ENCYCLOPEDIA
on Early Childhood
Development

Prosocial behaviour

Last update: December 2025
Topic Editor:
Prof. Ariel Knafo-Noam, The Hebrew University of Jerusalem, Israel

Table of content

Topic funded by:

Synthesis

Why is it important?

Prosocial behaviours refer to voluntary actions specifically intended to benefit or improve the well-being of another individual or group of individuals. Examples of such behaviours include helping, sharing, consoling, comforting, cooperating, and protecting someone from any potential harm. From an evolutionary perspective, prosocial behaviours may have evolved from a biological adaptation to living in society. The development of prosocial behaviours is important during the early years as these actions are associated with social and emotional competence throughout childhood (e.g., peer acceptance, empathy, self-confidence, and emotion-regulation skills). Furthermore, prosocial behaviours are associated with academic performance, and the development of cognitive competencies, such as problem-solving and moral reasoning, all of which are contributing to a positive school adjustment.

What do we know?

Manifestations of prosocial behaviours emerge at a young age, and the same basic forms are found across cultures. Even 18-month-old infants demonstrate early forms of prosocial behaviours (e.g., when they point an out-of-reach object or an unseen event to an adult). Around the ages of 3 and 4, children's prosocial behaviours increase in complexity. They respond more readily to others' negative emotional state with appropriate sharing, helping, and/or comforting. During this developmental period, children also start to demonstrate in-group favouritism, which is manifested by a tendency to exhibit more prosocial behaviours towards individuals who belong to the same group (e.g., based on perceived similarity, such as race and gender) than members of the out-group. Yet, as children develop more advanced socio-cognitive skills and spend more time interacting with their peers, they become increasingly aware of the reasons why it is important to help others, which in turn motivate them to engage in prosocial behaviours.

Several factors predict and/or reinforce prosocial behaviours in young children, in addition to genetic differences that account in part for individual differences. Early moral development during the first five years of life is an important foundation for prosocial behaviours. For instance, children who experience guilt following transgressions are more likely to engage in

prosocial behaviours relative to those who do not, as they are increasingly aware of the consequences of their actions for the self and for others. Children's prosocial behaviours are also influenced by feelings of empathy and the desire to help others. While there is a general consensus that empathy is an important predictor of children's prosocial behaviours, extremes forms of empathy - either surfeits or deficits - may increase the risk of developing psychological problems later on. For example, young children who express extreme concerns for their parents' well-being (e.g., due to marital conflicts or health problems) have been found to be at increased risk of developing anxiety or depression as they grow up. In contrast, young children's absence of reaction and/or inappropriate reactions to someone's distress (laughter, enjoyment) may be a precursor of behavioural difficulties. However, it is important to keep in mind that the expression of empathy falls on a continuum and is influenced not only by the child's characteristics but also by the environment he/she is exposed to. Finally, parent and peer socialization play an important role in the development of prosocial behaviours. Parents who model prosocial behaviours and encourage children to understand the perspective of others promote the internalization of prosocial values in their children. Similarly, educators who promote collaborative peer interactions motivate the development of cognitive skills that support prosocial forms of behaviour.

What can be done?

Prosocial education needs to start early at home and extend throughout the preschool years. Parents who model prosocial behaviours, exhibit warm and responsive parenting, and emphasize emotional states of others can help the development of prosocial behaviours in children. Parents are also encouraged to explain to children what they did wrong following a transgression, and how their actions may have affected the other person-–as opposed to simply punishing them. Early childhood educators can also play an important role in the development of children's morality and prosocial behaviours by implementing instructional and intervention programs. Although more research is needed to establish a set of practical guidelines and practices that foster prosocial behaviours in young children, early interventions should emphasize:

a. caring relationships with adults and peers;
b. adults modelling of prosocial characteristics;
c. training in empathy and perspective taking;

d. active learning approaches such as cooperative learning.

Early childhood educators can also play an active role by curbing children's predisposed biases and by structuring collaborative interactions with peers from diverse groups (e.g., gender, cultures, religions, socio-economic backgrounds). These opportunities would have consequences on children's beliefs about others (e.g., us versus them), and prosocial behaviours across groups. Lastly, and most importantly, parents and educators are encouraged to *positively reinforce* children's prosocial tendencies, rather than to *negatively reinforce* their antisocial tendencies (by punishing them, for example). By putting a greater emphasis on their good actions rather than on their bad ones, children's prosocial behaviours are more likely to be manifested.

Socio-Cognitive Correlates of Prosocial Behaviour in Young Children

[1]Tracy L. Spinrad, PhD, [2]Sarah VanSchyndel, MA, doctoral student

[1]Arizona State University, T. Denny Sanford School of Social and Family Dynamics, USA

[2]Arizona State University, Department of Psychology, USA

May 2015

Introduction

Prosocial behaviour refers to voluntary behaviour intended to benefit another.[1] Researchers have been interested in studying the normative patterns of prosocial development and in understanding the factors that may impact individual difference in prosocial behaviour. In his developmental theory, Hoffman[2] outlined a shift over time from infants' self-concern to toddlers' and young children's empathy and prosocial behaviour in response to others' distress. He argued that children's socio-cognitive skills, such as self-other differentiation and perspective taking, play a key role in the emergence of prosocial behaviour.

Subject

Recent evidence suggests that prosocial behaviour emerges early in life; toddlers as young as 14-18 months demonstrate prosocial behaviour such as helping, sharing, and comforting a distressed person,[3-7] and these behaviours increase over the course of toddlerhood and early childhood.[1]

There is also evidence that socio-cognitive skills, such as emotion understanding, perspective taking, and self-awareness are related to individual differences in children's prosocial behaviour. We focus on the relations of several important socio-cognitive skills to prosocial responding, including self-other differentiation, theory of mind, and emotion understanding.

Problems

One problem with current research is that it is unclear exactly when infants develop the socio-cognitive abilities needed to behave prosocially, such as self-other differentiation, and whether such abilities are necessary for prosocial responding.8

There is also a need to examine more nuanced questions regarding the relation of socio cognitive skills and children's prosocial behaviours. For instance, it is unclear whether the early emergence of socio-cognitive abilities in infancy or early toddlerhood predicts later prosocial behaviours. Further, research is limited in testing whether socio-cognitive skills directly or indirectly predict prosocial behaviour in young children. It is possible that such skills lead to prosocial responses through their impact on sympathy or social competence. Finally, although researchers assume that socio-cognitive skills are a prerequisite for prosocial behaviour, it is possible that socio-cognitive skills are not needed for all types of prosocial behaviour (i.e., such as instrumental helping) or that prosocial skills also influence children's socio-cognitive development. Few longitudinal studies have examined this possibility.

Research Context

Consistent with Hoffman's theory, there has been support for the notion that self-other differentiation is associated with toddlers' observed empathy toward mothers[9] and peers,[10] as well as non-costly sharing with adult experimenters.[11,12] Using the classic mirror self-recognition task, researchers have shown a positive relation between self-awareness and children's prosocial behaviour.[9,13] In a recent study, ownership understanding (i.e., the knowledge that something belongs to the self versus other) was positively related to non-costly sharing in toddlers.[11]

Other aspects of socio-cognitive development have been associated with prosocial behaviour. For example, young children's abilities to understand emotions and to take another person's perspective have been positively related to prosocial behaviour and empathy.[12,14-18] In addition, kindergarteners' false belief understanding (i.e., theory of mind) has been associated with relatively high ratings of prosocial behaviour,[19] although in another study, preschoolers who passed a theory of mind test were less likely to share stickers in a resource allocation game than children who failed the theory of mind assessment, perhaps because children may become more selective with whom they will share resources with as they develop such perspective taking skills.[20]

Key Research Questions

There are a number of key research questions with regard to the relations of children's socio-cognitive skills to their prosocial development. First, researchers should address whether socio-cognitive skills are necessary for the emergence of prosocial behaviour. In other words, are skills

such as self-other differentiation and perspective taking a necessary condition for children's prosocial behaviours? Next, it is important to consider whether the associations between socio-cognitive skills and prosocial behaviour direct or indirect. Third, understanding whether socio-cognitive skills differentially predict prosocial behaviour depending on the type (i.e., helping, sharing, comforting) or context of prosocial behaviour (e.g., costly versus non-costly, peers versus adult, friend versus non-friend) may clarify mixed findings in the literature. Finally, researchers need to consider the direction of effects in understanding the relations between these constructs using longitudinal designs.

Recent Research Results

Although there is evidence of a relation between self-other differentiation and prosocial behaviour, scientists have recently shown that infants demonstrate rudimentary self-other differentiation using implicit measures prior to when toddlers typically pass mirror self-recognition tasks.[21] For example, children begin to demonstrate an understanding of others' intentions, goals, and desires between 9 and 12 months[22,23] and have shown the ability to make judgments about others' moral character as young as 3 months of age.[24-27]

Longitudinal relations between socio-cognitive abilities and children's prosocial responding have been found. In one study, false belief understanding at 54 months was positively related to adult-reported prosocial orientation both concurrently and 18 months later.[28] The researchers also found that 42-month emotion understanding predicted prosocial responding concurrently and a year later. Interestingly, later emotion understanding and false-belief understanding were unrelated to prosocial responding, indicating that these abilities are most likely to predict later prosocial behaviour during a period in which the socio-cognitive skills are emerging.

Recent work is also beginning to focus on understanding the mediating role of socio-cognitive skills in predicting later prosocial behaviour. For example, Ensor, Spencer and Hughes[29] showed that emotion understanding at age 3 mediated the relations between early verbal ability and mother-child mutuality to prosocial behaviour at age 4.

Further, even if distress is not overtly expressed, young children's empathy or sympathy may mediate the relations between socio-cognitive and prosocial outcomes. Consistent with this notion, Vaish and colleagues[30] demonstrated that toddlers' showed more concern and prosocial behaviour towards an adult victim whose property had been harmed versus an unharmed victim,

even in the absence of negative emotion. These results suggest that toddlers have the ability to take another person's perspective and in turn, feel concern for the harmed individual, resulting in subsequent prosocial behaviour; however, this meditational model has not been tested in a sample of young children. In a more direct test of this idea with older children, Brazilian adolescents' perspective taking was indirectly related to prosocial behaviour through its effects on sympathy and moral reasoning.[31]

Finally, children's general cognitive and language skills have been considered in relation to children's prosocial behaviours.[32,33] Recent work indicated that young children's language skills were associated with relatively high empathic concern and low disregard for others, even after controlling for general cognitive ability.[33] Thus, language skills, as opposed to general cognitive ability, may play a specific role in explaining young children's empathy.

Research Gaps

There are a number of gaps in current research on prosocial behaviour. First, studies of prosocial behaviour in early infancy are very limited. Although one study noted that infants who were exposed to a peer's distress were more likely to cry themselves,[34] this behaviour may reflect emotional contagion, rather than empathy, per se. Only one study has shown that infants younger than 12 months show capacity for cognitive and affective components of empathy in addition to personal distress.[8] Few studies have utilized more implicit measures of socio-cognitive skills that demand less cognitive skills than mirror self-recognition.[35] Second, researchers need to focus on a variety of socio-cognitive skills in their work in relation to a several type of prosocial behaviours (i.e., helping, sharing, comforting) and when prosociality is costly vs. non-costly, as it is unclear whether various types of prosocial responding have similar socio-cognitive correlates. Third, longitudinal data are needed to make more causal claims about the relations between socio-cognitive skills and empathy/prosocial behaviour. There is a particular need for studies that control for the stability of constructs over time and to examine potential bidirectional relations. Finally, researchers should continue to focus on the potential complex relations between socio-cognitive skills and children's prosocial responding. For example, it is possible that the relations of socio-cognitive skills and prosocial responding are moderated by other factors such as sex or prosocial motivation, and mediated processes should also be examined in samples of young children.

Conclusions

There has been a great deal of interest in studying young children's positive social behaviours, such as prosocial responding. Developmental work indicates that prosocial responding emerges in toddlerhood and increases with age. Furthermore, the socio-cognitive skills hypothesized to be necessary for the development of empathy and prosocial behaviour have been positively related to individual differences in prosocial responding. Specifically, self-other awareness, perspective taking (including emotion understanding), and theory of mind have been associated with relatively higher prosocial behaviour and/or empathy. Researchers continue to question whether such skills may develop earlier than originally proposed by Hoffman.[2] Further, researchers are beginning to stress the importance of studying complex relations between children's socio-cognitive abilities and their prosocial behaviour, as well as examining the relations between earlier socio-cognitive skills and later prosocial responding. Future work is needed in determining the relations of socio-cognitive factors to different types of young children's prosociality in various contexts.

Implications for Parents, Services and Policy

A better understanding of the processes involved in predicting young children's prosocial behaviour has important clinical implications. For example, empathy training may be a promising direction to increase social understanding and prosocial skills, as well as to reduce children's aggression and bullying. Indeed, interventions to promote social skills or empathy training have been found to be effective in improving children's empathy and prosocial behaviour. More work is needed to understand the specific mechanisms involved in effective interventions, particularly whether socio-cognitive factors, such as perspective taking, are key features to enhancing children's prosocial behaviour, as well as how to identify young children at risk for developing impairment in these abilities. Further, interventions have typically focused on school-aged children; thus, it is unclear whether such techniques can be used in younger children; developmentally-appropriate assessments of these constructs need to be evaluated with young children in future research. It is also important focus on how parents may impact children's prosocial skills either directly or indirectly through children's socio-cognitive abilities.

References

1. Eisenberg N, Spinrad TL, Knafo A. Prosocial development. In: Lamb M, ed. and Lerner RM, vol. ed. *Handbook of child psychology and developmental science. 7th ed; Vol. 3. Socioemotional processes*. New York: Wiley. In press.
2. Hoffman ML. *Empathy and moral development: Implications for caring and justice*. New York: Cambridge University Press; 2000.

3. Svetlova M, Nichols SR, Brownell CA. Toddlers' Prosocial Behavior: From Instrumental to Empathic to Altruistic Helping. *Child Development* 2010;81(6):1814-1827. doi:10.1111/j.1467-8624.2010.01512.x

4. Warneken F, Tomasello M. Helping and cooperation at 14 months of age. *Infancy* 2007;11(3), 271-294. doi:10.1111/j.1532-7078.2007.tb00227.x

5. Young SK, Fox NA, Zahn-Waxler C. The relations between temperament and empathy in 2-year-olds. *Developmental Psychology*. 1999;35(5):1189-1197. doi:10.1037/0012-1649.35.5.1189.

6. Zahn-Waxler C, Robinson JL, Emde RN. The development of empathy in twins. *Developmental Psychology*. 1992;28:1038–1047. doi:10.1037/0012-1649.28.6.1038.

7. Zahn-Waxler C, Schiro K, Robinson JL, Emde RN, Schmitz S. Empathy and prosocial patterns in young MZ and DZ twins: Development and genetic and environmental influences. In: Emde RN, Hewitt JK, eds. *Infancy to early childhood: Genetic and envirionmental influences on developmental change*. New York, NY: Oxford University Press; 2001: 141-162.

8. Roth-Hanania R, Davidov M, Zahn-Waxler C. Empathy development from 8 to 16 months: Early signs of concern for others. *Infant Behavior and Development* 2011;34(3):447-458. doi:10.1016/j.infbeh.2011.04.007.

9. Zahn-Waxler C, Radke-Yarrow M, Wagner E, Chapman M. Development of concern for others. *Developmental Psychology* 1992;28:126–136.

10. Bischof-Köhler D. Empathy and self-recognition in phylogenetic and ontogenetic perspective. *Emotion Review* 2012;4(1):40-48. doi:10.1177/1754073911421377.

11. Brownell CA, Iesue SS, Nichols SR, Svetlova M. Mine or yours? Development of sharing in toddlers in relation to ownership understanding. *Child Development* 2013;84(3):906-920. doi:10.1111/cdev.12009.

12. Nichols SR, Svetlova M, Brownell CA. The role of social understanding and empathic disposition in young children's responsiveness to distress in parents and peers. *Cognition, Brain, & Behavior* 2009;13(4):449-478.

13. Bischof-Köhler D. The development of empathy in infants. In: Lamb ME, Keller H, eds. *Infant Development: Perspectives from German Speaking Countries*. Lawrence Erlbaum; 1991:245-273. Hillsdale, NJ:

14. Denham SA. Social cognition, prosocial orientation, and emotion in preschoolers: Contextual validation. *Child Development* 1986;57:194-201. doi:10.2307/1130651.

15. Ensor R, Hughes C. More than talk: Relations between emotion understanding and positive behaviour in toddlers. *British Journal of Developmental Psychology* 2005;23:343-363. doi:10.1348/026151005X26291.

16. Garner PW, Jones DC, Palmer DJ. Social cognitive correlates of preschool children's sibling caregiving behavior. *Developmental Psychology* 1994;30(6):905-911. doi: 10.1037/0012-1649.30.6.905.

17. Knafo A, Steinberg T, Goldner I. Children's low affective perspective-taking ability is associated with low self-initiated pro-sociality. *Emotion* 2011;11(1):194-198. doi:10.1037/a0021240.

18. Strayer J, Roberts W. Children's empathy and role taking: Child and parental factors, and relations to prosocial behavior. *Journal of Applied Developmental Psychology* 1989;10:227-239. doi:10.1016/0193-3973(89)90006-3.

19. Diesendruck G, Ben-Eliyahu A. The relationships among social cognition, peer acceptance, and social behavior in Israeli kindergartners. *International Journal of Behavioral Development* 2006;30:137-147. doi:10.1177/0165025406063628.

20. Cowell JM, Samek A, List J, Decety J. The curious relation between theory of mind and sharing in preschool age children. *PLoS ONE* 2015;10(2):e0117947. doi:10.1371/journal.pone.0117947

21. Davidov M, Zahn-Waxler C, Roth-Hanania R, Knafo A. Concern for others in the first year of life: Theory, evidence, and avenues for research. *Child Developmental Perspectives* 2013;7(2):126-131. doi:10.1111/cdep.12028.

22. Woodward AL. Infants' ability to distinguish between purposeful and non-purposeful behaviors. *Infant Behavior & Development* 1999;22(2):145-160. doi:10.1016/S0163-6383(99)00007-7.

23. Woodward AL. Infants' developing understanding of the link between looker and object. *Developmental Science* 2003;6(3):297-311. doi:10.1111/1467-7687.00286.

24. Hamlin JK, Wynn K. Five- and 9-month-old infants prefer prosocial to antisocial others. *Cognitive Development* 2011;26:30-39. doi:10.1016/j.cogdev.2010.09.001.

25. Hamlin JK, Wynn K, Bloom P. Social evaluation by preverbal infants. *Nature* 2007;450(22):557-560. doi:10.1038/nature06288.

26. Hamlin JK, Wynn K, Bloom P. Three-month-old infants show a negativity bias in social evaluation. *Developmental Science* 2010;13:923-929.

27. Hamlin JK, Wynn K, Bloom P, Mahajan N. How infants and toddlers react to antisocial others. *Proceedings of the National Academy of Sciences of the United States of America* 2011;108:19931-19936.

28. Eggum ND, Eisenberg N, Kao K, Spinrad TL, Bolnick R, Hofer C, Kupfer AS, Fabricius WV. Emotion understanding, theory of mind, and prosocial orientation: Relations over time in early childhood. *Journal of Positive Psychology* 2011;6:4-16. doi:10.1080/17439760.2010.536776.

29. Ensor R, Spencer D, Hughes C. "You feel sad?": Emotion understanding mediates effects of verbal ability and mother-child mutuality on prosocial behaviors: Findings from 2 years to 4 years. *Social Development* 2011;20(1):93-110. doi:10.1111/j.1467-9507.2009.00572.x.

30. Vaish A, Carpenter M, Tomasello M. Sympathy through affective perspective taking and its relation to prosocial behavior in toddlers. *Developmental Psychology* 2009;45(2):534-543. doi:http://dx.doi.org/10.1037/a0014322.

31. Eisenberg N, Zhou Q, Koller S. Brazilian adolescents' prosocial moral judgment and behavior: Relations to sympathy, perspective taking, gender-role orientation, and demographic characteristics. *Child Development* 2001;72:518-534. doi:10.1111/1467-8624.00294.

32. Moreno AJ, Klute MM, Robinson JL. Relational and individual resources as predictors of empathy in early childhood. *Social Development* 2008;17:613–637. doi:10.1111/j.1467-9507.2007.00441.x

33. Rhee SH, Boeldt DL, Friedman NP, Corley RP, Hewitt JK, Young SE, Knafo A, Robinson J, Waldman ID, Van Hulle CA, Zahn-Waxler C. The role of language in concern and disregard for others in the first years of life. *Developmental Psychology* 2013;49(2):197-214. doi:10.1037/a0028318.

34. Hay DF, Nash A, Pedersen J. Responses of six-month-olds to the distress of their peers. *Child Development* 1981;52:1071-1075. doi:10.2307/1129114.

35. Geangu E, Benga O, Stahl D, Striano T. Individual differences in infants' emotional resonance to a peer in distress: Self–other awareness and emotion regulation. *Social Development* 2011;20(3):450-470. doi:10.1111/j.1467-9507.2010.00596.x.

The Moral Foundations of Prosocial Behaviour

Tina Malti, PhD, Sebastian P. Dys, MA, Antonio Zuffianò, PhD

University of Toronto, Canada

May 2015

Introduction

Moral development describes the emergence and changes in an individual's understanding of, and feelings about, moral principles across the lifespan. Morality includes various dimensions, most prominently emotions, knowledge and reasoning, values, and morally relevant, prosocial behaviours. While some of these components strongly develop across the first five years of life, there are also great inter-individual differences that lay the foundation for individual differences in prosocial behaviour.[1] These differences are believed to be due to biological and environmental factors.[2] Developmental differences occur through maturation and are socialized by peers, parents, cultural values and practices.[3]

Subject

Early moral development is an important foundation for prosocial behaviour. Moral emotions may facilitate children's prosocial conduct through the affective consequences of their actions for the self[4,5] (e.g., guilt) and/or the affective concern for others[6] (e.g., sympathy). Alternately, they may become increasingly aware of the reasons why it is important to help others, which may motivate them to engage in prosocial behaviour. Thus, if parents and teachers want to socialize prosocial behaviour in young children, it becomes an important question to consider the affective and cognitive components of morality that may facilitate such outcomes.

Progress has been made in the study of early moral development in recent years.[7] Most of the previous work has focused on either emotion or judgment. Yet, both moral emotions and moral cognitions appear necessary for the emergence of prosocial behaviour.[8] What is less known is the relation between moral emotions and moral cognitions and how their relations change over time. There is also a need to study trajectories of moral affect, moral cognition, and prosocial behaviour, as well as their socialization antecedents. Research on the role of peers in early moral development has also remained relatively limited. For example, it still needs to be determined how experiences of peer exclusion affect early prosocial tendencies.

Research Context

The moral foundations of prosocial behaviour have been studied from various perspectives. Researchers have used interviews, observational measures, and parents' or teachers' reports of children's moral emotions, moral judgment, and prosocial behaviour. The interview measures typically include questions that assess children's understanding and reasoning about moral issues in transgressions, such as if and why it is (not) right to transgress norms (e.g., pushing another child off the swing) and/or children's emotions anticipated in these events.[1,9] Observational studies have been utilized to study children's reactions to simulated distress (e.g., the experimenter expressed pain after hurting his/her knee[10]), spontaneous prosocial behaviour,[11] or negative reactions in response to a perceived transgression (e.g., children were led to believe that they damaged a valuable object[12]). While most research has been conducted in laboratory settings, some studies have been conducted in natural settings (e.g., home environment, kindergarten).

Key Research Questions

Developmental scientists have sought to understand at what ages children develop moral capabilities, such as empathy, guilt, or moral reasoning skills, and if development in these domains motivates children to act in prosocial ways. The central questions are how inter-individual differences in moral development relate to young children's prosocial behaviour, how these differences are associated with different socialization practices, and how normative change and atypical moral development affect changes in prosocial behaviour.

Recent Research Results

Investigators have studied young children's moral emotions, such as empathy and guilt. A consistent body of research has corroborated the notion that affective concern (i.e., empathy) is associated with prosocial behaviour.6 Early forms of empathy (i.e., feeling an emotion similar to what another is experiencing) exist from infancy on.[13] Children's sympathetic responses become tied to their prosocial actions in the 2nd year of life[11,14] and predict future prosocial behaviour.[15] Early precursors of guilt, such as distress following a perceived transgression, emerge between the first and second year of life.[12] Around 3-5 years of age, children begin to report guilt in response to specific transgressions, such as imagining pushing another child off the swing, and these guilt feelings predict prosocial behaviour.[1,16,17,18]

In addition, researchers have explored children's evaluations of, and reasoning about, moral issues. Infants appear to possess capacities to form rudimentary social evaluations. For example, 6-month-old infants prefer those who help over those who impede another's goals.[19] Older infants and toddlers prefer equal allocation of resources over unfair distributions.[20,21] By the age of 3, children understand that it is wrong to break moral rules, and they show more responsiveness to emotional distress evoked by moral transgressions (involving issues of fairness or harm) as compared to social-conventional transgressions (involving traditions or customs).[22] In the second year of life, as children increasingly understand simple intentions, they also begin to demonstrate the first instances of prosocial behaviour, such as helping others without being asked.[23,24,25] By the third and fourth years of life, children can more readily respond to another's negative emotional state with appropriate sharing or helping, even if it is of a cost to the child.[26,27] The limited research on relations between moral reasoning and prosocial behaviour in early childhood has yielded mixed findings, with some studies finding positive relations,[28] and others finding no relations.[29]

In addition, how parents and peers facilitate moral and prosocial tendencies has been explored. In general, there is evidence that friends and peers are important for moral and prosocial development.[30,31,32,33] For example, 4-year-olds' moral reasoning has been linked to the quality of interaction between friends.[34] Family interactions and parenting are also associated with children's morality. For example, participation in family discourse about moral issues, warm and supportive parenting, low use of discipline based on power, and high use of induction (i.e., explaining to the child why the transgression is wrong and how it affects the victim) enhance early moral development.[2,12,32,35,36]

Research Gaps

Although young children's emotions in moral contexts have been studied, research on a wide array of naturally occurring emotions in these contexts, as well as links with moral knowledge , values, and various prosocial behaviours is necessary. There is also a need for research on how interactions with friends and peers affect young children's moral and prosocial development. Longitudinal investigations are also warranted to better understand which mechanisms account for links between early moral development and prosocial behaviour. In addition, current research is lacking in studies that investigate the effects of diverse social contexts, such as impoverished communities, on children's judgments about, and feelings associated with, everyday experiences involving issues of morality and group functioning, such as social exclusion.[37]

Conclusions

Morality develops tremendously in the first five years of life. Although even infants have basic skills to distinguish right and wrong and express empathic concern, moral knowledge and the anticipation of more complex emotions, such as guilt, strongly develop during the early childhood years. This developmental process is closely tied to children's increasing understanding of intentions, needs, and desires, both in the self and others.[38,39] Individual differences in empathy and guilt have been associated with various forms of prosocial behaviour, most prominently helping and sharing behaviour.[6,17] In addition, empathy and guilt have been shown to predict future prosocial behaviour. There is also some evidence, albeit limited, for a positive relation between moral reasoning and prosocial behaviour. Moreover, it has been shown that constructive family interactions and warm and supportive parenting affect young children's morality and prosocial tendencies positively.[32] There is also evidence that positive interactions with peers and close friends promote early moral development.

Implications for Parents, Services and Policy

The early years are a time in which various components of morality emerge and rapidly develop. These components are likely to form the foundation for children's prosocial behaviour. Moral emotions, such as guilt and empathy, are critical because they can motivate children to behave in prosocial ways. Moral reasoning skills are important because they help children navigate complex social and moral situations in everyday life. Parents, teachers, and peers play an important role in children's developing morality. Because the quality of parent-child relationships and peer relationships is associated with moral and prosocial development, it is important that parents and other caregivers be encouraged to interact with children in ways that foster the development of moral emotions, moral reasoning, and prosocial behaviour. Similarly, because peers play a significant role in moral development, it is central to promote high-quality interactions with friends and peers. Because moral development is central to the emergence of socially responsibly attitudes and values, social inclusion, and mental health, service providers and policy-makers need to implement strategies that promote moral development.

This research was supported by grants from the Social Sciences and Humanities Research Council of Canada (SSHRC) and the Canadian Institutes of Health Research (CIHR).
Correspondence concerning this article should be addressed to Tina Malti, Department of Psychology, University of Toronto. tina.malti@utoronto.ca

References

1. Malti T, Ongley S. The development of moral emotions and moral reasoning. In: Killen M, Smetana JG, eds. *Handbook of moral development*. 2nd ed. New York: Taylor & Francis, 2014:163-183.
2. Hay DF. The roots and branches of human altruism. *British Journal of Psychology*. 2009;100:473-479.
3. Kärtner J, Keller H, Chaudary N. Cognitive and social influences on early prosocial behaviour in two sociocultural contexts. *Developmental Psychology*. 2010;46:905-914.
4. Hoffman ML. *Empathy and moral development: Implications for caring and justice*. New York: Cambridge University Press; 2000.
5. Malti T, Latzko B. Moral emotions. In: Ramachandran V, ed. *Encyclopedia of human behavior*. 2nd ed. Maryland Heights, MO: Elsevier; 2012:644-649.
6. Eisenberg N, Tracy S, Knafo A. Prosocial development. In: Lamb M, ed, Lerner M, vol ed. *Handbook of child psychology and developmental science. Vol. 3*. 7th ed. New York: Wiley. In press.
7. Decety J, Howard, L.H. The role of affect in the neurodevelopment of morality. *Child Development Perspectives*. 2013;7(1):49-54.
8. Killen M, Smetana, JG, eds. *Handbook of moral development*. 2nd ed. New York: Taylor & Francis; 2014.
9. Arsenio W. Moral emotion attributions and aggression. In: Killen M, Smetana JG, eds. *Handbook of moral development*. 2nd ed. NewYork: Taylor & Francis; 2014:235-255.
10. Zahn-Waxler C, Robinson J, Emde RN. The development of empathy in twins. *Developmental Psychology*. 1992;28:1038-1047.
11. Vaish A, Carpenter M, Tomasello M. Sympathy through affective perspective taking and its relation to prosocial behavior in toddlers. *Developmental Psychology*. 2009;45:534-543.
12. Kochanska G, Gross JN, Lin MH, Nichols KE. Guilt in young children: Development, determinants, and relations with a broader system of standards. *Child Development*. 2002;73:461-482.
13. Davidov M, Zahn-Waxler C, Roth-Hanania R, Knafo A. Concern for others in the first year of life: Theory, evidence, and avenues for research. *Child Development Perspectives*. 2013;7:126-131.
14. Svetlova M, Nichols S, Brownell C. Toddlers' prosocial behavior: From instrumental to empathic to altruistic helping. *Child Development*. 2010;81:1814-1827.
15. Kochanska G, Koenig JL, Barry RA, Kim S, Yoon, JE. Children's conscience during toddler and preschool years, moral self, and a competent, adaptive developmental trajectory. *Developmental Psychology*. 2010;46:1320-1332.
16. Gummerum M, Hanoch Y, Keller M, Parsons K, Hummel A. Preschoolers' allocations in the dictator game: The role of moral emotions. *Journal of Economic Psychology*. 2010;31:25-34.
17. Malti T, Krettenauer T. The relation of moral emotion attributions to prosocial and antisocial behavior: A meta-analysis. *Child Development*. 2013;84:397-412.
18. Ongley S, Malti M. The role of moral emotions in the development of children's sharing behavior. *Developmental Psychology*. In press.
19. Hamlin JK, Winn K, Bloom P. Social evaluation by preverbal infants. *Nature*. 2007;450: 557-559.
20. Geraci A, Surian L. The developmental roots of fairness: Infants' reactions to equal and unequal distributions of resources. *Developmental Science*. 2011;14:1012-1020.
21. Moore C. Fairness in children's resource allocation depends on the recipient. *Psychological Science*. 2009;20:944-948.

22. Smetana JG. Social domain theory: Consistencies and variations in children's moral and social judgments. In: Killen M, Smetana JG, eds. *Handbook of moral development.* Mahwah, NJ: Erlbaum, 2006:119-154

23. Paulus M, Moore C. Producing and understanding prosocial actions in early childhood. *Advances in Child Development and Behavior*. 2012;42:271-305.

24. Behne T, Carpenter M, Call J, Tomasello M. Unwilling versus unable: Infants' understanding of intentional action. *Developmental Psychology*. 2005;41:328-337

25. Warneken F, Tomasello M. The roots of human altruism. *British Journal of Psychology*. 2009;100:455–471.

26. Dunfield KA, Kuhlmeier VA. Classifying Prosocial Behaviour: Children's Responses to Instrumental Need, Emotional Distress, and Material Desire. *Child Development*. 2013;84:1766-1776.

27. Olson KR, Spelke ES. Foundations of cooperation in young children. *Cognition*. 2008;108:222-231.

28. Eisenberg-Berg N, Hand M. The relationship of preschoolers' reasoning about prosocial moral conflicts to prosocial behavior. *Child Development*. 1979;50:356-363.

29. Gummerum M, Keller M, Takezawa M, Mata, J. To give or not to give: Children's and adolescents' sharing and moral negotiations in economic decision situations. *Child Development.* 2008;79:562-576.

30. Carpendale JIM, Lewis C. How children develop social understanding. Oxford: Blackwell Publishers; 2006.

31. Nucci L. Social interaction in the construction of moral and social knowledge. In Carpendale J, Mueller U, eds. Social interaction and the development of knowledge. Mahwah, NJ: Lawrence Erlbaum, 2004: 195-214.

32. Dunn J. Moral development in early childhood and social interaction in the family. In: Killen M, Smetana JG, eds. Handbook of moral development. 2nd ed. New York: Taylor & Francis, 2014:135-160.

33. Hastings PD, Utendale WT, Sullivan C. The socialization of prosocial development. In: Grusec JE, Hastings PD, eds. *Handbook of socialization: Theory and research*. New York: Guilford, 2007:638-664.

34. Dunn J, Cutting AL, Demetriou H. Moral sensibility, understanding other, and children’s friendship interactions in the preschool period. *British Journal of Developmental Psychology*. 2000;18:159-178.

35. Smetana JG. (1997). Parenting and the development of social knowledge reconceptualized: A social domain analysis. In: Grusec JE, Kuczynski L, eds. *Parenting and the internalization of values*. New York: Wiley; 1997:162-192.

36. Malti T, Eisenberg N, Kim H, Buchmann M. Developmental trajectories of sympathy, moral emotion attributions, and moral reasoning: The role of parental support. *Social Development*. 2013;22:773-779.

37. Killen M, Stangor C. Children's social reasoning about inclusion and exclusion in gender and race peer group contexts. *Child Development*. 2001;72:174-186

38. Wellman HM, Liu D. Scaling of theory-of-mind tasks. *Child Development*. 2004;75:502-517.

39. Lagattuta KH, Weller DW. Interrelations between theory of mind and morality: A developmental perspective. In: Killen M, Smetana JG, eds. *Handbook of moral development*. 2nd ed. New York: Taylor & Francis; 2014:385-408.

Prosocial Behaviour Towards Ingroup and Outgroup Members

Gil Diesendruck, PhD, Avi Benozio, MA, Doctoral student

Department of Psychology and Gonda Brain Research Center, Bar-Ilan University, Israel

May 2015

Introduction

Children currently live in social environments composed of individuals from diverse cultures, ethnicities, and religions. Research reveals that from very early on children become aware of these distinctions,[1,2] and develop biased attitudes,[3] and firm beliefs about them.[4] The present chapter addresses whether children's behaviour is modulated by these social group concepts.

Subject

Recent developmental findings reveal that even 18-month-olds spontaneously help strangers achieve their goals, suggesting that altruism might be a natural bias.[5] The question we address here is whether children are prosocial towards all others, or are they biased in their prosocial tendencies to favor those who are similar to them?

Problem

Evolutionary scholars note that once human survival started depending on the existence of large cooperative groups competing for resources with other groups, humans had to develop mechanisms for cooperating with non-genetically related others.[6–9] In this context, having a biased predisposition to produce prosocial behaviour towards one's ingroup might have been evolutionarily advantageous. A problematic corollary potentially deriving from this same evolutionary pressure, is that humans might have also evolved a biased disposition to act antisocially towards outgroup members.[10]

Research Context

We examine the question of biased prosociality in the context of infants' and young children's interactions in, and reactions to, a variety of intergroup contexts – be them interactions with conventional or novel groups.

Key Research Questions

We divide the question of biased prosociality early on in development into two broad issues. First, we examine the evidence on the extent to which children behave differently when interacting with ingroup vs. outgroup members. Then we examine factors potentially explaining children's differential behaviour – such as self-identification, expectations of reciprocity, and reputation management.

Recent Research Results

Biased prosocial behaviour

Children's intergroup prosocial behaviour has been addressed mainly via resource distribution tasks. In these tasks, children are typically provided with a certain endowment, and are asked to distribute it to potential recipients. In extensive work on this issue, Fehr and colleagues have placed children in three different types of games: 1- Prosocial game, in which children had to choose between an egalitarian distribution (1 sticker for self and 1 sticker for recipient) or a selfish distribution (1 for self and 0 for recipient); 2- Sharing game (1,1 vs. 2,0); and 3- Envy game (1,1 vs. 1,2). Sometimes children played with recipients from their own school-class (ingroup) and sometimes with recipients from a different school (outgroup). Fehr and colleagues found that already at ages 3-4, children showed ingroup favoritism in some of these games. Moreover, boys showed strong aversion at being disadvantaged vis-a-vis outgroup recipients.[11] Lastly, biased altruism towards the ingroup and spiteful behaviour towards the outgroup emerged simultaneously, but only around adolescence.[12] Using similar experimental games, Moore found that 5-year-olds favored a friend over a stranger in a game that held a cost to the distributor, but no discrimination was found in the absence of personal cost.[13] Similar findings were found with a third-party distribution task among 3.5-year-olds.[14]

A further important question is whether children manifest biased prosociality even when groups are defined in arbitrary ways. Dunham and colleagues found that although 5-year-olds privileged same-gender recipients in a resource distribution task, when group membership was determined minimally by arbitrarily assigning children to different color-groups, ingroup favoritism was negligible.[15] Also employing minimal-group assignment of membership, Benozio & Diesendruck did find ingroup favoritism in resource allocation, already by 3-4 years of age. Interestingly, the favoritism was apparent primarily amongst boys. In particular, boys tuned their distributive

behaviour to match the personal preferences of an ingroup member who liked or disliked the stickers, but acted spitefully towards an outgroup member.[16] Similar results, with a compatible effect for gender, were recently demonstrated among 8-year olds while distributing positively and negatively valenced resources.[17]

In sum, under certain circumstances, even arbitrary color-groups suffice for children – especially boys – to act prosocially towards ingroup members and antisocially towards outgroup ones.

Potential explanations of biased prosocial behaviour

a. Self-identification: The extent to which children identify with a group, affects their attitudes and willingness to act prosocially.[18–20] Consistent with this notion, subtle reminders of affiliative social relations, or being mimicked by another person, increased helping behaviour in 18-month-olds.[21,22] Furthermore, one of the key precursors of prosocial behaviour is a recognition of a need in the other, and the potential positive affective response one's actions might have on the other – capacities commonly characterized as empathy.[23] And in fact, 8-year-olds who strongly identified with their ingroup showed a stronger empathy bias, feeling more sad about negative events that occurred to an ingroup than an outgroup member.[24]

b. Expectations of reciprocity: In typical inter-personal interactions, the extent to which an individual decides to collaborate with another is a function of a history of reciprocity, which in turn affect expectations about future reciprocation.[6,25–27] It has been suggested that group membership may serve as a shortcut for such a history – and a catalyst for prosociality – insofar as one can presuppose reciprocity by ingroup members even in the absence of any previous encounters.[28] And indeed, 5-year-olds expect ingroup member to share with them, compared to an outgroup,[15] and 5- to 13-year-olds believe that people are more obliged to help racially-defined ingroup than outgroup members - and will feel happier doing so.[29] Strikingly, recent results suggest that expectations about ingroup favoritism might be present already in the first year of life.[30] Importantly, however, although children expect individuals to privilege their ingroup when distributing resources, they nonetheless evaluate more positively those who distribute resources equally between ingroup and outgroup members – a dissociation that expands from ages 4 to 10.[31] In a complementary fashion, although children expect group members to abide by group norms, when the norm is unfair – e.g., unequal resource distribution – then violators are regarded positively.[32] Thus, moral considerations of fairness may take precedence over group loyalty, especially as children mature.

c. Reputation management: Concern with reputation is also regarded as one of the driving forces in maintaining group cohesion and loyalty.[28] In fact, recent findings suggest that children's prosocial acts may be driven more by concerns about reputation, than commitment to fairness.[33] In particular, children seem to be especially concerned about how ingroup members evaluate their reputation, thus acting more generously in a resource distribution game when watched by an ingroup than by an outgroup member.[34]

Research Gaps

There are a number of issues that need to be further examined with regard to children's biased prosociality. One issue is that in order to achieve a more comprehensive assessment of the links among concepts, attitudes, self-identify, and behaviour, there needs to be more systematic examination of how children respond to various types of groups – familiar vs. novel, self-related vs. self-unrelated, negatively vs. neutrally valued, and groups viewed as fundamentally and inherently different ("essentialized") vs. those viewed as more arbitrary and dynamic ("non-essentialized"). In this latter regard, in particular, it would be valuable to conduct direct examinations of children's prosocial behaviours towards racially or ethnically defined social groups. A second important direction for future research, is to investigate children from diverse cultures,[35] variable in their normative endorsement of prosocial behaviour, importance of reputation, and centrality of group identity.[36] A third, more methodological issue, is to employ and compare different types of tasks (e.g., helping, cooperation), in addition to distributive ones. Finally, in order to track the development of children's biased prosociality, and the factors potentially influencing it, systematic comparisons across age groups are needed.

Conclusions

Although there are many gaps in the research findings to provide a definitive picture, there is nonetheless accumulating evidence that from a young age, children selectively act prosocially towards those who are members of their group – even if the groups are arbitrarily defined – and in some cases, act anti-socially towards members of other groups. Children might not be selfish, but they seem "groupish". There is also mounting evidence for different underlying reasons why children might develop such biased dispositions, having to do with self-identity, expectations of reciprocity, and reputation management. Although these conclusions reinforce evolutionary-based theoretical claims about the origins of such biases, there are reasons to believe the cultural context in which children develop likely plays a critical role in the establishment and manifestation of these biases. In particular, cultures identify the relevant social groups in

children's environment, determine the degree of emphasis on group membership and loyalty, and define norms for regulating pro- and anti-social behaviour in different contexts.

Implications for Parents, Services and Policy

Children are evidently not totally naïve about their social environment. Rather, from a fairly young age, they recognize different social groups, and develop robust attitudes and beliefs about these groups. Most critically from a practical perspective, these social concepts have direct consequences to the ways in which children interact with others. One of the implications of the above portrayal of children to educators is that, if we leave children to figure out the social world on their own, they might end up developing fairly discriminatory and biased dispositions. In other words, educators need to actively engage in curbing children's predisposed biases. A second important implication is that, by understanding the underlying motives fueling these biases, we might be able to design better interventions. In particular, the redefinition of social groups so as to include "others", might lead to the application of the processes of self-identification, expectations of reciprocity, and reputation onto a much broader social circle.

References

1. Bar-Haim Y, Ziv T, Lamy D, Hodes RM. Nature and nurture in own-race face processing. *Psychol Sci*. 2006;17(2):159-163.
2. Kinzler KD, Dupoux E, Spelke ES. The native language of social cognition. *Proc Natl Acad Sci*. 2007;104(30):12577-12580.
3. Dunham Y, Baron AS, Banaji MR. The development of implicit intergroup cognition. *Trends Cogn Sci*. 2008;12(7):248-253.
4. Diesendruck G, Goldfein-Elbaz R, Rhodes M, Gelman S, Neumark N. Cross-cultural differences in children's beliefs about the objectivity of social categories. *Child Dev*. 2013;84(6):1906-1917.
5. Warneken F, Tomasello M. The roots of human altruism. *Br J Psychol*. 2009;100(3):455-471.
6. Nettle D, Dunbar RI. Social markers and the evolution of reciprocal exchange. *Curr Anthropol*. 1997;38(1):93-99.
7. Tomasello M, Vaish A. Origins of human cooperation and morality. *Annu Rev Psychol*. 2013;64:231-255.
8. Richerson PJ, Boyd R. *Not by Genes Alone: How Culture Transformed Human Evolution*. University of Chicago Press; 2008.
9. Cosmides L, Tooby J, Kurzban R. Perceptions of race. *Trends Cogn Sci*. 2003;7(4):173-179.
10. Choi JK, Bowles S. The coevolution of parochial altruism and war. *Science*. 2007;318(5850):636-640.
11. Fehr E, Bernhard H, Rockenbach B. Egalitarianism in young children. *Nature*. 2008;454(7208):1079-1083.
12. Fehr E, Glätzle-Rützler D, Sutter M. The development of egalitarianism, altruism, spite and parochialism in childhood and adolescence. *Eur Econ Rev*. 2013;64:369-383.
13. Moore C. Fairness in children's resource allocation depends on the recipient. *Psychol Sci*. 2009;20(8):944-948.
14. Olson KR, Spelke ES. Foundations of cooperation in young children. *Cognition*. 2008;108(1):222-231.
15. Dunham Y, Baron AS, Carey S. Consequences of "minimal" group affiliations in children. *Child Dev*. 2011;82(3):793-811.

16. Benozio A, Diesendruck G. Parochialism in preschool boys' resource allocation. *Evol Hum Behav*. 2015:in press.

17. Buttelmann D, Böhm R. The ontogeny of the motivation that underlies in-group bias. *Psychol Sci*. 2014;25(4):921-7.

18. Bigler RS, Liben LS. Developmental Intergroup Theory: Explaining and Reducing Children's Social Stereotyping and Prejudice. *Curr Dir Psychol Sci*. 2007;16(3):162-166.

19. Nesdale D, Flesser D. Social identity and the development of children's group attitudes. *Child Dev*. 2001;72(2):506-517.

20. Paulus M. The emergence of prosocial behavior: Why do infants and toddlers help, comfort, and share? *Child Dev Perspect*. 2014;8:77-81.

21. Over H, Carpenter M. Eighteen-Month-Old Infants Show Increased Helping Following Priming With Affiliation. *Psychol Sci*. 2009;20(10):1189-1193.

22. Carpenter M, Uebel J, Tomasello M. Being mimicked increases prosocial behavior in 18-month-old infants. *Child Dev*. 2013;84(5):1511-1518.

23. Batson DC. *Altruism in Humans*. New York, NY: Oxford Univercity Press, Inc.; 2011.

24. Masten CL, Gillen-O'Neel C, Brown CS. Children's intergroup empathic processing: the roles of novel ingroup identification, situational distress, and social anxiety. *J Exp Child Psychol*. 2010;106(2-3):115-128.

25. Yamagishi T, Jin N, Kiyonari T. Bounded generalized reciprocity: Ingroup boasting and ingroup favoritism. *Adv Gr Process*. 1999;16(1):161-197.

26. Kanngiesser P, Warneken F. Young Children Consider Merit when Sharing Resources with Others. *PLoS One*. 2012;7(8):e43979.

27. House B, Henrich J, Sarnecka B, Silk JB. The development of contingent reciprocity in children. *Evol Hum Behav*. 2013;34(2):86-93.

28. Nowak M a, Sigmund K. Evolution of indirect reciprocity. *Nature*. 2005;437(7063):1291-1298.

29. Weller D, Lagattuta KH. Helping the in-group feels better: children's judgments and emotion attributions in response to prosocial dilemmas. *Child Dev*. 2013;84(1):253-268.

30. Hamlin JK, Mahajan N, Liberman Z, Wynn K. Not like me = bad: Infants prefer those who harm dissimilar others. *Psychol Sci*. 2013;24(4):589-594.

31. Dejesus JM, Rhodes M, Kinzler KD. Evaluations versus expectations: Children's divergent beliefs about resource distribution. *Cogn Sci*. 2014;38(1):178-193.

32. Killen M, Rutland A, Abrams D, Mulvey KL, Hitti A. Development of intra- and intergroup judgments in the context of moral and social-conventional norms. *Child Dev*. 2013;84(3):1063-1080.

33. Shaw A, Montinari N, Piovesan M, Olson KR, Gino F, Norton MI. Children develop a veil of fairness. *J Exp Psychol Gen*. 2014;143(1):363-375.

34. Engelmann JM, Over H, Herrmann E, Tomasello M. Young children care more about their reputation with ingroup members and potential reciprocators. *Dev Sci*. 2013;16(6):952-958.

35. Graham J, Haidt J, Koleva S, et al. Moral foundations theory: The pragmatic validity of moral pluralism. *Adv Exp Soc Psychol*. 2013;47:55-130.

36. House B, Silk JB, Henrich J, et al. Ontogeny of prosocial behavior across diverse societies. *Proc Natl Acad Sci*. 2013;110(36):14586-14591.

Prosocial Development Across the Lifespan

[1]Stuart I. Hammond, PhD, [2]Celia A. Brownell, PhD

[1]University of Ottawa, School of Psychology, Canada, [2]University of Pittsburgh, Department of Psychology, USA

November 2015

Introduction

Prosocial behaviours are voluntary acts intended to benefit others.[1] Prosocial acts emerge early in life, soon after babies learn to crawl,[2] and increase in complexity across the lifespan, with the emergence of paradoxically prosocial acts such as prosocial lying in middle childhood, and acts of long-term commitment in adolescence and adulthood.

Subject

The appearance of prosocial behaviour in infancy has led to recent claims that babies are born with a predisposition for morality and altruism.[3,4] A lifespan perspective on prosocial development both enriches and challenges this view. Throughout life, prosocial behaviour serves many functions, from simple enjoyment, to relationship building, to reputation enhancement, to explicitly moral aspirations.[5]

Problem

By taking a lifespan perspective, we can identify how prosocial behaviour changes in both form and function with age, as well as how age-specific mechanisms may affect its emergence and development. For example, infants' early prosocial behaviour, although superficially similar to adult forms, may have unique motives and functions that are less evident in later behaviours.[6] A lifespan perspective on prosocial development can also assist researchers in determining the role parents, peers, and other adults can play in, and in intervening to promote, its development throughout the lifespan.

Research Context

The majority of research on prosocial behaviour has involved direct and indirect observations of behaviour, through experimental and naturalistic studies, and self- and parent- and teacher-

reports, in single time point, cross-sectional, longitudinal, and more rarely, twin study, designs. However, more recent studies have also used other methods, such as neural imaging,[7] and pupil dilation and eye-tracking[8] to explore prosocial behaviour. It is likely that future research will use converging methods, combining behavioural methods with other methodologies.

Key Research Questions

Important research questions for the lifespan development of prosocial behaviour include understanding general patterns of development in prosocial behaviour over the lifespan, and studying how individual levels of prosocial behaviour change or remain stable within development.[5]

Recent Research Results

a) Infancy and toddlerhood helping, sharing, and caring

Infants as young as 12 months will inform adults of unseen events by pointing these out, and will also offer instrumental help by assisting adults complete thwarted tasks, such as picking up an out-of-reach object.[9,10] As they approach age 3, toddlers are more reliably able to comfort people in distress, for example, by hugging someone who is hurt, and sharing resources with those who express a need for food or a toy.[11-15] In experimental studies, these early appearing prosocial behaviours are relatively undifferentiated by gender; however, in parent and teacher report of younger children, and in experimental studies in childhood and beyond, females tend to engage in more comforting behaviours, and males in riskier helping behaviours.[16,17]

Cross-cultural studies find the same basic forms of prosocial behaviour in infants across diverse cultures,[18] and there is evidence that individual differences in prosociality are heritable.[19] However, there is also substantial cross-cultural and individual variability in prosociality across all ages.[20-24]

A potential mechanism supporting early prosocial behaviour is empathy,[25] which first manifests through reactive crying in response to another infant's cries.[26-29] In toddlers, expressions of empathic concern are related to comforting others.[15,30] Other forms of prosocial behaviour, such as children's attempts to assist adults with routines and chores in the home, may arise out of young children's desire for affiliation, such as social engagement with others in fun and amusement, and in mastery of adult tasks.[31-35] Although less well understood, motives behind a

particular prosocial act may change with development; for example, feeding a family pet may be "fun" for a young child, but gradually become motivated by a sense of responsibility and care for the pet.[2,24]

Throughout infancy, parental behaviour contributes to the early development of prosocial behaviour, for example through talking about others' emotions and mental states with their toddlers (e.g., 'sad,' 'remember'[12]), and by structuring affiliative and collaborative interactions to facilitate young children's participation in prosocial events as well as their imitative learning.[35-37]

b) Childhood: Reflecting on self and others

By the age of 4, children become more sophisticated in thinking about their own and others' actions.[5,38,39] Whereas infants expect equality in the partition of goods,[40,41] as children acquire more complex social understanding, resource division may come to be unequal, as they take factors such as effort, need, group membership, cost, and historical experiences, into consideration when distributing goods.[42-46]

During early and middle childhood, children in industrialized countries also begin to associate regularly with peers and less frequently with parents. Although both peers and parents influence children's competencies and opportunities in assisting others,[47] childhood prosocial behaviour increases in complexity in these new social contexts.[2,5,48,49] As children begin to understand the emotions of their friends and peers, and the expectations of schools and teachers, they begin to engage in prosocial lying to protect another's feelings or, in some cultures, to appear modest.[50] Similarly, children also learn to appreciate that necessary harm, such as pulling someone off an unsafe play structure, may lead to a greater good.[51]

c) Adolescence and emerging adulthood: Volunteering and identity

Prosocial behaviour tends to decline in early adolescence,[52] partly in relation to hormonal and other physiological events of puberty,[53] but then recovers.[54] A new form of prosociality, civic engagement and volunteering, emerges as adolescents become more socially independent. Participating in church groups, playing or coaching sports, and involvement in school clubs, which require maintenance of prosocial activity over time, contribute to a sense of agency, that one's acts can make a difference in the lives of others,[55] and the development of identity.[56-58] Volunteering in adolescence is linked to later civic engagement.[59]

d) Adulthood and beyond: Future generations and moral exemplars

Adults have access to more material resources, knowledge, independence, and, particularly with older and retired adults, more time, than in other stages of life. Exceptional individuals become moral exemplars, demonstrating exceptional moral commitment or heroic sacrifice.[58] However, classic social psychology research on phenomena such as bystander effect, wherein adults in a crowd are less likely to help, show that adults are not automatically more prosocial than children and adolescents.[5,60]

Being a parent or caregiver is an important context of prosociality, although one that is seldom recognized in the research literature. Beyond helping others directly, parents, teachers, and caregivers also attempt to socialize prosociality in children, with explicit reference to moral expectations and through facilitating children's cooperation in family and societal life, closing the loop on prosocial development across the lifespan.[2,37,47,61-63]

Research Gaps

The principal gap in the research on prosocial behaviour over the lifespan is understanding the developmental relation between the earliest prosocial behaviours and those behaviours emerging later in life.[2,5] Another important gap is understanding how some prosocial behaviours come to have moral motives. This is a daunting task because prosocial behaviours originate from many sources, such as increasing social and moral understanding, the formation and maintenance of social relations, and changing social roles, such as student or parent, and it is a difficult to entangle these influences.5

Conclusions

Prosocial behaviour is a concept whose relatively straightforward definition, as voluntary acts intended to benefit others, conceals a remarkable diversity.[5] This diversity is particularly apparent across a lifespan perspective, as when prosocial behaviour is viewed across age, the changes in its motives, its structure, its timeframe, and its beneficiaries become apparent. The prosocial behaviour of the infant is not completely that different from that of the adult, nor is it identical. Furthermore, the prosocial behaviour of a single individual may not be identically motivated at all times. Considered across the lifespan, we can see that human nature is oriented socially, towards interacting with others, though not always morally. In its developmental complexity, we should also consider the possibility that prosocial behaviour serves many

functions. It may be that through life experiences, and with hard work, reflection, and commitment, that it truly comes into its moral form.

Implications for Parents, Services and Policy

Prosocial behaviours are a normal and necessary part of living in society, and of social development, and promoting prosocial behaviour in all its forms is clearly desirable,[63] However, parents and teachers should be aware that prosociality is complicated, and that some motives for and structures of behaviour are more desirable than others. For example, although encouraging sharing of resources is important, this behaviour can easily come to involve favoritism, such as to in-groups. These biases can be addressed and corrected by parents and educators.[45]

Developmentally, there is some evidence that prosocial acts initially carried out for social reasons, such as chores that infants participate in for fun, can become legitimately personal and moral, as children learn to care about the recipients of these behaviours.[31,34] At the same time, parents should not be overly concerned if an infants' prosocial behaviour, supported by interest or fun, declines as the child masters the task and it becomes a "chore," and some age-related declines prosocial are also expected.

References

1. Eisenberg N, Spinrad TL, Knafo-Noam A. Prosocial development. In: Lamb ME, ed. *Handbook of child psychology and developmental science*. 7th ed. Hoboken, NJ: Wiley; 2015:610-656.
2. Hay DF, Cook KV. The transformation of prosocial behavior from infancy to childhood. In: Brownell CA, Kopp CB, eds. *Socioemotional development in the toddler years: Transitions and transformations*. New York: Guilford Press; 2007:100-131.
3. Wynn K, Bloom P. The moral baby. In: Killen M, Smetana JG, eds. *Handbook of moral development*. 2nd ed. New York: Psychology Press; 2014:435-53.
4. Vaish A, Tomasello M. The early ontogeny of human cooperation and morality. In: Killen M, Smetana JG, eds. *Handbook of moral development*. 2nd ed. New York: Psychology Press; 2014:279-98.
5. Carlo G. The development and correlates of prosocial moral behaviors. In: Killen M, Smetana JG, eds. *Handbook of moral development*. 2nd ed. New York: Psychology Press; 2014:208-234.
6. Carpendale JIM, Hammond SI, Atwood S. A relational developmental systems approach to moral development. In: Lerner RM, Benson JB, eds. *Advances in Child Development and Behavior*. Amsterdam: Elsevier Science; 2013:125-153.
7. Decety J, Howard LH. A neurodevelopmental perspective on morality. In: Killen M, Smetana J, eds. Handbook of moral development. Mahwah, NJ: Lawrence Erlbaum Associates; 2014:454-474.
8. Hepach R, Vaish A, Tomasello M. A new look at children's prosocial motivation. Infancy. 2013;18(1):67-90.
9. Liszkowski U. Human twelve-month-olds point cooperatively to share interest with and helpfully provide information for a communicative partner. *Gesture*. 2005;5:135-154.

10. Warneken F, Tomasello M. Helping and cooperation at 14 months of age. *Infancy*. 2007;11:271-294.

11. Bandstra NF, Chambers CT, McGrath PJ, Moore C. The behavioural expression of empathy to others' pain versus others' sadness in young children. *Pain*. 2011;152:1074-1082.

12. Brownell CA, Iesue SS, Nichols SR, Svetlova M. Mine or yours? development of sharing in toddlers in relation to ownership understanding. *Child Dev*. 2013;84(3):906-920.

13. Dunfield KA, Kuhlmeier VA, O'Connell LJ, Kelley EA. Examining the diversity of prosocial behaviour. *Infancy*. 2011;16:227-247.

14. Svetlova M, Nichols SR, Brownell CA. From instrumental to empathic to altruistic helping. *Child Dev*. 2010;81:1814-1827.

15. Zahn-Waxler C, Radke-Yarrow M, Wagner E, Chapman M. Development of concern for others. *Dev Psychol*. 1992;28:126-136.

16. Becker SW, Eagly AH. The heroism of women and men. *Am Psychol*. 2004;59:163-178.

17. Eisenberg N, Spinrad TL, Morris A. Empathy-related responding in children. In: Killen M, Smetana JG, eds. *Handbook of moral development.* 2nd ed. New York: Psychology Press; 2014:184-207.

18. Callaghan T, Moll H, Rakoczy H, Warneken F, Liszkowski U, Behne T, et al. Early social cognition in three cultural contexts. *Monogr Soc Res Child Dev*. 2011;76:vii-142.

19. Knafo-Noam A, Uzefovsky F, Israel S, Davidov M, Zahn-Waxler C. The prosocial personality and its facets: Genetic and environmental architecture of mother-reported behavior of 7-year-old twins. *Front Psychol*. 2015;6:1-9.

20. Kartner J, Keller H, Chaudhary N. Cognitive and social influences on early prosocial behavior in two sociocultural contexts. *Dev Psychol*. 2010;46(4):905-914.

21. House B, Silk JB, Henrich J, et al. Ontogeny of prosocial behavior across diverse societies. *Proc Natl Acad Sci.* 2013;110(36):14586-14591.

22. Rochat P, Dias DG, Liping G, Broesch T, Passos-Ferreira C, Winning A, Berg B. Fairness in distributive justice by 3- and 5-year-olds across seven cultures. *J. Cross-Cult. Psychol.* 2009;40(3):416-442.

23. Warneken F, Tomasello M. Altruistic helping in human infants and young chimpanzees. *Science*. 2006;311:1301-1303.

24. Laible D, Karahuta E. Prosocial behaviors in early childhood. In: Padilla-Walker LM, Carlo G, eds. *Prosocial development: A multidimensional approach.* Oxford University Press; 2014.

25. Batson CD. *The altruism question: Toward a social-psychological answer*. Hillsdale, NJ: Erlbaum Associates; 1991.

26. Geangu E, Benga O, Stahl D, Striano T. Contagious crying beyond the first days of life. *Infant Behav Dev.* 2010;33(3):279-288.

27. Hoffman ML. *Empathy and moral development: Implications for caring and justice*. New York: Cambridge University Press; 2000.

28. Nichols SR, Svetlova M, Brownell CA. Toddlers' responses to infants' negative emotions. *Infancy*. 2014;20(1):70-97.

29. Roth-Hanania R, Davidov M, Zahn-Waxler C. Empathy development from 8 to 16 months: Early signs of concern for others. *Infant Behav Dev*. 2011;34:447-458.

30. Nichols S, Svetlova M, Brownell C. The role of social understanding and empathic disposition in young children's responsiveness to distress in parents and peers. *Cogn Brain Behav.* 2009;4:449-478.

31. Carpendale JIM, Kettner VA, Audet KN. On the nature of toddlers' helping. *Soc Dev.* 2014;24(2):357-366.

32. Dahl A. The developing social context of infant helping in two U.S. samples. *Child Dev.* 2015:1-14.

33. Hay DF. The roots and branches of human altruism. *Brit J Psychol*. 2009;100(3):473-479.

34. Hay DF, Rheingold HL. The early appearance of some valued social behaviors. In: Bridgeman DL, ed. The nature of prosocial development. New York: Academic Press; 1983:73-94.

35. Rheingold HL. Little children's participation in the work of adults, a nascent prosocial behavior. *Child Dev*. 1982;53:114-125.

36. Hammond SI, Carpendale JIM. Helping children help. *Soc Dev*. 2015;24(2):367-383.

37. Waugh W, Brownell C, Pollock B. Early socialization of prosocial behavior: Patterns in parents' encouragement of toddlers' helping in an everyday household task. *Infant Behav Dev*. 2015;39:1-10.

38. Piaget J. *The moral judgment of the child*. New York, NY: Free Press; 1965.

39. Carpendale JIM, Lewis C. Constructing an understanding of mind: The development of children's social understanding within social interaction. *Behav Brain Sci*. 2004;27:79-96.

40. Paulus M. Children's inequity aversion depends on culture: A cross-cultural comparison. *J Exp Psychol*. 2015;132:240-246.

41. Sommerville JA, Schmidt MFH, Yun J, Burns M. The development of fairness expectations and prosocial behavior in the second year of life. *Infancy*. 2013;18(1):40-66.

42. Damon W. *The social world of the child*. San Francisco: Jossey-Bass Publishers; 1977.

43. Fehr E, Bernhard H, Rockenbach B. Egalitarianism in young children. *Nature*. 2008;454(7208):1079-1083.

44. Padilla-Walker LM, Fraser AM, Black BB, Bean RA. Associations between friendship, sympathy, and prosocial behavior toward friends. *J Res Adolesc*. 2015;25:28-35.

45. Rutland A, Killen M. A developmental science approach to reducing prejudice and social exclusion. *Soc Issues Policy Rev*. 2015;9:121-154.

46. Smith CE, Blake PR, Harris PL. I should but I won't: Why young children endorse norms of fair sharing but do not follow them. *PLoS ONE*. 2013;8(3):e59510.

47. Hastings PD, Miller JG, Troxel NR. Making good: The socialization of children's prosocial development. In: Grusec JE, Hastings PD, eds. *Handbook of socialization*. 2nd ed. Guilford Publications:637-660.

48. Abrams D, Van de Vyver J, Pelletier J, Cameron L. Children's prosocial behavioural intentions towards outgroup members. *Brit J Dev Psychol*. 2015.

49. Eisenberg N, Fabes RA. Prosocial development. In: Damon W, Eisenberg N, eds. *Handbook of child psychology: Social, emotional, and personality development. Vol 3*. 5th ed. New York: Wiley; 1998:701-778.

50. Evans AD, Lee K. Lying, morality, and development. In: Killen M, Smetana JG, eds. *Handbook of moral development*. 2nd ed. New York: Psychology Press; 2014:361-384.

51. Jambon M, Smetana JG. Moral complexity in middle childhood: Children's evaluations of necessary harm. *Dev Psychol*. 2014;50(1):22.

52. Carlo G, Crockett LJ, Randall BA, Roesch SC. Parent and peer correlates of prosocial development in rural adolescents: A longitudinal study. *J Res Adolesc*. 2007;17:301-324.

53. Masten CL, Eisenberger NI, Pfeifer JH, Colich NL, Dapretto M. Associations among pubertal development, empathic ability, and neural responses while witnessing peer rejection in adolescence. *Child Dev*. 2013;84(4):1338-1354.

54. Eisenberg N, Sadovsky A, Spinrad TL, et al. The relations of problem behavior status to children's negative emotionality, effortful control, and impulsivity: Concurrent relations and prediction of change. *Dev Psychol*. 2005;41(1):193-211.

55. Sokol BW, Hammond SI, Kuebli J, Sweetman L. The development of agency. In: Overton WF, Molenaar PCM, eds. *Handbook of child psychology and developmental science*. 7th ed. Hoboken, NJ: Wiley; 2015:284-322.

56. Blasi A. Moral functioning: Moral understanding and personality. In: Lapsley DK, Narvaez D, eds. *Moral development, self, and identity*. Mahwah, NJ: Erlbaum; 2004:335-347.

57. Pratt MW, Lawford HL. Early generativity and types of civic engagement in adolescence and emerging adulthood. In: Padilla-Walker LM, Carlo G, eds. *Prosocial Development*. New York: Oxford; 2014:410-432.

58. Walker LJ. Moral personality, motivation, and identity. In: Killen M, Smetana JG, eds. *Handbook of moral development.* 2nd ed. New York: Psychology Press; 2014:497-519.

59. Hart D, Atkins R, Donnelly TM. Community service and moral development. In: Killen M, Smetana JG, eds. *Handbook of moral development.* Mahwah, NJ: Erlbaum; 2006:633-656.

60. Freund AM, Blanchard-Fields F. Age-related differences in altruism across adulthood: Making personal financial gain versus contributing to the public good. *Dev Psychol.* 2014;50(4):1125-1136.

61. Pettygrove DM, Hammond SI, Karahuta EL, Waugh WE, Brownell CA. From cleaning up to helping out: Parental socialization and children's early prosocial behavior. *Infant Behavior and Development.* 2013;36:843-846.

62. Hammond SI, Carpendale JIM. Helping children help. *Soc Dev*. 2015;24(2):367-383.

63. Rogoff B. *The cultural nature of human development*. New York: Oxford University Press; 2003.

Individual Differences in Prosociality: The Roles of Parenting, Temperament, and Genetics

Ariel Knafo-Noam, PhD, Noam Markovitch, doctoral student

Department of Psychology, The Hebrew University of Jerusalem, Israel

November 2015

Introduction

Children differ in how likely they are to perform prosocial behaviours (voluntary behaviours intended to benefit others, such as sharing, helping, and consolation.)[1] Researchers have been debating the presence of a "prosocial" personality, in light of meaningful influences of the situation on individuals' tendency to help others.[2,3] Researchers accepting the notion of meaningful individual differences in prosociality also investigate the origin of these differences.

Subject

Although prosocial behaviours tend to increase with age and with children's socio-cognitive skills,1 and despite the finding that situational variables (such as recipients' need and relationship with the recipient) also affect the likelihood of prosocial behaviour,[4,5,6] substantial individual differences in prosociality are found at all ages. Three main domains in which researchers have tried to understand individual differences include socialization, temperament and genetics. Many researchers have focused on how children's socialization environment (for example, home, school, and peers) is related to children's tendency to help and share (this chapter focuses on parenting; school and peers are discussed elsewhere[7]). Another approach takes a dispositional perspective to prosociality: are there personality (or temperament) effects on prosocial behaviour? Finally, researchers ask: is prosociality affected by genetic factors?

Problems

Many different behaviours fall under the above formal definition of prosocial behaviours, but in many cases the associations among such behaviours are modest at best.[8] For example, compliant and self-initiated (respectively, following a request and without request) prosocial behaviours are not correlated with each other,[9] and sharing, helping and comforting may have different developmental patterns.[10] In addition, individual differences in prosociality may be situation-

dependent, with some children consistently more prosocial than others, while others' prosocial behaviour may be expressed in some, but not all, situations.[11] Thus, prosocial behaviours are often seen as a family of behaviours that are loosely connected. On the other hand, there is enough evidence for some agreement between raters about children's prosociality,[12] for meaningful correlations between mother-reported sharing and helping,13 and for longitudinal stability in prosociality.[14,15,16] This evidence enables asking what causes such stable, and in part cross-situationally consistent, individual differences.

Socialization research, showing the relationship between parenting and prosocial behaviour, is often hard to interpret because the direction of influence is not always clear, and much of the social influence taking place in families is bidirectional.[17] Genetic research, on the other hand, can provide evidence for the overall effect of genes on prosocial behaviour, but progress has been slower with regards to identifying specific genetic effects.

Research Context

Children's prosocial behaviour is typically measured by reports of teachers or caregivers, by observation of naturally occurring behaviours in a social setting such as kindergarten, or by experimental probes enabling children to help (for example, an experimenter drops objects and children's helping behaviour is noted).

To understand the role of parenting and temperament, typically parents' reports (using questionnaires) are used, and often temperament or parenting are observed from children's behaviour in a lab setting.

Genetic effects can be estimated by comparing behavioural similarity among family members depending on their degree of genetic relatedness (for example, comparing adoptive and biological siblings, or identical and fraternal twins). When behavioural similarity is higher in the case of high genetic relatedness (such as identical, monozygotic twins), a genetic effect is estimated. Researchers often estimate heritability, the proportion of variance in a certain population and context attributed to genetic variation in that population. Molecular genetic studies use DNA to compare individuals with different variants of specific (or many) genes to see whether these variants are associated with higher tendency for prosocial behaviour.[18]

Key Research Questions

Many questions can be asked regarding individual differences in prosocial behaviour. First, researchers have examined the different contributions of heredity and environment to individual differences in prosocial behaviour, and whether prosociality is related to children's temperament. Second, researchers try to isolate specific genes that are related to prosocial behaviour, therefore influencing individual differences. Third, there are attempts to understand the specific characteristics of the environment that influence the development of prosocial behaviour. In addition, there are interesting attempts to understand how specific genes and characteristics of the environment interact together to influence prosocial behaviour.

Recent Research Results

Twin studies of children's prosocial behaviour have all (with one exception[19]) shown that both genetic and environmental factors contribute to individual differences in prosocial behaviour (for reviews[20,18]). Genetic effects were found with prosocial behaviour observed at home or at the lab [21,9] and with questionnaire reports by parents, teachers, and children themselves.[22,16,23,24]

A recent study of 7-year old twins,[13] found that the associations of five prosociality facets (mother-reported sharing, social concern, kindness, helping, and empathic concern) were largely due to the overlap of genetic factors common to these facets. Nevertheless, each facet showed unique genetic contributions, meaning that some genetic factors are only relevant to sharing or helping, for example.

Evidence for the involvement of specific genes in prosociality is mainly based on adult studies, suggesting a role for genes regulating the activity of brain molecules involved in transferring information (neurotransmittors and hormones such as dopamine, serotonin, oxytocin, and vasopressin).[18] Only a handful of studies have looked at specific genes and their association with children's prosocial behaviour (for reviews[18,25]). Some research has linked children's prosocial behaviour to variations in the OXTR and AVPR1a genes.[26,27] However, results of molecular genetic studies are often hard to replicate, possibly because they are age-specific and because genes interact with environmental variables and with other genes.[18]

One study of preschool-age twins found that differences in the dopamine receptor D4 gene (DRD4) are related to twins' sharing with each other (but not with unfamiliar peers[28]). In two lab studies,[29,9] DRD4 had no direct association with sharing, but a gene-environment interaction was found as carriers of a certain variant of DRD4 showed stronger associations between prosocial

behaviour and their attachment security or the parenting they received (a finding not replicated in children 9-12 years old[30]).

Temperament may be important for understanding genetic effects on children's prosociality. In one of the above mentioned twin studies, when children were 3 years old, prosocial behaviour related positively to sociability and activity, and negatively to shyness and negative emotionality. These associations were largely due to genetic factors common to these temperament dimensions and to prosocial behaviour.[2] Other research also suggests that temperament is related to prosocial behaviour. It was found, for example, that prosocial behaviour is related positively to self-regulation and negatively to emotional reactivity.[31,32] In contrast, no association was found between social fear and shyness-fearfulness and children's prosocial behaviour.[33] Of specific interest are person-centered approaches, which look at the joint contribution of different traits to prosociality. For example, children with a combination of low levels of self-regulation and high levels of negative emotionality tend to be less prosocial than other children.[34]

Twin studies distinguish between the environment shared by siblings growing together, leading to behavioural similarity that cannot be accounted for by shared genetic background, and the non-shared environment, which includes non-genetic factors leading to differences even between monozygotic (genetically identical) twins growing up together. Research has shown that the shared environment effects on children’s prosociality are generally weak and tend to decrease with age.[18] In contrast, non-shared environment effects are pervasive and may increase throughout development.

As a more direct way to understand the effects of the environment, many researchers have looked at the role of parents in prosocial behaviour. First, parents' modeling of prosocial behaviour and providing hands-on experience in different prosocial behaviours was found to be related to children's behaviour.[1]

In addition, warm, responsive, and sensitive parenting styles were all found to be related to either prosocial behaviour or empathy.[35,36] Furthermore, in longitudinal research it was found that there are bidirectional relationships between children’s prosocial behaviour and the mother’s sensitivity.[37]

Second, disciplinary styles are related to prosocial behaviour. Mostly, parents' tendency to provide explanations about requests towards the child or consequences of her behaviour, were

found to be related to prosocial behaviour, as did emphasizing the emotional states of others in need.[38] Physical punishment and privilege deprivation, however, are generally found to be negatively correlated with prosocial behaviour.[1,39] These relations may vary according to culture and temperament of the child.[40]

Finally, different aspects of parents' emotionality are related to prosocial behaviour.[41] Children's prosociality is positively related to parental expression of positive emotions, discussion of emotions and supplying constructive ways for children to cope with their emotions.[42] Parental expression of negative emotions was found to be negatively related to prosocial behaviour, and maternal depression may be involved in children's tendency to behave prosocially for the purpose of pleasing a parent or reduction of guilt feelings.[43]

Research Gaps

Despite convincing evidence for the role of genetics in prosocial behaviour, little is known about the specific genes involved in individual differences, and through which brain processes they operate.[44,45,46] There is also convincing evidence for the role of the environment, but research on parenting tends to be correlational. The association of parenting with prosocial behaviours could reflect the effect of children on parents and not the opposite, and possibly the effects of genetic tendencies shared by parents and children (passive gene-environment correlations[39]). There is need for more longitudinal research that could help clarify the causal role of parenting. One such study has demonstrated that maternal sensitivity, warmth and responsiveness at age 54 months predicted prosociality at 3rd grade, which in turn, predicted maternal sensitivity in 5th grade.[37] This shows the complexity of such relations and the importance of longitudinal data. An important question is whether parenting relates similarly to different aspects of prosocial behaviour, like sharing, helping and comforting.[10,33,47]

Another gap concerns the seemingly contrasting findings showing the meager shared environment effects on prosocial behaviour, and those showing associations with parenting. Within-family genetic or temperamental differences between children may be moderating the effects of parenting. For example, mothers' reasoning and ignoring the child in boring tasks, requiring the child to play with uninteresting toys predicted later moral behaviour (part of which was prosocial behaviour) in inhibited children, whereas redirection and commands from mothers in tasks requiring kids not to approach appealing toys predicted moral behaviour in exuberant kids.[48] More research on such childXenvironment and geneXenvironment interactions is needed.

Finally, most of the research has been performed in Western cultures. Although heritability estimates have been shown to be similar across several cultures,[20] environmental effects were quite different. Specifically, it would be important to study how parenting relates to prosocial behaviour in different cultural contexts.

Conclusions

There are stable and meaningful individual differences in children's prosocial behaviour. These differences are accounted for, in part, by genetic differences among children, possibly reflected also in their temperament. Children's environment is also important. In addition to the effects of the school context and peers,[7] parenting is an important factor in prosocial development, although more longitudinal research is needed. The way parenting, genes, and temperament interact in affecting prosocial development is an important path for future research. Finally, children's socio-cognitive abilities and moral emotions,[49,50] and empathy[21] are important for prosocial behaviour. An integrative model including individual differences in these variables and accounting for their joint and separate genetic and environmental factors,[51] is needed to improve our understanding of prosocial development.

Implications for Parents, Services and Policy

Temperamental, genetic and environmental factors are all related to prosocial behaviour in children and adolescents. One important implication is that substantial differences exist within the normal range of children's development. Although at the extreme end prosocial behaviours could signify that a child is behaving prosocially for the wrong reasons, perhaps at a price of being taken advantage of,[43,52] children's prosocial behaviour is often considered a positive aspect of behaviour, and as such it is encouraged.

As parents, modeling prosocial behaviour at home, exhibiting warm and responsive parenting, explaining to your children reasons and consequences of behaviours and emotions can all encourage prosocial behaviour among your child. However, children’s tendencies (affected by their temperament) may result in different types of prosociality and may require different socialization strategies. Temperament could interact with parenting to induce prosocial behaviour in different ways, such as some children will benefit from one kind of parenting, whereas others will not. Therefore, future interventions designed to encourage prosocial behaviour should consider children's temperamental traits.

Acknowledgments

Preparation of this chapter was supported by Starting Grant no. 240994 from the European Research Council (ERC) to Ariel Knafo. The authors thank Stuart Hammond for his comments on an earlier version.

References

1. Eisenberg N, Spinrad TL, Knafo-Noam A. Prosocial Development. In: Lamb ME, Garcia Coll C, Vol. Eds. and Lerner RM, Series Ed, *Handbook of Child Psychology and Developmental Science*. 7th ed; Vol. 3. Social, Emotional, and Personality Development. New York: Wiley; 2015: 610-658.
2. Knafo A, Israel S. Empathy, Prosociality, and other aspects of kindness. In: Zentner M, Shiner R, Eds. *The Handbook of Temperament: Theory and Research*. New York: Guilford Press; 2012: 168-179.
3. Penner LA, Dovidio JF, Piliavin JA, Schroeder DA. Prosocial behavior: Multilevel perspectives. *Annual Review of Psychology*. 2005;56:365-392. doi: 10.1146/annurev.psych.56.091103.070141
4. Hepach R, Vaish A, Tomasello M. Young children sympathize less in response to unjustified emotional distress. *Developmental psychology*. 2013;49:1132-1138. doi: 10.1037/a0029501
5. Paulus M, Moore C. The development of recipient-dependent sharing behavior and sharing expectations in preschool children. *Developmental psychology*. 2014;50:914-921. doi: 10.1037/a0034169
6. Warneken F, Tomasello M. Altruistic helping in human infants and young chimpanzees. *Science*. 2006;311:1301-1303. doi: 10.1126/science.1121448
7. Wentzel K. Prosocial behaviour and schooling. In: Tremblay RE, Boivin M, Peters RD, eds. *Encyclopedia on Early Childhood Development* [online]. CEECD, SKC-ECD; 2015. URL: http://www.child-encyclopedia.com/prosocial-behaviour/according-experts/prosocial-behaviour-and-schooling. Accessed November 11, 2015.
8. Bryant BK, Crockenberg SB. Correlates and dimensions of prosocial behavior: A study of female siblings with their mothers. *Child Development*. 1980;51:529-544. doi: 10.2307/1129288
9. Knafo A, Israel S, Ebstein RP. Heritability of children's prosocial behavior and differential susceptibility to parenting by variation in the dopamine receptor D4 gene. *Development and Psychopathology*. 2011;23:53–67. doi:10.1017/S0954579410000647.
10. Dunfield KA. A construct divided: prosocial behavior as helping, sharing, and comforting subtypes. *Frontiers in psychology*. 2014;5:1-13. doi:10.3389/fpsyg.2014.00958
11. Mischel W, Shoda Y. A cognitive-affective system theory of personality: reconceptualizing situations, dispositions, dynamics, and invariance in personality structure. Psychological review. 1995;102:246-268. doi:10.1037/0033-295x.102.2.246
12. Saudino KJ, Ronald A, Plomin R. The etiology of behavior problems in 7-year-old twins: substantial genetic influence and negligible shared environmental influence for parent ratings and ratings by same and different teachers. *Journal of Abnormal Child Psychology*. 2005;33:113-130. doi:10.1007/s10802-005-0939-7
13. Knafo-Noam A, Uzefovsky F, Israel S, Davidov M, Zahn-Waxler C. The prosocial personality and its facets: Genetic and environmental architecture of mother-reported behavior of 7-year old twins. *Frontiers in Psychology*. 2015;6. doi: 10.3389/fpsyg.2015.00112
14. Carlo G, Crockett LJ, Randall BA, Roesch SC. A latent growth curve analysis of prosocial behavior among rural adolescents. *Journal of Research on Adolescence*. 2007;17:301-324. doi:10.1111/j.1532-7795.2007.00524.x

15. Eisenberg N, Guthrie I.K, Murphy BC, Shepard SA, Cumberland A, Carlo G. Consistency and development of prosocial dispositions: A longitudinal study. *Child development*. 1999;70:1360-1372. doi:10.1111/1467-8624.00100

16. Knafo A, Plomin R. Prosocial behavior from early to middle childhood: Genetic and environmental influences on stability and change. *Developmental Psychology*. 2006;42:771–786. doi:10.1037/0012-1649.42.5.771

17. Kuczynski L. Beyond Bidirectionality: Bilateral conceptual frameworks for understanding dynamics in parent-child Relations. In: Kuczynski L. Ed, *Handbook of dynamics in parent-child relations*. Sage Publications; 2003:3–24. doi:10.4135/9781452229645.n1

18. Israel S, Hasenfratz L, Knafo-Noam A. The genetics of morality and prosociality. *Current Opinion in Psychology*. 2015;6:55-59. doi:10.1016/j.copsyc.2015.03.027

19. Van IJzendoorn MH, Bakermans-Kranenburg MJ, Pannebakker F, Out D. In defense of situational morality: Genetic, dispositional and situational determinants of children's donating to charity. *Journal of Moral Education*. 2010;39:1–20. doi:10.1080/03057240903528535

20. Knafo A, Israel S. Genetic and environmental influences on prosocial behavior. In: Mikulincer M, Shaver PR, Eds. *Prosocial motives, emotions, and behavior: The better angels of our nature*. Washington, DC: American Psychological Association (APA) Publications; 2009:149-167. doi:10.1017/S0954579410000647

21. Knafo A, Zahn-Waxler C, Van Hulle C, Robinson JL, Rhee SH. The developmental origins of a disposition toward empathy: Genetic and environmental contributions. *Emotion*. 2008;8:737-752. doi:10.1037/a0014179

22. Hur YM, Rushton JP. Genetics and environmental contributions to prosocial behaviour in 2-to 9-year-old South Korean twins. *Biology Letters*. 2007;3:664-666. doi:10.1098/rsbl.2007.0365

23. Scourfield J, John B, Martin N, McGuffin P. The development of prosocial behaviour in children and adolescents: a twin study. *Journal of Child Psychology and Psychiatry*. 2004;45:927-935. doi:10.1111/j.1469-7610.2004.t01-1-00286.x

24. Gregory AM, Light-Häusermann JH, Rijsdijk F, Eley TC. Behavioral genetic analyses of prosocial behavior in adolescents. *Developmental science*. 2009;12:165-174. doi:10.1111/j.1467-7687.2008.00739.x

25. Fortuna K, Knafo A. Parental and genetic contributions to prosocial behavior during childhood. In: Padilla-Walker L, Carlo G, Eds. *The complexities of raising prosocial children: An examination of the multidimensionality of prosocial behaviors*. Oxford University Press; 2014:70-89.

26. Wu,N, Su Y. Oxytocin receptor gene relates to theory of mind and prosocial behavior in children. *Journal of Cognition and Development*. 2015;16:302-313. doi:10.1080/15248372.2013.858042

27. Avinun R, Israel S, Shalev I., et al. AVPR1A variant associated with preschoolers' lower altruistic behavior. *PLoS One*. 2011:6:e25274-e25274. doi: 10.1371/journal.pone.0025274

28. DiLalla LF, Elam KK, Smolen A. Genetic and gene–environment interaction effects on preschoolers' social behaviors. *Developmental Psychobiology*. 2009;51:451-464. doi: 10.1002/dev.20384

29. Bakermans-Kranenburg MJ, van Ijzendoorn MH. Differential susceptibility to rearing environment depending on dopamine-related genes: New evidence and a meta-analysis. *Development and psychopathology*. 2011;23:39-52. doi:10.1017/s0954579410000635

30. Buil JM, Koot HM, Olthof T, Nelson KA, van Lier PA. DRD4 Genotype and the developmental link of peer social preference with conduct problems and prosocial behavior across ages 9–12 years. *Journal of Youth and Adolescence*. 2015;44:1360–1378. doi:10.1007/s10964-015-0289-x

31. Carlo G, Crockett LJ, Wolff JM, Beal SJ. The role of emotional reactivity, self-regulation, and puberty in adolescents' prosocial behaviors. *Social Development*. 2012:21;667-685. doi: 10.1111/j.1467-9507.2012.00660.x

32. Padilla-Walker LM, Christensen KJ. Empathy and self-regulation as mediators between parenting and adolescents' prosocial behavior toward strangers, friends, and family. *Journal of Research on Adolescence*. 2011;21:545-551. doi:

10.1111/j.1532-7795.2010.00695.x

33. Gross RL, Drummond J, Satlof-Bedrick E, Waugh WE, Svetlova M, Brownell, CA. Individual differences in toddlers' social understanding and prosocial behavior: disposition or socialization? *Frontiers in Psychology*. 2015;6. doi:10.3389/fpsyg.2015.00600

34. Laible D, Carlo G, Murphy T, Augustine M, Roesch S. Predicting Children's Prosocial and Co-operative Behavior from Their Temperamental Profiles: A Person-centered Approach. Social Development. 2014; 23: 734-752. doi: 10.1111/sode.12072

35. Carlo G, Mestre MV, Samper P, Tur A, Armenta BE. The longitudinal relations among dimensions of parenting styles, sympathy, prosocial moral reasoning, and prosocial behaviors. *International Journal of Behavioral Development*. 2011;35:116-124. doi:10.1177/0165025410375921

36. Feldman,R. Mother-infant synchrony and the development of moral orientation in childhood and adolescence: Direct and indirect mechanisms of developmental continuity. *American Journal of Orthopsychiatry*. 2007;77:582-597. doi:10.1037/0002-9432.77.4.582

37. Newton EK, Laible D, Carlo G, Steele JS, McGinley M. Do sensitive parents foster kind children, or vice versa? Bidirectional influences between children's prosocial behavior and parental sensitivity. *Developmental psychology*. 2014;50:1808-1816. doi:10.1037/a0036495

38. Carlo G, Knight GP, McGinley M, Hayes R. The roles of parental inductions, moral emotions, and moral cognitions in prosocial tendencies among Mexican American and European American early adolescents. *The Journal of Early Adolescence*. 2011;31:757-781. doi:10.1177/0272431610373100

39. Knafo A, Plomin R. Parental discipline and affection, and children's prosocial behavior: Genetic and environmental links. *Journal of Personality and Social Psychology*. 2006;90:147–164. doi:10.1037/0022-3514.90.1.147

40. Yagmurlu B, Sanson A. Parenting and temperament as predictors of prosocial behaviour in Australian and Turkish Australian children. *Australian Journal of Psychology*. 2009;61:77-88. doi:10.1080/00049530802001338

41. Michalik NM, Eisenberg N, Spinrad TL, Ladd B, Thompson M, Valiente C. Longitudinal relations among parental emotional expressivity and sympathy and prosocial behavior in adolescence. *Social Development*. 2007;16:286–309. doi:10.1111/j.1467- 9507.2007.00385.x

42. Brownell CA, Svetlova M, Anderson R, Nichols SR, Drummond J. Socialization of early prosocial behavior: Parents' talk about emotions is associated with sharing and helping in toddlers. *Infancy*. 2013;18:91-119. doi:10.1111/j.1532-7078.2012.00125.x

43. Zahn-Waxler C, Van Hulle C. Empathy, guilt, and depression: When caring for others becomes costly to children. In: Oakley B, Knafo A, Madhavan G, Wilson DS, Eds. *Pathological altruism*. New York, NY: Oxford University Press; 2012: 321-344.

44. Meyer-Lindenberg A, Domes G, Kirsch P, Heinrichs M. Oxytocin and vasopressin in the human brain: social neuropeptides for translational medicine. *Nature Reviews Neuroscience*. 2011;12:524-538. doi:10.1038/nrn3044

45. Tost H, Kolachana B, Hakimi S, et al. A common allele in the oxytocin receptor gene (OXTR) impacts prosocial temperament and human hypothalamic-limbic structure and function. *Proceedings of the National Academy of Sciences*. 2010;107:13936-13941. doi:10.1073/pnas.1003296107

46. Walter H. Social cognitive neuroscience of empathy: concepts, circuits, and genes. *Emotion Review*. 2012;4:9-17. doi:10.1177/1754073911421379

47. Pettygrove DM, Hammond SI, Karahuta EL, Waugh WE, Brownell CA. From cleaning up to helping out: Parental socialization and children's early prosocial behavior. *Infant Behavior and Development*. 2013;36:843-846. doi:10.1016/j.infbeh.2013.09.005

48. Augustine,ME. Stifter CA. Temperament, parenting, and moral fevelopment: Specificity of behavior and context. *Social Development*. 2015;24:285-303. doi:10.1111/sode.12092

49. Malti T, Dys SP, Zuffiano A. The moral foundations of prosocial behaviour. In: Tremblay RE, Boivin M, Peters RD, eds. *Encyclopedia on Early Childhood Development* [online]. CEECD, SKC-ECD; 2015. URL: http://www.child-encyclopedia.com/prosocial-behaviour/according-experts/moral-foundations-prosocial-behaviour. Accessed November 11, 2015.

50. Spinrad TL, VanSchyndel S. Socio-cognitive correlates of prosocial behaviour in young children. In: Tremblay RE, Boivin M, Peters RD, eds. *Encyclopedia on Early Childhood Development* [online]. CEECD, SKC-ECD; 2015. URL: http://www.child-encyclopedia.com/prosocial-behaviour/according-experts/socio-cognitive-correlates-prosocial-behaviour-young-children. Accessed November 11, 2015.

51. Christ CC, Carlo G, Stoltenberg SF. Oxytocin receptor (OXTR) single nucleotide polymorphisms indirectly predict prosocial behavior through perspective taking and empathic concern. *Journal of Personality*. 2015. doi:10.1111/jopy.12152

52. Oakley B, Knafo A, McGrath M. Pathological altruism – An introduction. In: Oakley B, Knafo A, Madhavan G, Wilson DS, Eds. *Pathological altruism*. Oxford University Press; 2012:3-8.

How Evolutionary Theory and Neuroscience Contribute to Understanding the Development of Prosociality: Commentary

Jean Decety, PhD

The Child Neurosuite, Department of Psychology, The University of Chicago, USA

February 2016

Introduction

The articles on prosocial behaviour provide a fresh and comprehensive perspective on a vibrant domain of research in developmental psychology. Additionally, each piece concludes with a take-away message for parents and social policy, which nicely broadens their scope. I focus my commentary on some aspects that were not sufficiently integrated with the goal to provide empirical and theoretical clarity on the brain-behaviour processes involved in prosocial behaviour, with an emphasis on moral cognition.

Prosocial behaviour usually refers to any action performed by one organism to alleviate another's need or improve their welfare.[1] It is an uncontroversial phenomenon widespread across social species in different taxa. Even insects and fish engage in prosocial behaviour. To advance our understanding of the mechanisms that underpin such behaviours, as well as their development in children, this construct needs to be more clearly characterized. Generosity, helping, sharing, empathy and moral behaviour should not be used interchangeably (see Malti et al.). In this commentary, I argue that much is to be gained by conceptualizing prosocial behaviour as a multidimensional construct and by integrating evolutionary theory and developmental neuroscience into its study.

Research and conclusion

Taking evolution seriously

Humans are a hyper social species, which is to say we are specialized and adapted for group living. Rules and expectations for social interactions have been established and shaped over our evolutionary history. Behaviours that promote group cohesion and the smooth functioning of the social group, which are arguably the building blocks or precursor to moral cognition, have been

documented in other species.[2] Certainly, humans have a large neocortex, which allows for additional computations necessary for working memory, inhibitory control and selective attention (executive functions) to an extent unmatched with other species, as well as for enabling language and self-awareness. It remains, however, that the human capacity for caring for others is a biological adaptation, because it conferred a selective advantage by enhancing social cohesion and cooperation, and thus survival. This explains why early signs of empathic concern emerge very early in ontogeny, as documented by Roth-Hanania and her colleagues with 8-16 months old infants.[3] This capacity for empathic concern does not depend on, or necessitates self-reflexive abilities, theory of mind, or perspective taking, and these results contradict one dominant theory of the development of empathy (see Spinrad et al.).[4]

Importantly, evolution is a continuous process. It did not stop 30,000 years ago, nor did it start with apes and primates. Kinship and reciprocity have shaped the prosocial inclinations of all social species in important ways. Evidence of similarities in prosociality across these species may reflect either analogy or homology from the molecular level all the way up through biological mechanisms and neural circuits. For instance, rescue behaviour has been documented in ants,[5] and similarly in rodents,[6,7] and is preferentially directed to kin in both species. This does not imply that the physiological mechanisms are necessarily the same across species. It does tell us, however, that rescue behaviour has evolved across species because it provides increased fitness to the organisms. From a neuroscience perspective, there is solid evidence that, in mammalian species, including humans, emotion plays a causal role in eliciting several prosocial behaviours such as attachment, parental care and empathy. It is thus possible and meaningful to examine the molecular and neurobiological mechanisms that underpin these aspects of prosociality. For instance, oxytocin, a neuropeptide synthetized in the brain in all mammals, facilitates bond forming between mother and offspring and motivates caring in rodents, sheep and humans alike.[8] The role of oxytocin in facilitating species-typical social and reproductive behaviours is similar in its structure and expression, although the specific behaviours that it regulates are quite diverse. The common denominator is the special role of this peptide in increasing the salience of social stimuli. Nursing, caring and helping behaviours are associated with activation of the reward and pleasure circuits in both non-human animals and humans.[9-11] This is also the case for altruistic/costly giving in human subjects.[12,13]

Thus, it should come as no surprise that giving to others makes young children happy-even happier than when they are receiving treats themselves.[14] Positive emotion is a powerful

proximate mechanism for prosociality.

Different types of prosocial behaviour may not be related

It is critical to consider prosocial behaviour as a multidimensional construct rather than a global concept, and the relations between these various types of behaviours are not simple.[15] While some forms of prosocial behaviours such as helping and consolation can be the outcome of empathy, other behaviours, like sharing, are not necessarily associated with or elicited by empathy.[16,17] Furthermore, while empathy provides a foundation for care-based morality, it is not always a direct avenue for moral behaviour and can, from an early age, interfere with morality by introducing partiality, which leads to amoral or even immoral behaviours (see Diesendruck & Benozio).[18] Neuroscience research demonstrates that the circuits involved in empathy and morality only partially overlap.[19-22] Furthermore, the fact that empathy produces social preferences that can conflict with morality, fairness and justice is coherent with its ultimate cause in evolutionary theory. The roots of empathy are subsumed in the evolution of parental care and group living, and individuals who identify and cooperate with in-group members enjoy numerous benefits, including the fulfillment of many basic psychological needs, but group life is also a source of prejudice, biases, and of social strife.[23]

What developmental neuroscience brings to the study of morality

Studying subcomponents of more complex behaviours can be particularly useful from a developmental perspective, when it is the case that only some components of, or precursors to more complex behaviours are observable. A neurodevelopmental approach to morality is especially important because many brain regions that are germane to moral functioning do not appear to be fully mature until young adulthood. In addition, there are continuities and discontinuities in the developments, reorganizations and transformations of these regions. To make matter more complex, early competencies may serve functions that can be different from later ones. An illustration of such a phenomenon is the so-called empathic cry of the newborn, which is no longer observed at 5 months of age.[24] Rather than being an affective contagious response to another baby crying as often interpreted, this reaction in fact reflects another function that is anything but empathic.[25] It could be that the function of this cry is competitive, a call for the mother to come and nurse the infants rather than someone else’s infant, like bird chicks in their nest. This phenomenon in the infant has no relevance to empathy and concern present at 8 and 10 months as documented by developmental psychologists.[26]

Work across various academic disciplines has converged on the view that moral competency emerges from a complex social, emotional, and cognitive integration, which is shaped through cultural exposure.[27,28] In essence, morality concerns harm to other people. Studies using electroencephalography and event-related potentials (EEG/ERPs) in children aged 3-9 years while they were shown stimuli depicting physical injuries to people demonstrate both an automatic neural response (N200), which reflects affective arousal, and a late-positive potential (LPP), indexing cognitive reappraisal, with the latter showing an age-related gain.[29] Another EEG study assessed implicit moral evaluations of antisocial (harming) and prosocial (helping) behaviours in young children (3-5 years).[16] Significant differences were found in early automatic as well as later controlled temporal periods when children viewed the morally-laden scenarios. Importantly, only controlled processes predicted actual prosocial behaviour (i.e., the number of stickers given to another anonymous child). This study demonstrates that children's implicit moral evaluations are the result of an integration of both early and automatic processing of helping and harming scenarios, and later cognitively controlled reappraisal of these scenes. This neural response to interpersonal harm changes with age. Cross-sectional developmental functional MRI studies tested participants ranging from 4 to 37 years of age while they watched video clips of individuals being accidentally or intentionally injured.[30,31] Younger participants showed a stronger response in the amygdala (a region involved in processing emotionally salient stimuli), anterior insula, anterior cingulate cortex and ventromedial prefrontal cortex (vmPFC) when they observed others in distress. This latter region connected with evolutionarily old emotional systems in the brainstem and amygdala, integrates affective and value-based information necessary for caregiving behaviours and moral decision-making.[32,33] The early engagement of the amygdala, insula, and vmPFC during the perception of others' distress and pain is consistent with the timing of their structural maturation. These interconnected regions, which underlie rapid and prioritized processing of emotion signals and are involved in affective arousal, come online much earlier in development than other neural structures, especially regions of the prefrontal cortex implicated in emotion regulation and moral decision making, which continue to develop until late in adolescence.

Implications

Prosocial behaviours have been selected for in the course of evolution to facilitate social interactions and group living. We learned from evolutionary theory and neuroscience that behaviour is caused by rewards and stopped by punishments, but actually, the former cause

behaviour more effectively than punishment stops it in most individuals. Indeed, this is true for both emotion-driven prosocial behaviour and prosocial behaviour that results in emotional benefits. One way to promote the development of prosocial behaviour in children is to emphasize the positive consequences for the self, the other and the society as a whole. Often, parents and teachers tend to show the opposite pattern of emphasis by punishing antisocial behaviour or the lack thereof (which may be necessary in some cases) more than rewarding moral behaviour.

References

1. Cronin KA. Prosocial behaviour in animals: the influence of social relationships, communication and rewards. *Animal Behaviour* 2012;84:1085-1093.
2. Prétôt L, Brosnan S. The evolution of morality: A comparative approach. In: Decety J, Wheatley T, eds. *The moral brain: A multidisciplinary perspective*. Cambridge, MA: MIT Press; 2015:3-18.
3. Roth-Hanania R, Davidov M, Zahn-Waxler C. Empathy development from 8 to 16 months: Early signs of concerned for others. *Infant Behavior and Development* 34:447-458.2011;
4. Hoffman ML. *Empathy and moral development: Implications for caring and justice*. Cambridge, UK: Cambridge University Press; 2000.
5. Nowbahari E, Scohier A, Durand J-L, Hollis KL. Ants, Cataglyphis cursor, use precisely directed rescue behavior to free entrapped relatives. *PLoS ONE* 4:e657.2009;
6. Ben-Ami Bartal I, Decety J, Mason P. Empathy and pro-social behavior in rats. *Science* 334:1427-1430.2011;
7. Sato N, Tan L, Tate K, Okada M. Rats demonstrate helping behavior toward a soaked conspecific. *Animal Cognition* 18:1039-1047.2015;
8. Lim MM, Young L. Neuropeptidergic regulation of affiliative behavior and social bonding in animals. *Hormones and Behavior* 50:506-517.2006;
9. Ferris CF. Using awake animal imaging to understand neural circuits of emotion: Studies ranging from maternal care to aggression. In: Decety J, Christen Y, eds. *New frontiers in social neuroscience.* New York: Springer; 2014:111-126.
10. Strathearn L. Maternal neglect: Ocytocin, dopamine and the neurobiology of attachment. *Journal of Neuroendocrinology* 23:1054-1065.2011;
11. Decety J, Porges EC. Imagining being the agent of actions that carry different moral consequences: an fMRI study. *Neuropsychologia*, 49:2994-3001.2011;
12. Moll J, Krueger F, Zahn R, Pardini M, de Oliveira-Souza R, Grafman J. Human fronto–mesolimbic networks guide decisions about charitable donation. *Proceedings of the National Academy of Sciences* 103:15623-15628.2006;
13. Telzer EH, Masten CL, Berkman ET, Lieberman MD, Fuligni AJ. Gaining while giving: An fMRI study of the rewards of family assistance among white and Latino youth. *Social Neuroscience* 5:508-518.2010;
14. Aknin LB, Hamlin JK, Dunn EW. Giving leads to happiness in young children. *PLoS ONE* 7(6):e39211.2012;
15. Dunfield K, Kuhlmeier VA, O'Connell L, Kelley E. Examining the diversity of prosocial behavior: Helping, sharing, and comforting in infancy. *Infancy* 16:227–247.2011;
16. Cowell JM, Decety J. The neuroscience of implicit moral evaluation and its relation to generosity in early childhood. *Current Biology* 25(1):93-97.2015;

17. Paulus M. The emergence of prosocial behavior: Why do infants and toddlers help, comfort, and share? *Child Development Perspectives* 8:77–81.2014;

18. Decety J, Cowell JM. The complex relation between morality and empathy. *Trends in Cognitive Sciences* 18(7):337-339.2014;

19. Decety J, Cacioppo S. The speed of morality: a high-density electrical neuroimaging study. *Journal of Neurophysiology* 108:3068-3072.2012;

20. Yoder KJ, Decety J. The good, the bad, and the just: Justice sensitivity predicts neural response during moral evaluation of actions performed by others. *The Journal of Neuroscience* 34(12):4161-4166.2014;

21. Yoder KJ, Decety J. Spatiotemporal neural dynamics of moral judgments: A high-density EEG/ERP study. *Neuropsychologia* 60:39-45.2014;

22. Young L, Dungan J. Where in the brain is morality? Everywhere and maybe nowhere. *Social Neuroscience* 7(1):1–10.2012;

23. Decety J, Cowell JM. Empathy, justice and moral behavior. *American Journal of Bioethics – Neuroscience* 6(3):1-11.2015;

24. Martin G, Clark R. Distress in neonates: Species and peer specificity. *Developmental Psychology* 18:3-9.1982;

25. Campos JJ, Witherington D, Anderson DI, Frankel CI, Uchiyama I, Barbu-Roth M. Rediscovering development in infancy. *Child Development* 79:1625-1632.2008;

26. Davidov M, Zahn-Waxler C, Roth-Hanania R, Knafo A. Concern for others in the first year of life: Theory, evidence, and avenues for research. *Child Development Perspectives* 7:126–131.2013;

27. Decety J, Howard L. The role of affect in the neurodevelopment of morality. *Child Development Perspectives* 7:49-54.2013;

28. Killen M, Smetana JG. *The Handbook of Moral Development*. New York: Psychology Press; 2013.

29. Cheng Y, Chen C, Decety J. An EEG/ERP investigation of the development of empathy during early childhood. *Developmental Cognitive Neuroscience* 10:160-169.2014;

30. Decety J, Michalska KJ. Neurodevelopmental changes in the circuits underlying empathy and sympathy from childhood to adulthood. *Developmental Science* 13:886-899.2010;

31. Decety J, Michalska KJ, Kinzler KD. The contribution of emotion and cognition to moral sensitivity: A neurodevelopmental study. *Cerebral Cortex* 22:209-220.2012;

32. Decety J, Cowell JM. Friends or foes: Is empathy necessary for moral behavior? *Perspectives on Psychological Science* 9(5):525-537.2014

33. Parsons CE, Stark EA, Young KS, Stein A, Kringelbach ML. Understanding the human parental brain: A critical role of the orbitofrontal cortex. *Social Neuroscience* 8:525-543.2013;

Prosocial Behaviour and Schooling

Kathryn Wentzel, PhD

Department of Human Development and Quantitative Methodology, University of Maryland at College Park, USA

December 2025, Éd. rév.

Introduction

Prosocial behaviour in the form of sharing, helping, and cooperating is a hallmark of social competence throughout childhood.[1,2] Of direct relevance for schooling is that prosocial behaviour has been related positively to intellectual outcomes, including classroom grades and standardized test scores.[3] Displays of prosocial behaviour also have been related positively to other socially competent outcomes, including social acceptance and approval among classmates and being liked by teachers. Most scholars assume that cognitive and affective skills such as perspective taking, prosocial moral reasoning, adaptive attributional styles, perceived competence, and emotional well-being provide a psychological foundation for the development of prosocial behaviour. Individual differences such as genetic and temperament characteristics also have been noted.[1,2] In addition, theoretical perspectives also propose environmental influences, to include parenting within authoritative structures and positive interactions with peers.[4] Social developmental perspectives suggest that parents who encourage perspective taking and evoke empathic responses to the distress of others are likely to promote the internalization of prosocial values in their children.5 In addition, proponents of a peer socialization perspective typically argue that peer relationships provide opportunities for children to learn and practice prosocial skills. Collaborative interactions with peers also are believed to motivate the development of cognitive skills that support prosocial forms of behaviour.[2,6]

Subject

Understanding prosocial behaviour within school contexts is important for two reasons. First, schools provide children with ongoing opportunities to develop prosocial skills by way of interactions with peers. These opportunities can be informal, taking place within the context of friendships, peer group interactions, and play. They can also occur within the context of formal instruction, such as cooperative and collaborative learning activities.[4,7] Positive relationships and

interactions with teachers can also result in students learning and adopting positive values for prosocial behaviour in the classroom. Second, prosocial behaviour appears to support the development of academic skills.[3,4] This might occur because positive classroom behaviour is likely to result in positive interactions with teachers and peers, including provisions of academic help and positive feedback. It also is possible that underlying competencies that support prosocial behaviour, such as perspective taking and emotion regulation, also support the development of cognitive abilities.

Problems

It is clear that prosocial behaviour is highly valued by teachers and school personnel, as well as by children themselves. In addition, prosocial behaviour has received recent, increased attention by educators due, in part, to interest in promoting positive aspects of psychological functioning and adjustment rather than treating maladaptive forms of classroom behaviour once they occur. Instructional programs and interventions that directly promote the development of prosocial behaviour have had some success.[8] However, they are often difficult to implement, especially given other academic and disciplinary issues that also need to be addressed on a daily basis.

Research Context

The vast majority of studies on prosocial behaviour have been conducted on children in elementary school and middle school, although research on preschool children is becoming more frequent. This research relies primarily on teacher and peer reports of classroom behaviour or systematic classroom observations. The underlying psychological processes hypothesized to support prosocial behaviour in preschool-aged children are often assessed using structured laboratory-type tasks, whereas self-report methodologies are frequently used with older children.

Key Research Questions

Current research on prosocial behaviour in young children focuses on the following questions: 1) What are the underlying psychological processes and socialization mechanisms that promote prosocial behaviour in formal school settings? 2) To what extent does prosocial behaviour predict cognitive readiness and school-related outcomes? and, 3) How can educators promote the development of prosocial behaviour and related skills?

Recent Research Results

Researchers have recently identified several factors that promote the development of prosocial behaviour in young children. Researchers have continued to study prosocial behaviour in relation to perspective taking and theory of mind abilities, empathy, and emotion regulation skills.[2] Socialization experiences at home, including the communication of racial attitudes, have been found to predict prosocial tendencies in young children.[5,9] The quality of teacher-student relationships also has been related to prosocial behaviour in young children.[10,11] More specifically, teacher-student and peer relationships marked by emotional closeness and caring have been related positively to socially competent and prosocial forms of behaviour.[12]

The effects of prosocial behaviour on cognition and learning have been demonstrated by instructional programs focused on cooperative and collaborative learning structures. In this case, active discussion, problem solving, and elaborative feedback among peers who interact with each other in prosocial ways are associated with advances in a range of cognitive competencies (e.g., problem solving and conceptual understanding), and academic performance (grades and test scores) in samples ranging from preschool to high school.[13,14] Results of quasi-experimental and experimental studies suggest that the most successful cooperative learning activities are those that require positive interdependence among group members, individual accountability, face-to-face interactions among students, and learning social skills necessary to work cooperatively.[7]

Schoolwide policies and programs that accentuate the importance of students' prosocial development also are beginning to show promise.[8,15,16] Primary prevention programs can increase the prevalence of prosocial behaviours of preschool-aged children by improving classroom climate and the quality of teacher-student and peer interactions,[17] providing emotional support[18] and positive models of prosocial behaviour through media and role playing,[19,20] and directly reinforcing positive behaviour and social skills.21 Programs targeted at elementary-aged students also have been successful at increasing displays of prosocial behaviour by teaching positive social skills,[22-24] and by implementing school-wide curriculum to reinforce positive behaviour, fostering cognitive and social problem solving, and building classroom unity and school-wide caring communities.[25,26]

Research Gaps

Recent evidence supports the notion that prosocial behaviour in young children contributes to school readiness and cognitive competencies; skills such as perspective taking, empathy, and self-regulation contribute to the development of prosocial behaviour, and socialization

experiences with parents, teachers, and peers promote and sustain displays of positive behaviour at school. However, intervention studies that document causal connections between positive behaviour and its school-based antecedents and consequences, and longitudinal studies that document the long-term effects of prosocial behaviour on cognitive outcomes are rare. Future research is needed to clarify the causal nature of specific socialization processes, including the qualities and types of interactions that occur between young children and their parents, teachers, and peers. Multi-level studies of school contexts would also add to understanding of school-related influences on prosocial behavior,[27] as well as research on differences across developmental and cultural contexts.[28] Finally, identifying underlying processes and mechanisms that might explain positive associations between prosocial behaviour and cognitive abilities remains a challenge to the field.

Conclusions

Prosocial behaviour is a hallmark of social competence in children of all ages. However, it is clear that the developmental and socialization foundations of positive behaviour are rooted in early childhood. The importance of prosocial behaviour is supported by evidence that positive forms of behaviour are related positively to a range of psychological and emotional processes, to other socially competent outcomes, and to intellectual accomplishments in young children. Research findings also suggest that teachers and classmates have the potential to promote the development of prosocial behaviour by communicating norms and expectations for positive behaviour, creating emotionally positive classroom environments, and scaffolding the use of effective social cognitive and self-regulatory skills. However, programs specifically designed to train school personnel to do so are still in their infancy. Studies that focus on the long-term impact of prosocial behaviour, such as those linking positive social behaviour in preschool settings to classroom behaviour and academic accomplishments in later grades also are needed.

Implications

Prosocial behaviour can contribute in important ways to children’s social and academic success at school, and school contexts have the potential to provide essential supports for the development of these positive forms of social behaviour. At the preschool level, teachers can focus on creating emotionally supportive classroom environments, through establishing positive relationships with their students and by promoting positive interactions among students themselves. Strategies for creating caring classroom communities include practicing

authoritative discipline, effective communication practices, and ensuring student safety.[29] Teaching and reinforcing positive social skills, and utilizing collaborative and cooperative learning activities can also promote displays of prosocial behaviour in classroom settings. At the school-level, utilization of curricula and primary prevention activities to promote prosocial behaviour in all classrooms also should be considered. Finally, school-initiated parent involvement programs should highlight practices that can promote the development of prosocial behaviour at home, including the use of inductive reasoning and parental modeling of positive social interactions.

References

1. Eisenberg N, Spinrad TL, Knafo-Noam A. Prosocial development. In: Lamb ME, Garcia Coll C, eds; Lerner RM, series ed. *Handbook of child psychology: vol 3. Social, emotional, and personality development*. 7th ed. New York, NY: Wiley; 2015:610-658. doi:10.1002/9781118963418.childpsy315
2. Carlo G, Padilla-Walker LM, Hastings PD. Prosocial behaviors and development. In: *Handbook of moral development*. 3rd ed. New York, NY: Psychology Press; 2023:391-407. doi:10.4324/9781003047247-31
3. Wentzel KR. Motivational decision-making in achievement settings: a competence-in-context approach. In: Elliott A, ed. *Advances in motivation science*. New York, NY: Elsevier; 2021:245-284. doi:10.1016/bs.adms.2020.06.002
4. Wentzel KR, Muenks K. Peer influence on students' motivation, academic achievement and social behavior. In: Wentzel KR, Ramani G, eds. *Handbook of social influences in school contexts: social-emotional, motivation, and cognitive outcomes*. New York, NY: Taylor & Francis; 2016:13-30. doi:10.4324/9781315769929-3
5. Spinrad TL, Eisenberg N. Socialization of moral emotions and behavior. In: *The Oxford handbook of parenting and moral development.* Oxford, UK: Oxford University Press; 2019:57-71. doi:10.1093/oxfordhb/9780190638696.013.9
6. Piaget J. *The moral judgment of the child*. New York, NY: The Free Press; 1965. (original publ 1932).
7. Wentzel KR, Watkins DE. Peer relationships and learning: implications for instruction. In: Mayer R, Alexander P, eds. *Handbook of research on learning and instruction*. New York, NY: Routledge; 2011:322-343. doi:10.4324/9780203839089-25

8. Coşkun M, Ünal G. Promoting prosocial behavior in school setting. In: *Handbook of positive school psychology: evidence-based strategies for youth well-being.* Cham, Switzerland: Springer; 2024:31-42. doi:10.1007/978-3-031-54295-4_3

9. Xu X, Spinrad TL, Xiao SX, Xu J, Eisenberg N, Laible DJ, Berger RH, Carlo G. White children's prosocial behavior toward White versus Black peers: the role of children's effortful control and parents' implicit racial attitudes. *Child Development*. 2023;94(6):1581-1594. doi:10.1111/cdev.13948

10. Wentzel KR. Socialization in school settings. In: Grusec J, Hastings P, eds. *Handbook of social development*. 2nd ed. New York, NY: Guilford; 2015:251-275.

11. Wentzel KR. Students' relationships with teachers as motivational contexts. In: Wentzel KR, Miele DB, eds. *Handbook of motivation at school.* 2nd ed. Mahwah, NJ: Lawrence Erlbaum Associates; 2016:211-230.

12. Wentzel KR. Does anybody care? Conceptualization and measurement within the contexts of teacher-student and peer relationships. *Educational Psychology Review*. 2022;34(4):1919-1954. doi:10.1007/s10648-022-09700-7

13. Gauvain M. Collaborative problem solving: social and developmental considerations. *Psychological Science in the Public Interest.* 2018;19(2):53-58. doi:10.1177/1529100618813370

14. Slavin RE. Cooperative learning in elementary schools. *Education 3–13*. 2015;43(1):5-14. doi:10.1080/03004279.2015.963370

15. Malti T, Chaparro MP, Zuffianò A, Colasante T. School-based interventions to promote empathy-related responding in children and adolescents: a developmental analysis. *Journal of Clinical Child & Adolescent Psychology*. 2016;45(6):718-731. doi:10.1080/15374416.2015.1121822

16. Durlak JA, Mahoney JL, Boyle AE. What we know, and what we need to find out about universal, school-based social and emotional learning programs for children and adolescents: a review of meta-analyses and directions for future research. *Psychological Bulletin*. 2022;148(11-12):765-782. doi:10.1037/bul0000383

17. Xiao SX, Hanish LD, Malouf LM, Martin CL, Lecheile B, Goble P, Fabes RA, DeLay D, Bryce CI. Preschoolers' interactions with other-gender peers promote prosocial behavior and reduce aggression: an examination of the Buddy Up intervention. *Early Childhood Research*

Quarterly. 2022;60:403-413. doi:10.1016/j.ecresq.2022.04.004

18. Johnson DR, Seidenfeld AM, Izard CE, Kobak R. Can classroom emotional support enhance prosocial development among children with depressed caregivers? *Early Childhood Research Quarterly*. 2013;28:282-290. doi:10.1016/j.ecresq.2012.09.001
19. Coyne SM, Smith NJ. Sweetness on the screen: a multidimensional view of prosocial behavior in media. In: Padilla-Walker LM, Carlo G, eds. *Prosocial development: a multidimensional approach*. New York, NY: Oxford University Press; 2014:156-177. doi:10.1093/acprof:oso/9780199964772.003.0008
20. Wright MF. Popularity and social preference pressure from parents, friends, and the media: linkages to aggressive and prosocial behaviors. *Youth & Society*. 2020;52(3):332-348. doi:10.1177/0044118X18773222
21. Grasley-Boy NM, Gage NA, Anderson L, Sawtelle J. Exploring school-wide positive behavior interventions and supports tier 2 and tier 3 practices in California. *School Effectiveness and School Improvement*. 2025. doi:10.1080/09243453.2025.2525075
22. Conduct Problems Prevention Research Group. The effects of a multiyear universal social–emotional learning program: the role of student and school characteristics. *Journal of Consulting and Clinical Psychology*. 2010;78:156-168. doi:10.1037/a0018400
23. Gresham F, Van M, Cook C. Social-skills training for teaching replacement behaviors: remediating acquisition in at-risk students. *Behavioral Disorders*. 2006;31:363-377. doi:10.1177/019874290603100306
24. Kilian J, Fish M, Maniago E. Making schools safe: a system-wide school intervention to increase student prosocial behavior and enhance school climate. *Journal of Applied School Psychology*. 2006;23:1-30. doi:10.1300/J370v23n01_01
25. Schaps E. The role of supportive school environments in promoting academic success. In: *Getting results, developing safe and healthy kids update 5: student health, supportive schools, and academic success*. Sacramento, CA: California Department of Education, CDE Press; 2005:39-56.
26. What Works Clearinghouse. *Caring School Community*. Washington, DC: U.S. Department of Education; 2007. Accessed at: http://www.ies.ed.gov/ncee/wwc/
27. Wentzel KR, Muenks K, McNeish D, Russell S. Emotional support, social goals, and classroom behavior: a multilevel, multisite study. *Journal of Educational Psychology*.

2018;110(5):611-627. doi:10.1037/edu0000239

28. Carlo G, Partoví R. Varieties of altruistic actions across development and culture. *Journal for the Study of Education and Development*. 2025;48(1):3-35. doi:10.1177/02103702241304926

29. Wentzel KR. *Motivating students to learn*. 4th ed. New York, NY: Taylor & Francis; 2020.

School Intervention and Prosocial Behaviour

[1]Asha L. Spivak, PhD, Research Associate, [2]Joseph A. Durlak, PhD, Emeritus Professor of Psychology

[1]Peabody Research Institute, Vanderbilt University, USA, [2]Loyola University Chicago, USA

February 2016

Introduction

Prosocial behaviour denotes a constellation of voluntary acts intended to benefit or improve the welfare of others.[1] These acts include helping, sharing, comforting, cooperating, volunteering, and protecting someone from harm or bullying. These are key behaviours not only for compassionate society but also for classrooms. In view of the accumulated evidence suggesting that young children's prosocial behaviour makes important contributions to their long-term school adjustment, academic success, and social and psychological wellbeing,[2-4] prosocial development is highly relevant for early education and intervention.

Subject

Work to promote prosocial behaviours in schools can now be found throughout the world. Efforts to make social-emotional learning an integral part of early education are more grounded in policy and practice than ever before. This new positive direction for education has vital implications for improving the lives of students and the whole ethos of schools. Prosocial behaviour is linked to greater empathy, self-confidence, and antisocial impulse regulation, higher grades, and more supportive relationships.[2,5-7] In order to ensure that prosocial education efforts meet their potential, schools need evidence-based directions for selecting and implementing practices and programs that have a demonstrated track record of effectiveness.

Problems

There are conceptual, research, and practice-related problems to overcome in order to promote young students' prosocial behaviours most effectively. Efforts to promote social and emotional development are often inappropriately assumed and interpreted to include prosocial behaviours, which may or may not be the case. For example, social skills are not synonymous with prosocial behaviour, unless the social skills that are targeted specifically include constructs that reflect

acts intended to benefit others. The lack of care in defining and measuring specific prosocial behaviours has led researchers to conclude that the same school-based learning mechanisms that support other domains of social-emotional development will also directly promote the development of prosocial behaviour. Research has yet to establish what types of interventions are most successful in developing various prosocial behaviours. There are some promising models to follow,[8,9] but it is fair to say that to date there is not yet enough evidence to suggest that any one educational program has a proven track record for promoting children's decidedly prosocial behaviours. As a case in point, the largest U.S. randomized control evaluation of several evidence-based schoolwide social and character development programs provided little support for their overall effectiveness in improving the prosocial behaviour outcomes of students followed from third through fifth grades.[10] Finally, there is a need to translate what is learned from research into a set of practical guidelines and specific practices for teachers. It does little good to tell teachers that prosocial behaviours can be enhanced without informing them how to translate this knowledge into teachable moments and planned learning opportunities. Early childhood educators lack guidance and instruction for how to support children's prosocial behaviour; rarely are they observed reinforcing or encouraging prosocial behaviours of their students.[11,12] In fact, educators report both limited knowledge and professional learning opportunities as barriers for supporting social-emotional learning in their classrooms.[13]

Research Context

The vast majority of research in this field has occurred in the United Stated and Western Europe although educational systems throughout the world provide a cultural context for promoting prosocial behaviours. With the past decade's spotlight on the value of investments in prosocial development for early childhood, various types of interventions have been evaluated.[14-16] Typically, interventions involve training teachers to follow a program that is designed to either develop specific prosocial behaviours or psychological processes that presumably underlie prosocial behaviour (e.g., empathy). The dosage and duration of interventions range widely. Some interventions target school culture, but schoolwide efforts generally are reserved for elementary and middle school-age students. Some partnerships with families have been developed but these rarely include an explicit focus on developing prosocial behaviours. Generally, evaluations of programs do not cover more than a school year and restrict their attention to the school context.

Key Research Questions

Several vital questions emerge from recent research on school-based intervention targeting young children's prosocial development:

- What are the more effective school curricula, teaching practices, and intervention dissemination methods that explicitly promote the development of prosocial behaviour in young learners of different ages, developmental stages, and cultural contexts?
- Are there differences in intervention effects across diverse populations (e.g., race/ethnicity, socioeconomic status, early-onset antisocial behaviour) and school settings?
- How can educators be trained, prepared, and supported to deliver evidence-informed practice effectively and to infuse prosocial instruction consistently into their regular academic curricula?
- How can school partnerships and collaborations with families and communities strengthen early intervention efforts?
- To what extent do early prosocial education efforts help set children on positive developmental trajectories toward academic success, adaptive behavioural regulation, positive interpersonal relationships, and responsible citizenship?

Recent Research Results

A rich history of research suggests tentative but useful starting points for supporting prosocial behaviour in schools. Promising interventions tend to emphasize a) caring relationships with adults and peers, b) adults modeling and reinforcing prosocial characteristics, c) training in empathy and perspective-taking, and d) active learning approaches such as cooperative learning.[9,10,17-26] Important insights about features of more effective interventions can also be extrapolated from recent meta-analyses. The general picture from meta-analyses of educational or psychosocial interventions for school-age children is that overall mean effect size estimates range from .15 to .39 for positive social behaviours,[27] suggesting that some school-based interventions can contribute to important gains in prosocial development. The evidence base suggests that more effective social-emotional learning interventions meet S.A.F.E. criteria, or, in other words, interventions offer sequential activities to enhance step-by-step learning, use active forms of learning, provide focused time and attention on skill development, and establish explicit learning goals. In addition, the research suggests that schools do not need to introduce major reforms to be successful in the sense that a well-prepared and supported teaching staff can be successful in promoting students' prosocial behaviour.[27,28]

Research Gaps

Research needs to address what school-based practices and programs are most effective, for whom, and under what circumstances. Meta-analyses of the growing body of relevant treatment-control group intervention studies would do much more to clarify these issues than a reliance on findings from individual studies. Some research has suggested that perceived similarity to others lays the groundwork for prosociability.[29,30] These findings, in turn, suggest the potential value of developing and identifying interventions that enhance students' prosocial behaviours toward peers of different cultural and demographic backgrounds; this research area that has real implications for intergroup relations in increasingly multicultural societies remains largely uncharted territory. Finally, further research is needed to support solid conclusions about how to inspire and train educators and administrators to integrate routine prosocializing practices into their curricula.

Conclusions

Early education is in a strong position to develop and foster in young children the skills and motivation to be kind, caring, and compassionate in interactions, relationships, schools, homes, and communities. In order for prosocial education to meet its potential, it is important to recognize and overcome research-practice gaps and barriers to school implementation. Moving forward, an integrated approach that infuses both promising practices and programs into the daily fabric of classrooms and schools may be indispensable for prosocial education to be fully realized.[31] Empirically identifying and introducing daily routines to foster prosocial behaviour within the regular school curriculum may circumvent some stumbling blocks of manual-based programs. Research suggests that educators are more likely to implement specific, simple, and adaptable interventions; school reforms that deliver a relative cost advantage and are achievable with existing structures are important at the policy level.[32] However, manual-based programs can also play important roles in prosocial education: they help unprepared teachers deliver focused intervention. It is therefore critical that intentional efforts are made to ensure that a school-based program demonstrates credible evidence of repeated effectiveness before becoming established in schools. As a final point, interventions are not one-size-fits-all. That culture is central to education signals that a transplant of interventions to different countries and sociocultural contexts without cultural tailoring may have limited success.

Implications for Parents, Services and Policy

Prosocial education needs to start early at home and continue in preschool to frame positive behavioural expectations and to provide young learners with extended opportunities to learn the foundational skills of cooperation and helping so important for social and academic competence. This underscores the importance of developing strong school-family partnerships. The accumulated research indicates that schools and families may help children's prosocial development thrive by implementing teaching approaches and practices that emphasize caring relationships with adults and peers, active learning, prosocial models, positive reinforcement for prosocial behaviour, and empathy and perspective-taking training.[9,10,17-26] Successful interventions also tend to be sequenced, focused, and explicit in learning goals.[27] It is critical not to lose sight of the fact that all learning occurs in context and prosocial behaviours are enriched by a combination of school, home and community environments that nurture and reinforce children's capacities to constructively care for and help their fellow human beings.

References

1. Eisenberg N, Mussen P. *The roots of prosocial behavior in children*. Cambridge: Cambridge University Press; 1989.
2. Caprara GV, Barbaranelli C, Pastorelli C, Bandura A, Zimbardo PG. (2000). Prosocial foundations of children's academic achievement. *Psychological Science.* 2000;11(4): 302–306.
3. Eisenberg N, Guthrie IK, Murphy BC, Shepard SA, Cumberland A, Carlo G. Consistency and development of prosocial dispositions: A longitudinal study. *Child Development.* 1999;70(6):1360-1372.
4. Jones DE, Greenberg M, Crowley M. Early Social-Emotional Functioning and Public Health: The Relationship Between Kindergarten Social Competence and Future Wellness. *American Journal of Public Health.* 2015;105(11):2283-2290. doi: 10.2105/AJPH.2015.302630
5. Eisenberg N, Spinrad TL, Knafo-Noam A. Prosocial Development. In: Lamb ME, Garcia C, coll. (vol. eds.), Lerner RM (series ed.). *Handbook of Child Psychology: Vol. 3. Social, Emotional, and Personality Development,* 7th ed. New York: Wiley; 2015:610-656.
6. Larrieu J, Mussen P. Some personality and motivational correlates of children's prosocial behavior.*Journal of Genetic Psychology* 1986;147:529–542.
7. Markiewicz D, Doyle AB, Brendgen M. The quality of adolescents' friendships: Associations with mothers' interpersonal relationships, attachments to parents and friends, and prosocial behaviors.*Journal of Adolescence.* 2011;24:429-445.
8. Institute of Education Sciences. What Works Clearinghouse Intervention Report on Caring School Community. Institute of Education Sciences, U.S. Department of Education. 2007.
9. Chambers B. Cooperative learning in kindergarten: Can it enhance perspective-taking ability and prosocial behavior. *International Journal of Early Childhood*. 1993;25:31-36.
10. Social and Character Development Research Consortium. Efficacy of Schoolwide Programs to Promote Social and Character Development and Reduce Problem Behavior in Elementary School Children. Washington, DC: National Center for Education Research, Institute of Education Sciences, U.S. Department of Education. 2010.
11. Caplan MZ, Hay DF. Preschoolers' responses to peers' distress and beliefs about bystander intervention.*Journal of Child Psychology and Psychiatry*. 1989;30:231-242.

12. Eisenberg N, Cameron E, Tryon K, Dodez R. Socialization of prosocial behavior in the preschool classroom. *Developmental Psychology*. 1981;17:773-782.

13. Bridgeland J, Bruce M, Hariharan A. The missing piece: A national survey on how social and emotional learning can empower children and transform schools. Washington, D.C.: Civic Enterprises; 2013.

14. Ornaghi V, Grazzani I, Cherubin E, Conte E, Piralli F. 'Let's talk about emotions!': The effect of conversational training on preschoolers' emotion comprehension and prosocial orientation. *Social Development*. 2015;24:166-183.

15. Ostrov JM, Massetti GM, Stauffacher K, Godleski SA, Hart KC, Karch KM, Mullins AD, Ries EE. An intervention for relational and physical aggression in early childhood: A preliminary study. *Early Childhood Research Quarterly*. 2009;24:15-28.

16. Ramaswamy V, Bergin C. Do reinforcement and induction increase prosocial behavior? Results of a teacher-based intervention in preschools. *Journal of Research in Childhood Education*. 2009;23:527- 538.

17. Caprara GV, Kanacri BPL, Gerbino M, Zuffiano A, Alessandri G, Vecchio G, Caprara E, Pastorelli C, Bridgall B. Positive effects of promoting prosocial behavior in early adolescence: Evidence from a school-based intervention. *International Journal of Behavioral Development*. 2014;38:386-396.

18. Gillies RM. Maintenance of cooperative and helping behaviors in reconstituted groups. *The Journal of Educational Research*. 1999;92:357-363.

19. Honig AS, Pollack B. Effects of a brief intervention program to promote prosocial behaviors in young children. *Early Education and Development*. 1990;1:438-444.

20. Kärnä A, Voeten M, Little TD, Poskiparta E, Kaljonen A, Salmivalli C. A large-scale evaluation of the KiVa antibullying program: Grades 4-6. *Child Development*. 2011;82:311-330.

21. Feshbach ND, Feshbach S. Empathy training and the regulation of aggression: Potentialities and limitations. *Academic Psychology Bulletin*. 1982;4:399-413.

22. Frey KS, Nolen SB, Edstrom LVS, Hirschstein MK. Effects of a school-based social-emotional competence program: Linking children's goals, attributions, and behavior. *Applied Developmental Psychology*. 2005;26:171-200.

23. Mares ML, Woodard E. Positive effects of television on children's social interactions: A meta-analysis. *Media Psychology*. 2005;7:301–322.

24. Schonert-Reichl KA, Oberle E, Lawlor MS, Abbott D, Thomson K, Oberlander TF, Diamond A. Enhancing cognitive and social-emotional development through a simple-to-administer mindfulness-based school program for elementary school children: A randomized controlled trial. *Developmental Psychology*. 2015;51:52-66.

25. Staub E. The use of role playing and induction in children's learning of helping and sharing behavior. *Child Development*. 1971;42:805-816.

26. Yarrow M, Scott P, Waxler C. Learning concern for others. *Developmental Psychology*. 1973;8:240-260.

27. Durlak JA, Weissberg RP, Dymnicki AB, Taylor RD, Schellinger K. The impact of enhancing students' social and emotional learning: A meta-analysis of school- based universal interventions. *Child Development*. 2011;82:474-501.

28. Sklad M, Diekstra R, Ritter MD, Ben J, Gravesteijn C. Effectiveness of school- based universal social, emotional, and behavioral programs: Do they enhance students' development in the area of skill, behavior, and adjustment? *Psychology in the Schools*. 2012;49:892- 909.

29. Balliet D, Wu J, De Dreu CK. Ingroup Favoritism in Cooperation: A Meta-Analysis. *Psychological Bulletin*. 2014;140:1556-81.

30. Dovidio JF, Gaertner SL, Validzic A, Matoka A, Johnson B, Frazier S. Extending the benefits of recategorization: Evaluations, self-disclosure, and helping. *Journal of Experimental Social Psychology*. 1997;33:401-420.

31. Jones SM, Bouffard SM. Social and emotional learning in schools: From programs to strategies. *Social Policy Report*. 2012;26:1-22.

32. Lewig K, Arney F, Scott D. Closing the research-policy and research-practice gaps: Ideas for child and family services. *Family Matters*. 2006;74:12-19.

Empathy, Prosocial Behaviour and Adjustment: Clinical Aspects of Surfeits and Deficits in Concern for Others

Carolyn Zahn-Waxler, PhD, Andrew Schoen, BS

University of Wisconsin, USA

February 2016

Introduction

Prosocial behaviours provide benefit to others. They include sharing, help, comfort, protection and defense of others, and related traits of kindness and generosity. These adaptive behaviours reflect social-emotional competence. Prosocial actions evoked by others' distress are often motivated by feelings of empathy/sympathy and a desire to alleviate their suffering.[1] Under some circumstances these feelings and actions can be maladaptive.[2] Some psychiatric disorders and psychological problems are characterized, in part, by extremes of empathy, both surfeits and deficits that undermine the capacity to care for others in a healthy manner.[3,4,2] The study of extremes can provide insights into processes associated with different forms of psychopathology.[3,4,5,2]

Subject

Expressions of concern for others begin during the first and second year of life.[6,7] They are manifest in facial and vocal expressions of empathy/sympathy, the forms of prosocial actions noted above, and cognitive awareness of the other's experience. From early on, however, three types of extremes are present[8,9,10] that may be precursors of later psychological and psychiatric problems.

1. Surfeits

High levels of empathy and prosocial behaviours are sometimes associated with anxiety and depression.[11,2] From early on in development extreme concern may be a sign of these internalizing problems. Extreme concern can also be seen in a genetic disorder, William's Disease; it includes mild to moderate mental disability and high sociability, where extreme prosociality can create danger.[12]

2. Deficits

   a. Callousness and hostility. This appears in the second and third years of life, af-ter concern for others emerges and is expressed toward both adults and peers.[13,7] It is seen in laughter as children enjoy the person's distress, anger/aggression, and blaming the victim. It is relatively rare and may signal later conduct problems and psychopathic traits.

   b. Lack of response. This can be seen in children on the autism spectrum.[3] It is also seen in children high in inhibition,[14] which predicts later anxiety and depression in adolescence, especially in girls.[15]

The two types of empathy deficits are referred to as active versus passive deficits, respectively.[16] DSM-V psychiatric nomenclature describes disorders defined, to a significant degree, by these deficits.

Problem

Surfeits and deficits in caring emotions and behaviours in children and adolescents can undermine quality of social relationships and long-term adjustment.

Others' lives also are affected (e.g., parents, siblings, peers). Research on surfeits of concern for others has been hampered by reluctance to pathologize behaviours that seem so mature and considerate. This began to change with the advent of a developmental psychopathology approach and assessment of risk factors implicating high levels of concern for others in anxiety and depression.[2] There is still, however, more research on active and passive deficits in concern for others.

Research Context

Because others' distress may be infrequent and unpredictable, naturalistic observations are difficult to obtain. Reports from children, adolescents, parents, teachers, and clinicians are used to assess both concern for others[17,18,19] and lack of regard for others.[20,21] Prosocial and antisocial themes also are evoked in symbolic play.[22,9] In early naturalistic studies[23] we trained mothers to make detailed, reliable, observations of children's responses to others' distress.

Structured probes (e.g., when an examiner or parent simulates pain or sorrow) are used extensively in both laboratory and home contexts. These probes first were used in studies of early normative development of concern for others[24,7] and then under conditions likely to evoke

extreme concern, e.g. having a depressed parent.[8] Distress simulations also are used to study concern in older children and youth as well as those likely to have deficits, i.e. antisocial patterns and conduct problems[25,26] or autism spectrum children.[27,3] Longitudinal designs can assess whether early extremes predict later problems.[25]

Key Research Questions

1. What environmental conditions elicit (a) surfeits of concern for others, (b) active deficits, and (c) passive deficits?
2. What biological/hormonal/genetic conditions elicit (a) surfeits of concern for others, (b) active deficits, and (c) passive deficits?
3. How do biological/gene and environmental processes interact to produce extremes? Research provides some starting points.[28,29,30]
4. How are surfeits and deficit in concern for others implicated in different psychological and psychiatric problems?
5. How do gender differences in extremes inform us about etiology of different forms of psychopathology?

Recent Research Results

Surfeits of concern for others

High-risk environments, e.g. exposure to parental depression and marital conflict[31,8,9,10] can evoke higher than normative levels of concern and prosocial behaviour toward parents. Between 2 and 4 years of age, some children attempt to comfort parents in distress and mediate their conflicts. This may indicate parentification/role reversal and dissolution of boundaries, as parents' needs supersede those of their children. Children's initial empathy-based concern can fuse with anxiety and pathological guilt as children feel responsible, i.e. a cause of parental distress. Global attributions of being blameworthy or at fault are central to attributional theories of how depression develops. This may be exacerbated by depressed parent's use of guilt-induction[32] and other negative practices.[33] Subclinical and clinical anxiety and depression are present by 3 years, [34,35] hence early extreme concern may signal developing internalizing problems, diminished self-development, and problems with peers.[36,37]

More recent research confirms these findings and extends them to other popula-tions, e.g. other forms of parental psychopathology and personality problems, alcoholism/substance abuse, early parenthood, poverty. A common theme across many studies[2] is that girls more often than boys are likely to show extreme concern. Other recent studies explore the multi-faceted nature of high concern in adolescents identifying (a) both costs and benefits in their friendships, peer relationships and involvement in parental conflict[38,39,40] and (b) high caring as a "risky strength."[41] Here too, girls are more affected. Possible brain and behavioural sex differences in empathy can help to explain females' susceptibilities and strengths in this domain.[42] Hormonal differences may be at play, as lower fetal testosterone has been linked to higher levels of empathy (though not always extremes) both in boys and girls.[43] In general, there has been little research on biological processes associated with surfeits of concern for others, because most researchers in these areas are unaware of potential adverse consequences.

Active deficits in concern for others

The high risk family environments identified above for surfeits in concern for others are also sometimes associated with deficits, both active and passive,[44] so work is needed to identify child characteristics that differentiate these three groups. Research on young children's high observed active disregard and low empathy and prosociality[45,46,20] predicts antisocial behaviour and psychopathic/callous-unemotional traits. Callous-unemotional traits predict severity and stability of conduct problems and delinquency.[21]

There is ample research on physiological correlates of active deficits and antisocial behaviour.[47] Measures of physiological underarousal are often associated with callous/psychopathic traits and antisocial behaviour, though this is not invariable. Aggressive/disruptive toddlers show heightened rather than diminished physiological reactivity and they do not show lower concern for others.[48] Negative relations between concern for others and aggressive behaviour may develop over time, suggesting the value of early interventions since concern is still preserved in some young aggressive children.[46]

The salience of early development is highlighted in two recent studies of observed active disregard for others in the second and third years of life.[49,25] Early active disregard predicted antisocial behaviour in childhood and adolescence based on mother, teacher and child reports. Early language predicted less disregard and greater concern, suggesting the possible protective role and the importance of encouraging language from the first years of life. There is also

substantial research on environmental contributions, including child-rearing and discipline practices, to active disregard and antisocial behaviour.[50,51,46]

Atypical empathy is present at the neural level in adolescents with conduct disorder and psychopathic traits.[16] Youths appeared to show no neural response deficits in pain-experiencing regions when viewing others in distress. However, those with conduct disorder showed less coupling compared to controls between the amygdala, a key region in emotion processing, and the ventromedial prefrontal cortex, a region thought to be involved in behavioural responses. This relative deficit in functional connectivity between these regions has been found for individuals with callous-disregard as well.[52] Another study with adolescents with conduct disorder also found structural neural deficits associated with lack of empathy.[53]

Passive deficits in concern for others

Laboratory research using structured distress probes documents deficits in empathy and prosocial behaviour in children on the autism spectrum[54,55] consistent with parent reports. It is not clear why these differences occur and whether they always reflect core deficits; greater emotional reactivity and sensitivity to environmental stressors as indexed by high levels of cortisol,[56] and lack of communicative skills associated with neurological deficits may blunt empathy in some children. Since language plays a role in empathy even in the first years of life, [54,49] the study of variations in language in autistic children may help to explain why empathy is relatively preserved in some of these children.[27] When autism was first identified as a disorder, cold, distant mothering, (a.k.a. ‘refrigerator mothers’) was claimed to create autism, including empathy deficits. These views were discredited, as the primacy of biological/genetic underpinnings became known.

In humans, exposure to high levels of prenatal androgens may result in masculine behaviours and abilities. Simon Baron-Cohen has proposed an extreme male brain of autism whereby fetal testosterone, more common in males than females, creates a hyper-masculinized brain, associated with autism/Asperger’s, difficulty in social relationships, and restricted interests.[57] This may also be true at a subsyndromal level. In typically developing 4 year-olds, fetal testosterone predicted problems in empathy, social relations and restricted interests, for both sexes.[58] Similar patterns were observed in other research, with fetal testosterone, showing an inverse relationship with empathy.[59,43] More male-typical behaviours and fewer female-typical behaviours, including empathy[60] are seen in females exposed to high prenatal testosterone due to

a genetic disorder congenital adrenal hyperplasia (CAH) or because mothers were prescribed hormones during pregnancy.

Passive deficits occur on a continuum; low concern does not necessarily reflect psychopathology but can still create interpersonal problems. Physiological and gene re-lated effects have been identified. Low empathy in preschool children of depressed mothers is associated with right frontal EEG asymmetry.[61] The AVPR1A gene variant is associated with preschooler's lower altruistic behaviour.[62]

Research Gaps

There are no well-established standardized tests or norms for identifying surfeits and deficits in concern for others. Mostly, extremes are inferred based on how they relate to or predict other measures that reflect risk and/or psychopathology. Often, extremes result from a combination of genetic and environmental factors, yet little is known about specific processes that interact to produce different developmental outcomes. Only some children show surfeits or deficits even in high-risk environments and some children show surfeits or deficits in apparently low-risk environments. Future research is needed to ad-dress these complexities. Also, rather than just dichotomizing children as extreme or not, it is important to study individual differences within categories of surfeits and deficits.

Little is known about intentions and motives that underlie surfeits and deficits in concern for others. Initial empathy-based acts of caring toward distressed caregivers may be taken over by anxiety, guilt and shame. Greater knowledge of children's emotions is needed. Some children, who appear to be inexpressive, may in fact experience concern that we do not yet know how to tap. Some show multiple emotions associated with both concern and active disregard in the same context. What sets these children apart?

Conclusions

Three extremes of empathy and prosociality, i.e. surfeits, active deficits, and pas-sive deficits emerge in the first years of life. These extremes have been associated with different psychological and psychiatric problems later in development. Surfeits are more commonly associated with internalizing problems and deficits with externalizing problems and autism spectrum disorders. Comorbidity is also possible and requires further attention. Surfeits and deficits in empathy and prosociality are not invariably prodromal signs of later problems; hence

it will be important to determine why only some young children go on to experience serious difficulties.

Knowledge about surfeits and deficits of concern for others has come mainly from three largely separate research domains. Conceptual and empirical work would benefit from studies that explore relations among them, e.g. recent work comparing multiple features of empathy in two different populations (autism spectrum and conduct disorders) who both show deficits[63] or examining concern and active disregard in the same populations.[46]

Both normatively[64] and at the extremes, girls show higher empathy and prosocial behaviour than boys and boys show more active and passive disregard than girls. This parallels sex differences in forms of psychopathology from childhood and adolescence through adulthood. Conduct problems and autism-spectrum problems show a marked male preponderance, while anxiety and depression show a marked female preponderance.[65] Empathy deficits in fact are symptoms that help to define male-preponderant problems and surfeits are correlates (possibly symptoms or causes) of female preponderant problems. Gender differences in concern and disregard, in conjunction with other known gender differences in child temperament,[66] may provide a better window into our understanding of etiologies of the different psychological and psychiatric problems considered here.[67]

Implications for Parents, Services, and Policy

It is valuable for parents, teachers, and other caregivers to encourage children's social competence, including expressions of concern for others, and to begin early in life. Several programs are available,[68-73] more often for older children than younger children, and there is considerable research to guide additional program development.[74-79,32] More work has been done with community samples than with troubled children. The extent to which intervention paradigms and findings from community samples will generalize to extremes in concern and lack of regard for others is not yet clear.

For children with surfeits of concern for others, interventions exist to improve social functioning by reducing children's sense of responsibility and empathic over-involvement for the problems of their parents.[80,81] Because parental distress is also associated with other extremes of aggression and avoidance,[44] i.e. deficits in concern for others, further interventions should be tailored to these child characteristics.

Recent classroom interventions with preschoolers and older children have focused on mindfulness and loving-kindness practices to increase attentional focus and self-regulation, heighten empathy, and reduce bullying and other forms of aggression.[82,83] Practices to increase mindfulness are now used with parents,[84] but not yet with children at the extremes. Such practices might help reduce both overly high and low concern for others, since one goal is to subdue overwhelming and stormy feelings, as well as create calm and caring for the self. While we've emphasized the need for environmental interventions, recent work on biological interventions, is also relevant to empathy.[85,75,28] Oxytocin, for example, plays a role in mediating low parental mood and child empathy.

Some extremes in concern and disregard for others and associated internalizing and externalizing problems are unlikely to be amenable to interventions, because they occur within the broader context of societal problems such as poverty and parental problems such as child maltreatment. Interventions directed solely toward the child may be of little consequence until the larger issues are addressed.

References

1. Eisenberg N, Fabes RA, Spinrad TL. Prosocial development. In: Eisenberg N, Damon W, Lerner RM, eds. *Handbook of child psychology*. Hoboken, NJ: Wiley; 2006:646-718.
2. Zahn-Waxler C, Van Hulle C. Empathy, guilt and depression: When caring for others becomes costly to children. In: Oakley B, Knafo A, Madhavan G, Wilson DS, eds. *Pathological altruism*. New York, NY US: Oxford University Press; 2011:243-259.
3. Sigman MD, Kasari C, Kwon JH, Yirmiya N. Responses to the negative emotions of others by autistic, mentally retarded, and normal children. *Child Development*. 1992;63(4):796-807. doi: 10.2307/1131234.
4. Blair RJR. Responding to the emotions of others: dissociating forms of empathy through the study of typical and psychiatric populations. *Consciousness and Cognition*. 2005;14(4):698-718. doi: 10.1016/j.concog.2005.06.004.
5. Decety J, Moriguchi Y. The empathic brain and its dysfunction in psychiatric populations: implications for intervention across different clinical conditions. *BioPsychoSocial Medicine*. 2007;1(1):22. doi: 10.1186/1751-0759-1-22.
6. Davidov M, Zahn-Waxler C, Roth-Hanania R, Knafo A. Concern for others in the first year of life: theory, evidence, and avenues for research. *Child Development Perspectives*. 2013;7(2):126-131. doi: 10.1111/cdep.12028.
7. Zahn-Waxler C, Radke-Yarrow M, Wagner E, Chapman M. Development of concern for others. *Developmental Psychology*. 1992;28(1):126. doi: 10.1037/0012-1649.28.1.126.
8. Radke-Yarrow M, Zahn-Waxler C, Richardson DT, Susman A, Martinez P. Caring behavior in children of clinically depressed and well mothers. *Child Development*. 1994;65(5):1405-1414. doi: 10.1111/j.1467-8624.1994.tb00825.x
9. Zahn-Waxler C, Kochanska G, Krupnick J, McKnew D. Patterns of guilt in children of depressed and well mothers. *Developmental Psychology*. 1990;26(1):51. doi: 10.1037/0012-1649.26.1.51.
10. Cummings EM, Zahn-Waxler C, Radke-Yarrow M. Young children's responses to expressions of anger and affection by others in the family. *Child Development*. 1981;52(4):1274-1282. doi: 10.2307/1129516

11. O'Connor LE., Berry JW, Lewis TB, Stiver DJ. Empathy-based pathogenic guilt, pathological altruism, and psychopathology. In: Oakley B, Knafo A, Madhavan G, Wilson DS, eds. *Pathological altruism*. New York, NY US: Oxford University Press; 2011:10-30.

12. Mervis CB, Klein-Tasman BP. Williams syndrome: cognition, personality, and adaptive behavior. *Mental Retardation and Developmental Disabilities Research Reviews.* 2000;6(2):148-158. doi: 10.1002/1098-2779(2000)6:2<148::AID-MRDD10>3.0.CO;2-T.

13. Klimes-Dougan B, Kistner J. Physically abused preschoolers' responses to peers' distress. *Developmental Psychology*. 1990;26(4):599. doi: 10.1037/0012-1649.26.4.599.

14. Young S, Fox N, Zahn-Waxler C. Relations between temperament and empathy in two-year-olds. *Developmental Psychology*. 1999;35(5);1189-1197. doi: 10.1037/0012-1649.35.5.1189.

15. Schwartz CE, Snidman N, Kagan J. Adolescent social anxiety as an outcome of inhibited temperament in childhood. *Journal of the American Academy of Child & Adolescent Psychiatry.* 1999;38(8):1008-1015. doi: 10.1097/00004583-199908000-00017.

16. Decety J, Michalska KJ, Akitsuki Y, Lahey BB. Atypical empathic responses in adolescents with aggressive conduct disorder: a functional MRI investigation. *Biological Psychology*. 2009;80(2):203-211. doi: 10.1016/j.biopsycho.2008.09.004.

17. Kochanska G. *My Child, version 2: A preliminary manual*. Iowa City: University of Iowa, Department of Psychology; 1992.

18. Bryant BK. An index of empathy for children and adolescents. *Child development.* 1982;53(2):413-425. doi: 10.2307/1128984.

19. Davies PT, Coe JL, Martin MJ, Sturge-Apple ML, Cummings EM. The developmental costs and benefits of children's involvement in interparental conflict. *Developmental Psychology*. 2015;51(8):1026-1047. doi: 10.1037/dev0000024.

20. Shirtcliff EA, Vitacco MJ, Graf AR, Gostisha AJ, Merz JL, Zahn-Waxler C. Neurobiology of empathy and callousness: implications for the development of antisocial behavior. *Behavioral Sciences & the Law*. 2009;27(2):137-171. doi: 10.1002/bsl.862.

21. Frick PJ, Stickle TR, Dandreaux DM, Farrell JM, Kimonis ER. Callous–unemotional traits in predicting the severity and stability of conduct problems and delinquency. *Journal of Abnormal Child Psychology*. 2005;33(4):471-487. doi: 10.1007/s10648-005-5728-9

22. Zahn-Waxler C, Park JH, Usher B, Belouad F, Cole P, Gruber R. Young children's representations of conflict and distress: A longitudinal study of boys and girls with disruptive behavior problems. *Development and Psychopathology*. 2008;20(01):99-119. doi: 10.1017/S0954579408000059

23. Zahn-Waxler C, Radke-Yarrow M, King RA. Child rearing and children's prosocial initiations toward victims of distress. *Child Development*. 1979;50(2):319-330. doi: 10.2307/1129406.

24. Zahn-Waxler C, Robinson JL, Emde RN. The development of empathy in twins. *Developmental Psychology*. 1992;28(6):1038. doi: 10.1037/0012-1649.28.6.1038

25. Rhee SH, Friedman NP, Boeldt DL, Corley RP, Hewitt JK, Knafo A, Lahey BB, Robinson J, Van Hulle CA, Waldman ID, Young SE, Zahn-Waxler C. Early concern and disregard for others as predictors of antisocial behavior. *Journal of Child Psychology and Psychiatry, and Allied Disciplines*. 2013;54(2):157-166. doi:10.1111/j.1469-7610.2012.02574.x.

26. Van Hulle C, Zahn-Waxler C, Robinson JL, Rhee SH, Hastings PD, Knafo A. Autonomic correlates of children's concern and disregard for others. *Social Neuroscience*. 2013;8(4):275-290. doi: 10.1080/17470919.2013.791342.

27. Scheeren AM, Koot HM, Mundy PC, Mous L, Begeer S. Empathic responsiveness of children and adolescents with high-functioning autism spectrum disorder. *Autism Research.* 2013;6(5):362-371. doi: 10.1002/aur.1299.

28. Bakermans-Kranenburg MJ, van Ijzendoorn MH. Oxytocin receptor (OXTR) and serotonin transporter (5-HTT) genes associated with observed parenting. *Social Cognitive and Affective Neuroscience*. 2008;3(2):128-134. doi: 10.1093/scan/nsn004.

29. Harold GT, Rice F, Hay DF, Boivin J, van den Bree M, Thapar A. Familial transmission of depression and antisocial behavior symptoms: disentangling the contribution of inherited and environmental factors and testing the mediating role of parenting. *Psychological Medicine*. 2011;41(06):1175-1185. doi: 10.1017/S0033291710001753.

30. Knafo A, Israel S, Ebstein RP. Heritability of children's prosocial behavior and differential susceptibility to parenting by variation in the dopamine receptor D4 gene. *Development and Psychopathology*. 2011;23(01):53-67. doi: 10.1017/S0954579410000647

31. Klimes-Dougan B, Bolger A. Coping with maternal depressed affect and depression: Adolescent children of well and depressed mothers. *Journal of Youth and Adolescence*. 1998;27:1-15.

32. Zahn-Waxler C, Iannotti RJ, Cummings EM, Denham S. Antecedents of problem behaviors in children of depressed mothers. *Development and Psychopathology*. 1990;2(03):271-291. doi: 10.1017/S0954579400000778.

33. Goodman SH, Rouse MH, Connell AM, Broth MR, Hall CM, Heyward . Maternal depression and child psychopathology: A meta-analytic review. *Clinical Child and Family Psychology Review*. 2011;14(1):1-27. doi: 10.1007/s10567-010-0080-1.

34. Luby J, Belden A, Sullivan J, Hayen R, McCadney A, Spitznagel E. Shame and guilt in preschool depression: evidence for elevations in self-conscious emotions in depression as early as age 3. *Journal of Child Psychology and Psychiatry*. 2009;50(9):1156-1166. doi: 10.1111/j.1469-7610.2009.02077.x.

35. Carter AS, Briggs-Gowan MJ, Jones SM, Little TD. The infant–toddler social and emotional assessment (ITSEA): Factor structure, reliability, and validity. *Journal of Abnormal Child Psychology*. 2003;31(5):495-514. doi: 10.1023/A:1025449031360.

36. Denham SA, Zahn-Waxler C, Cummings EM, Iannotti RJ. Social competence in young children's peer relations: Patterns of development and change. *Child Psychiatry and Human Development*. 1991;22(1):29-44. doi: 10.1007/BF00706057.

37. Essex MJ, Kraemer HC, Armstrong JM, Boyce WT, Goldsmith HH, Klein MH, Woodward H, Kupfer DJ. Exploring risk factors for the emergence of children's mental health problems. *Archives of General Psychiatry*. 2006;63(11):1246-1256. doi: 10.1001/archpsyc.63.11.1246.

38. Smith RL, Rose AJ. The “cost of caring” in youths' friendships: Considering associations among social perspective taking, co-rumination, and empathetic distress. *Developmental Psychology*. 2011;47(6):1792. doi: 10.1037/a0025309.

39. Rudolph KD, Conley CS. The socioemotional costs and benefits of social-evaluative concerns: Do girls care too much? *Journal of Personality*. 2005;73(1):115-138. doi: 10.1111/j.1467-6494.2004.00306.x.

40. Davies PT, Coe JL, Martin MJ, Sturge-Apple ML, Cummings EM. The developmental costs and benefits of children’s involvement in interparental conflict. *Developmental Psychology*. 2015;51(8):1026-1047. doi: 10.1037/dev0000024.

41. Tone EB, Tully EC. Empathy as a “risky strength”: A multilevel examination of empathy and risk for internalizing disorders. *Development and Psychopathology*. 2014;26(4pt2):1547-1565. doi: 10.1017/S0954579414001199.

42. Christov-Moore L, Simpson EA, Coudé G, Grigaityte K, Iacoboni M, Ferrari PF. Empathy: Gender effects in brain and behavior. *Neuroscience & Biobehavioral Reviews*. 2014;46:604-627. doi: 10.1016/j.neubiorev.2014.09.001.

43. Chapman E, Baron-Cohen S, Auyeung B, Knickmeyer R, Taylor K, Hackett G. Fetal testosterone and empathy: Evidence from the empathy quotient (EQ) and the “reading the mind in the eyes” test. *Social Neuroscience*. 2006;1(2):135-148. doi: 10.1080/17470910600992239.

44. Solantaus-Simula T, Punamäki RL, Beardslee WR. Children's responses to low parental mood. I: Balancing between active empathy, overinvolvement, indifference, and avoidance. *Journal of the American Academy of Child & Adolescent Psychiatry*. 2002;41(3):278-286. doi: 10.1097/00004583-200203000-00007.

45. Blair RJR. Responsiveness to distress cues in the child with psychopathic tendencies. *Personality and Individual Differences*. 1999;27(1):135-145. doi: 10.1016/S0191-8869(98)00231-1.

46. Hastings PD, Zahn-Waxler C, Robinson J, Usher B, Bridges D. The development of concern for others in children with behavior problems. *Developmental Psychology*. 2000;36(5):531. doi: 10.1037//0O12-1649.36.5.531.

47. Ortiz J, Raine A. Heart rate level and antisocial behavior in children and adolescents: A meta-analysis. *Journal of the American Academy of Child & Adolescent Psychiatry*. 2004;43(2):154-162. doi: 10.1097/00004583-200402000-00010.

48. Gill KL, Calkins SD. Do aggressive/destructive toddlers lack concern for others? Behavioral and physiological indicators of empathic responding in 2-year-old children. *Development and Psychopathology*. 2003;15(01):55-71. doi: 10.1017.S095457940300004X.

49. Rhee SH, Boeldt DL, Friedman NP, Corley RP, Hewitt JK, Young SE, Knafo A, Robinson J, Waldman ID, Van Hulle CA, Zahn-Waxler C. The role of language in concern and disregard for others in the first years of life. *Developmental Psychology*. 2013;49(2):197. doi: 10.1037/a0028318.

50. Waller R, Gardner F, Hyde LW. What are the associations between parenting, callous–unemotional traits, and antisocial behavior in youth? A systematic review of evidence. *Clinical Psychology Review*. 2013;33(4):593-608. doi: 10.1016/j.cpr.2013.03.001.

51. Wagner NJ, Mills-Koonce WR, Willoughby MT, Zvara B, Cox MJ. Parenting and children's representations of family predict disruptive and callous-unemotional behaviors. *Developmental Psychology*. 2015;51(7):935-948. doi: 10.1037/a0039353.

52. Marsh AA, Finger EC, Mitchell DG, Reid ME, Sims C, Kosson DS, Towbin KE, Leibenluft E, Pine DS, Blair RJ. Reduced amygdala response to fearful expressions in children and adolescents with callous-unemotional traits and disruptive behavior disorders. *American Journal of Psychiatry*. 2008;165(6):712-720. doi: 10.1176/appi.ajp.2007.07071145.

53. Sterzer P, Stadler C, Poustka F, Kleinschmidt A. A structural neural deficit in adolescents with conduct disorder and its association with lack of empathy. *Neuroimage*. 2007;37(1):335-342. doi: 10.1016/j.neuroimage.2007.04.043.

54. Hutman T, Rozga A, DeLaurentis A, Sigman M, Dapretto M. Infants' pre-empathic behaviors are associated with a skills. *Infant Behavior and Development*. 2012;35(3):561-569. doi: 10.1016/j.infbeh.2012.05.007.

55. Hobson JA, Harris R, García-Pérez R, Hobson RP. Anticipatory concern: A study in autism. *Developmental Science*. 2009;12(2):249-263. doi: 10.1111/j.1467-7687.2008.00762.x.

56. Putnam SK, Lopata C, Thomeer ML, Volker MA, Rodgers JD. Salivary Cortisol Levels and Diurnal Patterns in Children with Autism Spectrum Disorder. *Journal of Developmental and Physical Disabilities*. 2015;27(4):453-465. doi: 10.1007/s10882-015-9428-2.

57. Baron-Cohen S. The extreme male brain theory of autism. *Trends in cognitive sciences*. 2002;6(6):248-254. doi:10.1016/S1364-6613(02)01904-6.

58. Knickmeyer R, Baron-Cohen S, Raggatt P, Taylor, K. Foetal testosterone, social relationships, and restricted interests in children. *Journal of Child Psychology and Psychiatry*. 2005;46(2);198–210. doi: 10.1111/j.1469-7610.2004.00349.x.

59. Knickmeyer R, Baron-Cohen S, Raggatt P, Taylor K, Hackett G. Fetal testosterone and empathy. *Hormones and Behavior*. 2006;49(3):282-292. doi: 10.1016/j.yhbeh.2005.08.010.

60. Constantinescu M, Hines M. Relating prenatal testosterone exposure to postnatal behavior in typically developing children: Methods and findings. *Child Development Perspectives*. 2012;6(4);407-413. doi: 10.1111/j.1750-8606.2012.00257.x

61. Jones NA, Field T, Davalos M. Right frontal EEG asymmetry and lack of empathy in preschool children of depressed mothers. *Child Psychiatry and Human Development*. 2000;30(3);189-204. doi: 10.1023/A:1021399605526.

62. Avinun R, Israel S, Shalev I, Gritsenko I, Bornstein G, Ebstein RP, Knafo A. AVPR1A variant associated with preschoolers' lower altruistic behavior. *PLoS One*. 2011;6(9):e25274-e25274. doi: 10.1371/journal.pone.0025274.

63. Bons D, van den Broek E, Scheepers F, Herpers P, Rommelse N, Buitelaaar JK. Motor, emotional, and cognitive empathy in children and adolescents with autism spectrum disorder and conduct disorder. *Journal of Abnormal Child Psychology.* 2013;41(3):425-443. doi: 10.1007/s10802-012-9689-5.

64. McClure EB. A meta-analytic review of sex differences in facial expression processing and their development in infants, children, and adolescents. *Psychological Bulletin*. 2000;126(3):424. doi: 10.1037/0033-2909.126.3.424.

65. Zahn-Waxler C, Shirtcliff EA, Marceau K. Disorders of childhood and adolescence: Gender and psychopathology. *Annual Review of Clinical Psychology*. 2008;4;275-303. doi: 10.1146/annurev.clinpsy.3.022806.0913.

66. Else-Quest NM, Hyde JS, Goldsmith HH, Van Hulle CA. Gender differences in temperament: a meta-analysis. *Psychological Bulletin*. 2006;132(1);33. doi: 10.1037/0033-2909.132.1.33.

67. Rutter M, Caspi A, Moffitt TE. Using sex differences in psychopathology to study causal mechanisms: unifying issues and research strategies. *Journal of Child Psychology and Psychiatry*. 2003;44(8):1092-1115. doi: 10.1111/1469-7610.00194.

68. Havighurst SS, Wilson KR, Harley AE, Prior MR, Kehoe C. Tuning in to kids: Improving emotion socialization practices in parents of preschool children–findings from a community trial. *Journal of Child Psychology and Psychiatry*. 2010;51(12):1342-1350. doi: 10.1111/j.1469-7610.2010.02303.x.

69. Dewar G. Teaching empathy: Evidence-based tips for fostering empathy in children. *Parenting Science*. 2009. Available at: http://www.parentingscience.com/teaching-empathy-tips.html. Accessed January 29, 2016.

70. Castillo R, Salguero JM, Fernández-Berrocal P, Balluerka N. Effects of an emotional intelligence intervention on aggression and empathy among adolescents. *Journal of Adolescence*. 2013;36(5):883-892. doi: 10.1016/j.adolescence.2013.07.001.

71. Hyde LW, Shaw DS, Gardner F, Cheong J, Dishion TJ, Wilson M. Dimensions of callousness in early childhood: Links to problem behavior and family intervention effectiveness. *Development and Psychopathology*. 2013;25(02):347-363. doi: 10.1017/S0954579412001101.

72. Wilson KR, Havighurst SS, Harley AE. Tuning in to kids: An effectiveness trial of a parenting program targeting emotion socialization of preschoolers. *Journal of Family Psychology*. 2012;26(1):56. doi: 10.1037/a0026480.

73. Schonert-Reichl KA, Smith V, Zaidman-Zait A, Hertzman C. Promoting children's prosocial behaviors in school: Impact of the "Roots of Empathy" program on the social and emotional competence of school-aged children. *School Mental Health*. 2012;4(1):1-21. doi: 10.1007/s12310-011-9064-7.

74. Vinik J, Almas A, Grusec J. Mothers' knowledge of what distresses and what comforts their children predicts children's coping, empathy, and prosocial behavior. *Parenting: Science and Practice*. 2011;11(1);56-71. doi: 10.1080/15295192.2011.539508.

75. Apter-Levy Y, Feldman M, Vakart A, Ebstein RP, Feldman R. Impact of maternal depression across the first 6 years of life on the child's mental health, social engagement, and empathy: The moderating role of oxytocin. *American Journal of Psychiatry*. 2014;170(10);1161-1168. doi: 10.1176/appi.ajp.2013.12121597.

76. Brownell CA, Svetlova M, Anderson R, Nichols SR, Drummond J. Socialization of early prosocial behavior: Parents' talk about emotions is associated with sharing and helping in toddlers. *Infancy*. 2013;18(1):91-119. doi: 10.1111/j.1532-7078.2012.00125.x.

77. Tong L, Shinohara R, Sugisawa Y, Tanaka E, Yato Y, Yamakawa N, Anme T. Early development of empathy in toddlers: Effects of daily parent–child interaction and home-rearing environment. *Journal of Applied Social Psychology*. 2012;42(10):2457-2478. doi: 10.1111/j.1559-1816.2012.00949.x.

78. Hastings PD, Utendale WT, Sullivan C. The socialization of prosocial development. In: Grusec JE, Hastings PD, eds. *Handbook of Socialization: Theory and Research*. New York and London: The Guilford Press; 2007:638-664.

79. Willoughby MT, Mills-Koonce WR, Gottfredson NC, Wagner NJ. Measuring callous unemotional behaviors in early childhood: factor structure and the prediction of stable aggression in middle childhood. *Journal of Psychopathology and*

Behavioral Assessment. 2014;36(1):30-42. doi: 10.1007/s10862-013-9379-9.

80. Beardslee WR, Gladstone TR. Prevention of childhood depression: Recent findings and future prospects. *Biological Psychiatry*. 2001;49(12);1101-1110. doi: 10.1016/S0006-3223(01)01126-X.

81. Beardslee WR, Gladstone TR, Wright EJ, Cooper AB. A family-based approach to the prevention of depressive symptoms in children at risk: Evidence of parental and child change. *Pediatrics*. 2003;112(2):e119-e131. doi: 10.1542/peds.112.2.e119.

82. Flook L, Goldberg SB, Pinger L, Davidson RJ. Promoting prosocial behavior and self-regulatory skills in preschool children through a mindfulness-based kindness curriculum. *Developmental Psychology*. 2015;51(1):44-51. doi: 10.1037/a0038256.

83. Schonert-Reichl KA, Oberle E, Lawlor MS, Abbott D, Thomson K, Oberlander TF, Diamond A. Enhancing cognitive and social–emotional development through a simple-to-administer mindfulness-based school program for elementary school children: A randomized controlled trial. *Developmental Psychology*. 2015;51(1):52. doi: 10.1037/a0038454.

84. Coatsworth JD, Duncan LG, Nix RL, Greenberg MT, Gayles JG, Bamberger KT, Berrena E, Demi MA. Integrating mindfulness with parent training: Effects of the mindfulness-enhanced strengthening families program. *Developmental Psychology*. 2015;51(1):26-35. doi: 10.1037/a0038212.

85. Harris JC, Carter CS. Therapeutic interventions with oxytocin: current status and concerns. *Journal of the American Academy of Child & Adolescent Psychiatry*. 2013;52(10):998-1000. doi: 10.1016/j.jaac.2013.08.001.