Early development of prosocial behavior: Current perspectives. *Infancy*, 18(1), 1–9. <https://doi.org/10.1111/infa.12004>
- Brownell, C. A., Svetlova, M., Anderson, R., Nichols, S. R., & Drummond, J. (2013). Socialization of early prosocial behavior: Parents' talk about emotions is associated with sharing and helping in toddlers. *Infancy*, 18, 91–119. <https://doi.org/10.1111/j.1532-7078.2012.00125.x>
- Cameron, C., & Miller, D. (2015). A Practitioner's Guide to Cluster-Robust Inference. *Journal of Human Resources*, 50(2), 317–372. <https://doi.org/10.3368/jhr.50.2.317>
- Carlo, G., Mestre, M. V., Samper, P., Tur, A., & Armenta, B. E. (2011). The longitudinal relations among dimensions of parenting styles, sympathy, prosocial moral reasoning, and prosocial behaviors. *International Journal of Behavioral Development*, 35(2), 116–124. <https://doi.org/10.1111/cdev.12761>
- Davidov, M., & Grusec, J. E. (2023). Parenting and children's prosociality: Multiple pathways to socialization. In T. Malti & M. Davidov (Eds.), *The Cambridge handbook of prosociality: Development, mechanisms, promotion* (pp. 361-387). Cambridge University Press.
- Decety, J., & Jackson, P. L. (2004). The functional architecture of human empathy. *Behavioral and Cognitive Neuroscience Reviews*, 3(2), 71–100. <https://doi.org/10.1177/1534582304267187>
- De Los Reyes, A., Augenstein, T. M., Wang, M., Thomas, S. A., Drabick, D. A. G.,

- Burgers, D. E., & Rabinowitz, J. (2015). The validity of the multi-informant approach to assessing child and adolescent mental health. *Psychological bulletin*, 141(4), 858–900. <https://doi.org/10.1037/a0038498>
- Dunfield, K. A. (2014). A construct divided: Prosocial behavior as helping, sharing, and comforting subtypes. *Frontiers in Psychology*, 5, 958. <https://doi.org/10.3389/fpsyg.2014.00958>
- Eisenberg, N., & Miller, P. A. (1987). The relation of empathy to prosocial and related behaviors. *Psychological Bulletin*, 101(1), 91–119. <https://doi.org/10.1037/0033-2909.101.1.91>
- Eisenberg, N., Spinrad, T. L., & Knafo-Noam, A. (2015). Prosocial development. In M. E. Lamb & R. M. Lerner (Eds.), *Handbook of child psychology and developmental science: Socioemotional processes* (7th ed., pp. 610–656). John Wiley & Sons, Inc. <https://doi.org/10.1002/9781118963418.childpsy315>
- Farrant, B. M., Devine, T. A. J., 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. <https://doi.org/10.1002/icd.740>
- Ferreira, T., Cadima, J., Matias, M., Vieira, J. M., Leal, T., & Matos, P. M. (2016). Preschool children's prosocial behavior: The role of mother–child, father–child and teacher–child relationships. *Journal of Child and Family Studies*, 25(6), 1829–1839. <https://doi.org/10.1007/s10826-016-0369-x>
- Ferreira, T., Nunes, F., & Matos, P. (2025). Best Practices in Structural Equation Modeling with Cross-Sectional. *Emerging Adult Data In: Flourishing as a Scholar*. <https://doi.org/10.1093/oso/9780197677797.003.0011>
- Gross, J. T., Stern, J. A., Brett, B. E., & Cassidy, J. (2017). The multifaceted nature of prosocial behavior in children: Links with attachment theory and research. *Social Development*, 26(4), 661–678. <https://doi.org/10.1111/sode.12242>
- Hay, D. F. (2023). Prosocial behavior in infancy and early childhood. In T. Malti & M. Davidov (Eds.), *The Cambridge handbook of prosociality: Development, mechanisms, promotion* (pp. 127- 144). Cambridge University Press.

- Hu, L., & Bentler, P. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal*, 6(1), 1–55. <https://doi.org/10.1080/10705519909540118>
- Krousorati, K., Gregoriadis, A., Tsigilis, N., Grammatikopoulos, V., & Evangelou, M. (2022). Introducing the Home Learning Environment Questionnaire and examining the profiles of home learning environments in Greece. *Frontiers in Education*, 7, 987131. <https://doi.org/10.3389/feduc.2022.987131>
- Lansford J. E. (2022). Annual Research Review: Cross-cultural similarities and differences in parenting. *Journal of child psychology and psychiatry, and allied disciplines*, 63(4), 466–479. <https://doi.org/10.1111/jcpp.13539>
- Martins, M. C., Santos, C., Fernandes, M., & Veríssimo, M. (2022). Attachment and the development of prosocial behavior: A systematic review. *Children*, 9(7), 1011. <https://doi.org/10.3390/children9060874>
- Paulus, M. (2018). The multidimensional nature of early prosocial behavior: A motivational perspective. *Current Opinion in Psychology*, 20, 111–116. <https://doi.org/10.1016/j.copsyc.2017.09.003>
- Rieffe, C., Ketelaar, L., & Wiefferink, C. H. (2010). Assessing empathy in young children: Construction and validation of an Empathy Questionnaire (EmQue). *Personality and Individual Differences*, 49(5), 362–367. <https://doi.org/10.1016/j.paid.2010.03.046>
- Rosseel, Y. (2012). *lavaan: An R package for structural equation modeling*. *Journal of Statistical Software*, 48(2), 1–36. <https://doi.org/10.18637/jss.v048.i02>
- Spinrad, T. L., & Eisenberg, N. (2014). Empathy, prosocial behavior, and positive development in schools. In M. J. Furlong, R. Gilman, & E. S. Huebner (Eds.), *Handbook of positive psychology in schools* (2nd ed., pp. 157–168). Routledge.
- Stevens, F. L., & Taber, K. H. (2021). The neuroscience of empathy and compassion in pro-social behavior. *Neuropsychologia*, 159, 107925. <https://doi.org/10.1016/j.neuropsychologia.2021.107925>
- Sun, J., Liu, J., Liu, M., Feng, Y., & Li, Y. (2024). Maternal warmth and prosocial

behaviors among Chinese preschool children: The roles of social competence and sibling presence. *Early Education and Development*, 35(4), 691–703.
<https://doi.org/10.1080/10409289.2023.2200338>

Thompson, R. A., & Newton, E. K. (2013). Baby altruists? Examining the complexity of prosocial motivation in young children. *Infancy*, 18(1), 120–133.
<https://doi.org/10.1111/j.1532-7078.2012.00139.x>

Thompson, R. A. (2023). Parenting and children's prosociality: Multiple pathways to socialization. In T. Malti & M. Davidov (Eds.), *The Cambridge handbook of prosociality: Development, mechanisms, promotion* (pp. 361-387). Cambridge University Press.

Torréns, M. & Kärtner, J. (2016). Psychometric properties of the early prosocial behaviour questionnaire. *European Journal of Developmental Psychology*.
<https://doi.org/10.1080/17405629.2016.1259107>

Van Der Storm, L., Van Lissa, C. J., Lucassen, N., Helmerhorst, K. O. W., & Keizer, R. (2021). Maternal and paternal parenting and child prosocial behavior: A meta-analysis using a structural equation modeling design. *Marriage & Family Review*.
<https://doi.org/10.1080/01494929.2021.1927931>

Williams, K. E., & Berthelsen, D. (2017). The development of prosocial behaviour in early childhood: Contributions of early parenting and self-regulation. *International Journal of Early Childhood*. <https://doi.org/10.1007/s13158-017-0185-5>