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Prosocial behaviour

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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.

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The Moral Foundations of Prosocial Behaviour

[1,2]**Tina Malti, PhD,** [3]**Sebastian P. Dys, PhD,** [4]**Antonio Zuffianò, PhD**

[1]Leipzig University, Germany; [2]University of Toronto, Canada; [3]University of Canterbury, New Zealand; [4]Sapienza University of Rome, Italy.

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Introduction

Moral development describes the changes in a person's understanding of, and feelings about, moral principles across the lifespan. Morality includes several dimensions, most prominently emotions, knowledge and reasoning, values, and prosocial and antisocial behaviours. While some of these components strongly develop across the first five years of life, significant biological and environmental factors also lay the foundation for individual differences in prosocial behaviour.[1,2] 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 affective consequences of their actions for the self[4,5] (e.g., guilt) and concern for others[6] (e.g., sympathy). Alternately, they may become increasingly aware of why it is important to help others, which may motivate prosocial behaviour. Thus, for parents and teachers seeking to socialize prosocial behaviour, it is important to consider the affective and cognitive components of morality that facilitate such outcomes.

In recent decades, progress has been made in the study of early moral development.[7] Most early work focused on either emotions or cognitions (e.g., judgments, reasoning). Yet, both moral emotions and moral cognitions appear necessary for the emergence of prosocial behaviour.[8] What remains less well understood are the links between moral emotions and moral cognitions and how these relations change over time. There is also a need to study trajectories of moral emotions, moral cognition, and prosocial behaviour, as well as their socialization antecedents. In addition, research on how some aspects of peer influences in early moral development remains limited; for example, it is still unclear how experiences of peer exclusion shape 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 teacher 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 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.[9] Observational studies have been utilized to study children's reactions to simulated distress (e.g., the experimenter expressed pain after hurting their 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 examined natural settings (e.g., home environment, kindergarten)[13].

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 extensively studied young children's moral emotions, such as empathy and guilt. A robust body of research indicates that affective concern (i.e., empathy) is associated with prosocial behaviour.[6] Early forms of empathy—feeling an emotion similar to what another is experiencing—emerge as early as three months of age.[14] Over time, most children develop sympathy—a feeling of concern for another—which becomes linked to their prosocial action by the 2nd year of life[11] and predicts future prosocial behaviour.[15] Early precursors of guilt, such as distress following a perceived transgression, emerge between the first and second years of life.[12] More explicit guilt responses to specific transgressions, such as imagining pushing another child off a swing, typically emerge around 3–4 years of age and are predictive of future prosociality.

[16,17,18,19]

In addition, researchers have explored children's evaluations of, and reasoning about, moral issues. Even in infancy and toddlerhood, children show preferences for equal resource distributions.[20,21] By age 3, children understand that it is wrong to break moral rules and they respond more strongly to moral transgressions, involving issues of fairness or harm, than to social-conventional violations, involving traditions or customs.[22] As children's understanding of intentions develops in the second year of life, they demonstrate the first instances of spontaneous prosocial behaviours, 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 when personally costly.[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 influence moral and prosocial tendencies has been studied extensively. Secure attachment relationships with both mothers and fathers are associated with greater prosociality,[30] supporting the use of warm and responsive caregiving, particularly in response to children's distress.[31] Disciplinary practices that minimize coercion or power assertion (e.g., spanking) and prioritize inductive discipline—explaining why a transgression is wrong based on how it affects a victim—also appear beneficial for early moral development.[12,32,33] Additionally, there is evidence that friends, peers, and siblings are important for moral and prosocial development.[34,35,36] For example, the quality of children's peer relationships is associated with later increases in their prosocial behaviour.[37]

Research Gaps

Although young children's emotions in moral contexts have been studied, more research is needed to distinguish between different motivations for prosocial behaviour, such as acting to satisfy social expectations versus acting out of selfless concern or kindness.[1] Longitudinal investigations are also warranted to better understand developmental trajectories and mechanisms that account for links between early moral development and prosocial behaviour.[39] Moreover, multi-informant and multi-method studies are needed to capture the variability in prosocial behaviour and moral development, especially among atypically developing groups of children whose expression of prosocial actions might be more context-specific.[38] In addition, current research is lacking in studies that investigate how young children's moral and prosocial development vary across diverse backgrounds—for example, in non-Western, non-industrialized

countries—and as a function of adverse social contexts—including experiences of impoverishment, displacement, or out-group membership,[40] although studies have increasingly examined the impact of such factors among older children.[41]

Conclusions

Morality develops tremendously during the first five years of life. Although even infants demonstrate rudimentary capacities to distinguish right and wrong and express empathic concern, early childhood is marked by substantial growth in moral knowledge and the anticipation of more complex emotions, such as guilt. This developmental process is closely tied to children's emerging understanding of intentions, needs, and desires, in both themselves and others.[42] Individual differences in empathy and guilt have been associated with various prosocial behaviours.[6,17] In addition, empathy and guilt have been shown to predict later prosocial behaviour. There is also some, albeit limited, evidence for a positive relation between moral reasoning and prosocial behaviour. Furthermore, secure attachments with both mothers and fathers as well as inductive discipline are positively linked to young children's moral and prosocial development.[30,32] Finally, there is evidence that positive interactions with peers and close friends also support early moral development.[37]

Implications for Parents, Services and Policy

The early years are a time in which various components of morality emerge and rapidly develop. These components likely 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. In cases where parents are struggling to form secure attachments and employ appropriate discipline, it may be beneficial to engage relevant evidence-based parenting interventions for early childhood (e.g., the Video-feedback Intervention to promote Positive Parenting and Sensitive Discipline).[43] Similarly, because peers play a significant role in moral development, it is central to promote high-quality interactions with friends and peers, which may also benefit from developmentally tailored,

evidence-based interventions.[44] Because moral development is central to the emergence of socially responsibly attitudes and values, social inclusion, and mental health, service providers and policy-makers should prioritize implementing strategies that promote moral development.

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Prosocial Behaviour Towards Ingroup and Outgroup Members

[1]Avi Benozio, PhD, [2]Gil Diesendruck, PhD

[1]Department of Psychology, The Hebrew University of Jerusalem, Israel, [2]Department of Psychology and Gonda Brain Research Center, Bar-Ilan University, Israel

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Introduction

Children currently grow up in social environments composed of individuals from diverse cultural, linguistic, ethnic, and religious groups. Research reveals that from early in development, children become sensitive to such social distinctions[1-3] and develop biased attitudes[4,5] and firm beliefs about them[6,7]. The present chapter addresses whether children's behavior is modulated by these emerging 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[8,9]. 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 accounts propose that as human survival increasingly relied on cooperation within large groups of non-kin, individuals evolved mechanisms that support collaboration with unrelated others.[10-13] In this context, having a biased predisposition to produce prosocial behavior 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 tendency to act antisocially towards outgroup members.[14]

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 – whether 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 extent to which young children behave differently when interacting with ingroup vs. outgroup members. Second, we consider which factors may explain these differences, including social identification, expectations of reciprocity, reputation management, and contextual factors such as cost, group salience, and intergroup contact.

Recent Research Results

Biased prosocial behavior

Children's intergroup prosocial behavior has been studied across several domains, including sharing, helping, and regulating.

Sharing typically involves a personal cost and has been widely examined. Studies using resource-distribution tasks typically show children take into account relational affiliations, namely, higher sharing toward friends over strangers[15], same-school over different-school peers[16], and even toward peers assigned arbitrarily to minimal color-based groups[17,18]. Notably, in these arbitrary group studies, boys sometimes show strong parochialism. They give desirable resources to ingroups to increase their well-being, and undesirable resources to outgroups to decrease their well-being. These early patterns suggest that children are naturally inclined to favor members of their own group, even before they have learned much about social categories5. Nevertheless, the magnitude and expression of this predisposition in real-world group contexts, such as ethnic distinctions, are highly sensitive to children's social ecologies and to the quality of intergroup relations they regularly experience[19]. This sensitivity illustrates that parochial tendencies are not fixed but shaped to some extent by children's everyday environments.

Helping. Helping is one of the most widely studied forms of prosocial behavior, yet much less work has examined how helping varies as a function of group membership.[20,21] In real-world contexts, White children have been shown to help same-race adults more readily[22], and children are more willing to help their friendship group over non-friends[23]. In contrast, in minimal-group paradigms, helping often shows little or no ingroup advantage, with children commonly assisting both ingroup and outgroup peers[24,25]. Despite holding more negative attitudes toward outgroups,

children sometimes help outgroup peers more, especially when they view the outgroup as less competent or more in need, suggesting that specific stereotype content can guide prosocial responses toward outgroup members[26,27]. This domain, therefore, highlights the role of children's fairness and need-based concerns in moderating ingroup bias.

Regulation. Prosociality is not only about giving and helping, but also about how children enforce fairness and manage moral norms within and across groups. In these contexts, children regulate both their own and others' behavior in group-biased ways, especially when loyalty obligations collide with moral rules. When confronted with the "whistleblower's dilemma", 5-year-olds readily report mild transgressions by both ingroup and outgroup members, yet become significantly less likely to expose ingroup wrongdoers when the offence is severe, indicating that loyalty can override justice concerns when group reputation is threatened[28]. Similarly, children may give up rewards to protect a secret shared by children from their own group, but are more willing to reveal a secret belonging to children from another group[29]. By late childhood, they even selectively tell prosocial lies to protect or advantage ingroup peers, and judge such dishonesty as more acceptable when it benefits the ingroup[30]. Finally, when an authority figure (i.e., teacher) explicitly endorsed withholding resources, boys were relatively reluctant to act against ingroup peers but readily applied this permission to disadvantage outgroup members, suggesting that normative approval amplifies parochial bias[31]. Together, these findings reveal that children's self-regulation and norm enforcement are strategically attuned to safeguarding the ingroup, balancing fairness and honesty with a motivated commitment to group loyalty.

In sum, group membership shapes the extent to which children extend prosocial behavior across social boundaries, with the strength of bias varying by domain and context. Recent developmental accounts, therefore, argue that children come to treat group boundaries as moral boundaries, influencing who is seen as deserving of help, inclusion, and fair treatment[32].

Potential explanations of biased prosocial behavior

Social identification: The extent to which children identify with a social group shapes both their attitudes and their willingness to act prosocially toward its members[9,33,34]. One of the key precursors of prosocial behavior 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[35]. 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[36]. In this regard, once empathic understanding is induced experimentally, children show equal helping intentions toward both groups, regardless of the recipient's need level or children's own perspective-taking skills[23]. A different manipulation, such as making a common identity salient, reduced negative intergroup attitudes among both Jewish and Arab children. In contrast, emphasizing ingroup or outgroup identities had different effects, as majority (Jewish) and minority (Arab) children responded differently when group boundaries were highlighted[37]. Overall, the findings indicate that intergroup attitudes in childhood are influenced by how social identities are framed.

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 affects expectations about future reciprocation[10,38,39]. 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[40,41]. And indeed, 5-year-olds expect ingroup members to share with them, compared to an outgroup[42], 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[43]. However, recent research highlights important boundary conditions. When reciprocity involves real risk, as in trust-based economic games, young children sometimes show no ingroup bias and trusted ingroup and outgroup partners equally to reciprocate investments or to act generously, despite exhibiting clear ingroup preferences in their social evaluations[44]. Moreover, although children expect group members to adhere to collective norms, they approve of norm violations when those norms are unfair – for example, when they disadvantage another group[45] – and they increasingly evaluate egalitarian resource distributions as more morally virtuous than ingroup favoritism across development[46]. Together, these findings suggest that although reciprocity expectations initially support parochial prosociality, concerns about fairness and cooperative efficiency can override group boundaries, especially when children face genuine uncertainty or moral trade-offs.

Reputation management: Concern with reputation is also regarded as one of the driving forces in maintaining group cohesion and loyalty[40]. Recent findings suggest that children's prosocial acts may be driven more by concerns about reputation than commitment to fairness[47]. 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[48,49].

Research Gaps

Although recent research has made important progress, several gaps remain in understanding how group membership shapes young children's prosocial behavior. First, future work needs to examine a wider range of social groups. Children interact with groups that differ in many ways, such as familiar versus unfamiliar, personally meaningful versus less relevant, positively versus negatively viewed, and groups perceived as fixed and "natural" versus those seen as flexible. To better understand how these distinctions shape behavior, it will be important to more directly study prosocial behavior toward real-world groups such as racial and ethnic groups[19]. Second, much of our current evidence comes from Western, industrialized societies. Studies with children from diverse cultural settings, varying in how much they value group loyalty, fairness, reputation, and cooperation, are essential for understanding which patterns are universal and which depend on social norms[50]. Third, most developmental work has focused on sharing tasks. A fuller picture requires comparing multiple types of prosocial action, such as helping, cooperating on joint goals, and enforcing rules in group-relevant ways. Finally, systematic comparisons across age groups are needed to clarify how biases change over development and how early predispositions interact with children's experiences in families, schools, and communities. Together, these directions will help explain not only when group biases emerge, but also how they can be reduced.

Conclusions

Despite ongoing questions, a clear picture is emerging regarding young children's prosociality in intergroup contexts. From a young age, children do not treat all others equally. They often act more kindly and generously toward members of their own group, even when group boundaries are newly created, and may at times behave unfairly toward children from other groups. In that sense, children are not simply selfish, but rather "group-minded". Multiple developmental processes contribute to these tendencies, including children's growing sense of belonging to social groups, their beliefs about who will return favors, and their concern for how others view them. At the same time, children's fairness concerns and responses to others' needs can limit or override group preferences. Although such early biases align with evolutionary perspectives on human cooperation, cultural environments play a powerful role in shaping whether these tendencies are strengthened or reduced. Societies define which group distinctions matter, how important loyalty is, and what counts as fair or cooperative behavior. Thus, children's prosocial biases are not fixed, but develop in response to the social worlds they inhabit.

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 for how 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 social identification, expectations of reciprocity, and reputation onto a much broader social circle.

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Prosocial Development Across the Lifespan

Stuart I. Hammond, PhD, Emma M. Grant, PhD Student, Ariana I. Furlong, PhD Student

School of Psychology, University of Ottawa, Canada

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Introduction

Prosocial behaviours are defined as voluntary acts intended to benefit others.[1] Prosocial acts include caring, helping, sharing, and informing,[2,3] and emerge early in life, even before babies begin to crawl.[4–7] As we grow up, our prosocial behaviours reach a wider group of people, from peers at school in childhood and to wider communities in adolescence and adulthood, and take new forms within social organizations such as classrooms, workplaces, and broader communities in person and online.[8,9] Prosocial behaviours circle back towards care for families and future generations in old age. In our review, we also briefly examine prosocial behaviour through computer-mediated interaction (e.g., through social media).

Problem

Prosocial behaviours are woven into all aspects of life (e.g., childcare, relationships, work). That means that prosocial development is influenced by biological features (e.g., human infants' prolonged need for care), socialization practices (e.g., parenting), and socio-cultural institutions (e.g., school). Prosocial behaviours can also occur in routine (e.g., holding a door open for someone) and extraordinary contexts (e.g., bystander intervention after a car accident). Nevertheless, the overall theme of prosocial behaviours is simple: prosocial behaviours contribute to our individual and collective wellbeing.[10]

Key Research Questions

Research on prosocial behaviour uses a variety of research methods, including naturalistic methods such as observation and interviews, and experimental methods, including innovative technologies[11] and genetics.[12] An overarching research tension in the field lies in the conceptualization of prosocial behaviour. Some researchers view prosocial behaviour as a routine aspect of human life (e.g., participating and collaborating with others) likely sustained by a variety of motives,[13] and others focus on prosocial behaviour as a form of bystander

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intervention (e.g., problem solving), which is more likely to have moral or altruistic motives.[14] From these tensions stem key research questions:

1. The motives of prosocial behaviour: Is prosocial behaviour a morally motivated act, or can it also be sustained by other motives such as interest in social interaction and personal fulfilment?[13,15] This is an important research question in the study of early infancy, and has important policy implications for issues such as volunteering.
2. Universal and culturally-distinct forms of prosocial behaviour: How can the universal aspects of prosocial behaviour, such as caring, helping, informing, and sharing which are seen across cultures (and even across species), be reconciled with powerful cultural influences which impact relative valuing and even timing of prosocial behaviours?[16] In general, Western cultures have shifted prosocial behaviours and community participation until later in the lifespan (e.g., support and caregiving for the family and volunteering in the community is not expected until adolescence, and is often elective).[17]
3. Gender and prosocial behaviour: Although males and females show a full range of prosocial behaviours, why do females tend to engage in more comforting behaviours, and males in riskier helping behaviours?[18] These findings reflect a larger debate on the biology and socialization of gender, however, at both a research and policy level, the importance of caregiving as a prosocial behaviour that is central to human survival is often undervalued.

Recent Research Results

a) Infancy and toddlerhood: Being cared for and learning to care

Babies begin to act in helpful ways early in life (by about 4-6 months) in the context of being cared for by others.[5,19,20] For example, a baby may hold their own bottle when bottle fed, or arch their back when a parent comes to pick them up, both of which are helpful for parents. Biologically, human infants remain in a period of dependency for longer than most mammals, whereby many social experiences (i.e., being held, fed, changed) are common across human societies, and may shape early prosocial responsiveness in similar ways.[21,22] In this period of dependency, infants respond to others' positive and negative emotions, a form of empathy relevant to comforting others.[23,24] Infants' prosocial behaviour becomes more impactful as they learn to crawl and walk.[25,26] Infants begin to get involved in routines and chores in the home, and become capable of intervening in problems, such as informing another of an unseen event or

helping by picking up an out-of-reach object, or what is called bystander intervention in social psychology. Toddlers' helping is not always very helpful to parents, leading to 'unhelpful helping', and parents may seek to discourage or redirect their children (e.g., having a toddler use a toy broom or vacuum).[27] However, in many Indigenous-heritage cultures, unhelpful helping is encouraged and shaped as valued community participation.[17,28,29]

b) Childhood: Reflecting on right and wrong and going to school

As children become more sophisticated in thinking about their own and others' actions, children's prosocial behaviour becomes more complex.[10,30,31] Through their expanding social circle at school and outside the home, children are exposed to wider cultural expectations around preventing harm, promoting fairness, group membership, and ensuring the needs of others.[32] As a result, children may engage in prosocial lying because they value protecting someone's feelings, or, in some cultures, to appear modest.[33] Similarly, children also learn to appreciate that necessary harm, such as pulling someone off an unsafe play structure, may lead to a greater good.[34] Social context also influences children's prosocial behaviours, with certain contexts even promoting prosociality through acts of omission, such as choosing to be quiet during class.[8] Some examples of this can be children choosing to help others to maintain an altruistic public image or in an effort to encourage reciprocal helping from their peers.[35]

c) Adolescence and emerging adulthood: Volunteering and identity

Prosocial behaviour tends to change in early adolescence as individuals become more socially independent.[36] Participating with peers in church groups, playing team sports, and involvement in school and extracurricular clubs requires a maintenance of prosocial activity over time.[37] Other forms of planned prosocial behaviour, such as volunteering and civic engagement, allow adolescents to strengthen their communities, and contribute to a sense of agency that one's prosocial acts can make a difference in the lives of others.[38,39] Prosocial behaviour can also be made compulsory, and school-based community service initiatives in high schools are designed to foster lasting civic and prosocial engagement.[40] Institutional transitions occurring in late adolescence and emerging adulthood, for instance, the transition from high school to university, produce a return to elective volunteer engagement,[40,41] which may be motivated by self- and other-oriented goals.[13,42] Prosocial engagement in adolescence and emerging adulthood contributes to personal, social, and moral development,[43] well-being and purpose,[44–46] and is linked to other forms of civic engagement, including voting, social activism, and future

volunteering.[39,47]

d) Adulthood and beyond: Future generations and moral exemplars

Adults engage in prosocial behaviour at and through work and in their lives in their communities. Although work itself is compensated, interactions with customers and co-workers are opportunities for kindness and assistance to others. The selection of careers can also reflect prosocial goals, such as with recognized helping professions (e.g., nurses, teachers) and also careers such as running for public office that can reflect engagement and civic beliefs. An adult's level of formal and informal political engagement is also reflective of prosocial orientation.[48] The sustained period of adult life allows for exceptional individuals to become moral exemplars, and for individuals to demonstrate heroic sacrifice.[14] Prosocial activism (e.g., protesting an unjust law) can be disruptive to social norms and costly to the individuals performing it,[49] reflecting the complex nature of prosocial behaviour.

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. Older adults may return to volunteering after retirement,[50] and grandparents also serve a caregiving role.[51] In old age, as in infancy, the average person will require more care, closing the loop on prosocial development across the lifespan.

e) The role of technology: Prosocial behaviour is online

There is a great deal of concern that emerging technologies negatively impact human life, including prosocial behaviours, yet prosocial behaviour is widely present online.[52,53] People routinely show care and support on social media and other online platforms to both friends and strangers, and this form of prosocial engagement is particularly prevalent among youth.[54] Social media platforms have supported prosocial behaviours such as activism and donation campaigns and allowed for virtual volunteering during the COVID-19 pandemic.[9,54,55] Furthermore, technology has affordances, such as its relative permanency and extended reach, which means that prosocial behaviours such as an informative post or video can be accessed across geographic distances or later in time.

Implications for Parents, Services and Policy

Prosocial behaviours support life in society, offline and online, and parents and teachers have an important role in promoting prosocial development.[8,56] Infancy is an important period for the emergence of prosocial behaviours.[4,6,19] Infants and young children show empathy for others and they may also take part in prosocial acts, such as chores, for interest and fun.[23,29] Over time, these motives can become transformed into personal and moral motives, as children learn to identify themselves as helping individuals, and come to care about the recipients of these behaviours.[10] In general, these intrinsic motivation for prosocial behaviours (through values, interests, social bonds) will be more stable foundations than extrinsic motives over time.[13,42] Children's prosocial behaviours such as sharing resources can coexist with favouritism, such as to family and in-groups, so as parents and educators encourage sharing of resources, they can also address biases.[32]

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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.

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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

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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.

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Prosocial Behaviour and Schooling

Kathryn Wentzel, PhD

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

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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.

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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

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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

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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.

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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

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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]

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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.

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