

Development of prosociality and the effects of adversity

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Abstract

Understanding how children become kind and caring prosocial adults matters for the survival and thriving of humanity. However, adversity can impact children's prosocial potential in multifaceted ways. In this Review, we provide critical insights into how humans become prosocial from a developmental-relational perspective. We begin by discussing central factors underlying the development of prosociality in children. Next, we summarize research on the effects of adversity on prosocial development, including the effects of exposure to traumatic life events and everyday hurts and stressors, as well as protective factors that help children to find, remain on, or return to a prosocial path. Then we discuss interventions to nurture prosociality from an early age in every individual, emphasizing the role of practices of care to create positive change at community levels. Finally, we make recommendations for future research.

Sections


Introduction

Typical prosocial development

The effect of adversity

Nurturing prosociality

Summary and future directions

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Introduction

Cumulative evidence suggests that children show exceptional potential for kindness and care, or prosociality, from a young age. This early positive potential is important because prosociality influences well-being, social harmony and peace positively at the individual, community and global level. For example, at the individual level, being prosocial is associated with higher well-being, with modest effect sizes^{1–3}. At the community and global levels, prosociality can help to nurture inclusivity^{4,5}, empathic sensitivity and ethical awareness for all humans⁶. An understanding of how humans can become caring and kind is therefore needed to reduce conflict and crisis in the world, to stimulate the mutual thriving of people and the natural world, and to help humankind to reach its potential. Current social-economic and ecological crises and the largely unused potential of humans to become kind and cooperative make this topic timely and timeless.

Prosociality encompasses the many ways individuals show care and act to benefit others⁷. Caring, in its essential sense, means helping another person to grow and actualize themselves⁸. Prosociality includes behaviours and actions (such as helping, comforting or cooperating) and prosocial emotions and cognitions^{9,10} (Fig. 1). Prosocial behaviours can be motivated by other-oriented goals such as concern for another's well-being or self-oriented goals such as avoidance of feeling guilt or shame, a desire for recognition, reciprocity or survival¹⁰. For instance, altruism specifically reflects unselfish prosocial behaviour that is motivated by other-oriented goals with no expectation of reciprocity or personal benefit¹¹. Kindness – another specific prosocial virtue – transcends self-orientedness and is considered to reflect true concern towards others and/or the self¹². Prosocial emotions are other-oriented emotions, such as empathy for others, gratitude and respect¹². Prosocial cognitions refer to other-oriented thoughts and reasoning, such as the ability to recognize and reflect upon the perspectives of others⁹. Notably, in some cases, prosocial emotions and cognitions are considered motivators of prosocial behaviours¹³. We consider prosocial emotions and cognitions within the construct of prosociality because they reflect an underlying capacity to care for and about others.

We consider the development of children's prosociality within a holistic, relational-development 'web of care' framework, occurring in and through caring relationships with others and in continuous interactions between humans, non-humans and the natural environment (Fig. 2). This framework aligns with elements of Bronfenbrenner's bioecological framework by considering development as a series of nested processes, whereby relationships and environments influence a child's development both directly and indirectly¹⁴. However, it diverges and extends from the original framework by integrating our own theorizing and research about prosociality and its development through nurturing and caring relationships across the lifespan¹⁵. We emphasize the specific self-reflective and relational processes that have been implicated in prosocial development, including concepts of an awareness of the interrelatedness of the self and others, caring relationships and caring communities^{9,12,16}. Experiencing caring relationships can support human understanding of abstract and broad concepts such as love, harmony and camaraderie by highlighting similarities between the self and others, which enables authentic exchange between individuals who care for each other¹⁷. As such, deep relationships can help humans to find meaning in life by showing them that other humans care about them the way they are through their lived interactions¹⁷. These caring and close human relationships are embedded into the natural world^{12,18}: humans' affinity for nature and life is fundamental^{19,20}. The

human ecosystem includes interdependent relations with all living and nonliving entities and continuously changes depending on the quality of those connections²¹. Finally, the framework references processes of change and growth as part of the cosmos^{22,23}, which captures the notion that humans are embedded within physical elements of the cosmos (such as the celestial entities of planets and stars), as well as spiritual elements of the cosmos (such as an appreciation of the beauty and vastness of the Universe)^{22,23}.

In this Review, we synthesize research on prosociality focusing on the first two decades of human life. We start by providing a selective overview of the central environmental, psychological and genetic factors that underlie the development of prosociality. Next, we describe how prosociality can be impacted by adverse experiences (such as trauma-related conflict or chronic stress), as well as positive relationships and inner capacities that buffer against the potential negative effects of exposure to adversity. From knowledge about risk and protective factors for prosocial growth, we subsequently summarize how prosociality can be nurtured in children and adolescents. We conclude with future directions for research on the development and enhancement of human prosociality.

Our narrative review synthesizes the diverse and broad literature on prosociality using our holistic, relational-development framework to integrate and situate foundational and cutting-edge advances on the topic of prosociality. We focus on prosociality between infancy and adolescence, given that prosociality emerges early and exhibits marked growth and change across these developmental periods. We reference the following developmental categories when discussing findings: infancy (0–1 year of age), toddler (1–2 years of age), early childhood (3–5 years of age), middle childhood (6–11 years of age), and adolescence (12–20 years of age).

Typical prosocial development

We consider the typical development of prosociality from infancy to adolescence. To provide further context for the nature of this development, we describe the central environmental, psychological and genetic factors that contribute to prosociality. This provides a foundation for examining the effect of adversity on prosociality. Notably, adversities often reflect harmful examples of several of the environmental factors we discuss here, such as relationship conflict, caregiver psychopathology and neglect.

Prosociality develops in quality and quantity from infancy to adolescence (Fig. 3). Children begin to express and show care towards others from an early age. Prosocial emotions, cognitions and behaviours emerge early and typically first occur as precursors that are limited in quality and quantity. As early as 3 months of age, infants exhibit concern for distressed others²⁴. Toddlers tend to engage in basic forms of prosocial behaviour, including instrumental helping, comforting and sharing²⁵. More complex emotions and behaviours reflecting empathic concern and an understanding of the needs and emotions of others develop and increase markedly from infancy to middle childhood, with increases in displays of concern, empathy, guilt, and of comforting and helping behaviours in response to others' needs^{25–29}. Longitudinal evidence suggests that prosocial behaviour tends to stabilize or even decline from middle childhood to adolescence^{30,31}. However, prosocial emotions and motives continue to become increasingly sophisticated during this period, and come to incorporate abstract concepts such as respect and compassion, resulting in increased engagement in prosocial behaviours such as volunteering, donating and civic engagement^{30–32}. There is tremendous variability in individual development of

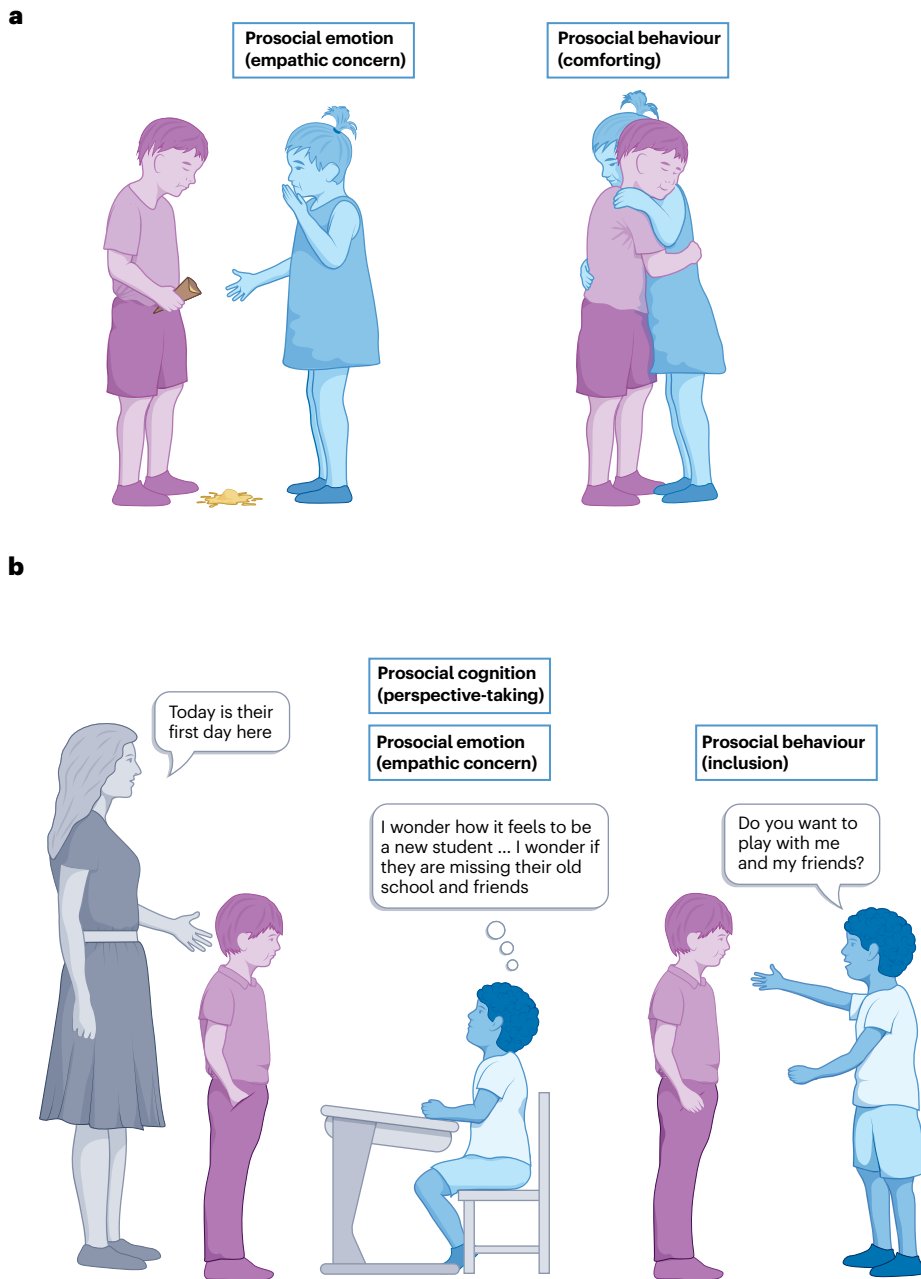


Fig. 1 | Examples of prosociality in peer relationships. **a**, A child (pink) drops their ice cream and another child (blue) exhibits the prosocial emotion of empathic concern and the prosocial behaviour of comforting by giving them a hug. **b**, A child (pink) is new to school and another child (blue) exhibits the prosocial cognition of perspective-taking, the prosocial emotion of empathic concern, and the prosocial behaviour of inclusion by inviting the child to participate in their play activities. These situations demonstrate how prosocial emotions, cognitions and behaviours can occur in the context of caring relationships and caring individuals.

prosocial behaviour, prosocial emotions and prosocial cognitions^{9,33}. We review the key environmental, psychological and genetic factors implicated in prosocial development.

Environmental factors

Prosocial development is a highly socialized process that interacts with the natural environment and an individual's unique caring communities and relationships (Fig. 2). The notion of interconnectedness between humans and the non-human or 'more-than-human' is a core tenet of many Indigenous worldviews and pedagogies^{34,35}. Interactions with the environment have the potential to be caring or uncaring, but

empirical research about children and non-human caring interactions is limited. Indigenous research methodologies suggest that land-based learning – which often incorporate notions of the importance of caring interactions with the more-than-human environment – has profound benefits for children's physical, emotional, intellectual and spiritual well-being^{35,36}. As other non-human entities such as artificial intelligence and social robots evolve, their use will have ethical implications for caring relationships and healthy development³⁷.

The web of influences from relational-contextual factors also strongly alter the development of prosociality. Relationships and contexts – including but not limited to caregiver, sibling, friend

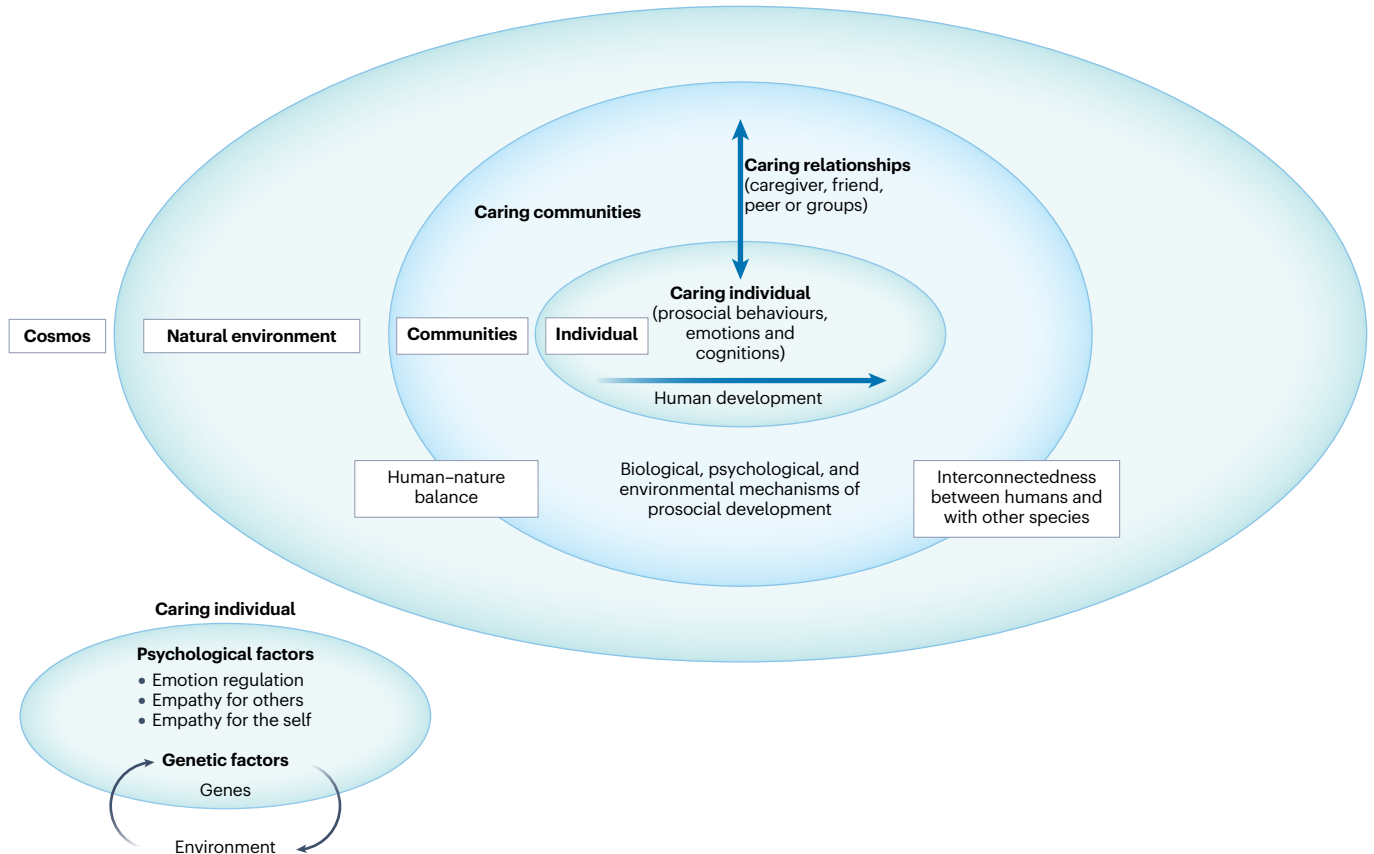


Fig. 2 | The web of care. This framework depicts a holistic, relational-developmental approach to human prosociality. The central oval reflects the individual level, which includes prosocial behaviours, emotions and cognitions that change across human development as well as psychological and genetic factors (see inset). The second oval reflects the community level, which includes

caring communities and relationships between the individual and others (including caregivers, friends, peers and groups). The third oval reflects the natural environment level, including interactions between humans and nature and humans and other species. Beyond the third oval is the cosmos, reflecting relationships between humans and the broader world.

and peer relationships, early care and education environments, and caring communities – act as important socialization agents throughout the child’s development^{38–41}. Experiencing and developing prosociality in relationships has the potential to synthesize the basic human needs for relatedness and agency in a manner that does not deny the uniqueness of each individual, including their specific needs and strengths⁴². Given that the caregiver–child relationship and attachment formation is central to child prosociality⁴³, we focus mainly on this context. More positive caregiving behaviours, including caregiver warmth, sensitivity and involvement, are consistently associated with higher subsequent prosocial behaviours exhibited by the child through childhood and adolescence^{44–47}. The way caregivers communicate with children also heavily influences prosocial development. For instance, caregiver–child conversations about refugee children are associated with children’s prosociality towards refugees⁴⁸. Importantly, children have an active role in influencing the type of socialization they receive or contributing to the effects of different relationship experiences. For example, in a study of 6-year-old and 10-year-old children, the positive association between parental warmth and child prosocial behaviours was even stronger when children had better emotion-regulation skills⁴⁹. Thus, environmental factors – especially supportiveness in

early caregiver–child relationships – promote prosociality throughout development.

Psychological factors

Three critical individual psychological factors underlying the development of prosociality are emotion regulation, empathy for others and empathy for the self. These factors are conceptualized as part of the individual level in our web-of-care framework (Fig. 2).

Emotion regulation, or the capacity to manage the expression, occurrence and intensity of one’s emotions, underlies the emergence and development of prosociality⁷. From infancy to early childhood, emotion regulation transitions from an externally guided process (by caregivers who act as co-regulators for their infants) to an increasingly internally guided process⁵⁰. Longitudinal evidence shows that more successful earlier emotion regulation predicts higher subsequent prosocial behaviours in early childhood⁵¹, middle childhood^{52,53}, and adolescence⁵⁴. The accumulating research in this area suggests that ‘helping oneself helps others’ because the ability to manage and respond to one’s own emotions at the psychological and autonomic levels can nurture the propensity to engage with others in a caring manner^{55,56}.

Empathy for others, or the capacity to vicariously feel the needs, pain or distress of others, is an essential factor that underlies prosociality and motivates other-oriented behaviours⁵⁷. The emotional component of empathy for others develops in infancy, with infants showing a strong connection with the emotions of others. For example, babies often cry when others cry – a phenomenon referred to as emotional contagion or reflexive crying that is considered an early step in the development of prosociality¹³. Notably, infants as young as 3 months old are capable of experiencing self-distress and concern in response to others' distress²⁴. Infants also engage in instrumental helping²⁵, and there is some indication that they weigh basic costs and benefits when engaging in basic helping behaviours, being more likely to engage in instrumental helping when the cost is lower to them⁵⁸. Behaviours reflecting empathic concern increase from infancy to toddlerhood²⁵, and toddlers show increases in their displays of concerned expressions and prosocial comforting in response to others' distress^{27,29}. However, toddlers are still less likely to engage in prosocial behaviours that are costly versus those that are non-costly at this age²⁵. The cognitive component of empathy for others, whereby children increasingly recognize the underlying cause of another's emotions, needs and desires, emerges during early childhood⁵⁹. Perspective taking is a cognitive component of empathy because it involves the capacity to consider the thoughts, emotions and needs of other people. Perspective taking develops around the age of 4 or 5 years, and its emergence facilitates more empathic, other-focused concern that in turn supports increases in complexity of prosocial behaviours in early childhood and into middle childhood^{59,60}. Along with perspective taking come improvements in other areas of cognitive development related to more complex understanding of abstract concepts of reciprocity, equity and fairness, which could explain in part why children begin to engage in more costly prosocial behaviours during this time^{59,61}.

Empathy for others and prosocial behaviours continue to be related during adolescence, and this relationship might become increasingly bidirectional in nature. In a study spanning five years during early adolescence, a bidirectional relationship was found between higher empathy and higher prosocial behaviours⁶². Prosocial behaviour might provide social feedback and opportunities to

engage in empathic-related processes that promote future empathy⁶². Furthermore, higher empathy is also associated with increases in prosocial behaviour over time⁶³. Thus, empathy for others might grow in a positive-feedback loop with prosocial behaviour.

Empathy for the self encapsulates self-oriented social-emotional capacities that involve gentleness toward one's own limitations, recognition of the needs of the vulnerable parts of the self, and attempts to repair and heal one's own transgressions and wounds^{12,15}. We conceptualize self-conscious emotions, such as feelings of healthy guilt, as reflecting an underlying empathy for the self because they involve a recognition that one has not behaved in a manner consistent with one's standards for oneself, often guided by principles of compassion¹⁵. The foundations of self-oriented social-emotional capacities emerge in infancy and toddlerhood through the development of a rudimentary sense of self, as indexed by the ability to recognize oneself in a mirror, which typically occurs around 18 months of age⁶⁴. Precursors of healthy guilt are thought to emerge during toddlerhood, as evidenced by toddlers' tendency to show bodily tension, negative affect or to look away in response to wrongdoing⁶⁵. However, self-oriented capacities that truly reflect empathy for the self and ethical guilt are not thought to truly emerge until early childhood, around the age of 3 or 4 years⁶⁶. At this time, children begin to report sadness over wrongdoing and ethical pride, which can motivate prosocial behaviours such as reparative behaviours and future kind actions^{10,66}. For example, in a 6-year-long longitudinal study spanning middle childhood and adolescence, children who showed higher sadness over wrongdoing showed greater increases in prosocial behaviour regardless of their empathy for others⁶⁷. By contrast, children with lower sadness over wrongdoing only showed increases in prosocial behaviour if they also had higher empathy for others⁶⁷. Thus, empathy for the self might function as an early foundation for prosociality, and empathy for others and the self might work as compensatory mechanisms in the development of prosociality.

Therefore, the existing literature highlights that emotion regulation, empathy for others and empathy for the self are important psychological factors underpinning prosociality. These psychological factors emerge early in life, and as they mature over time, help to

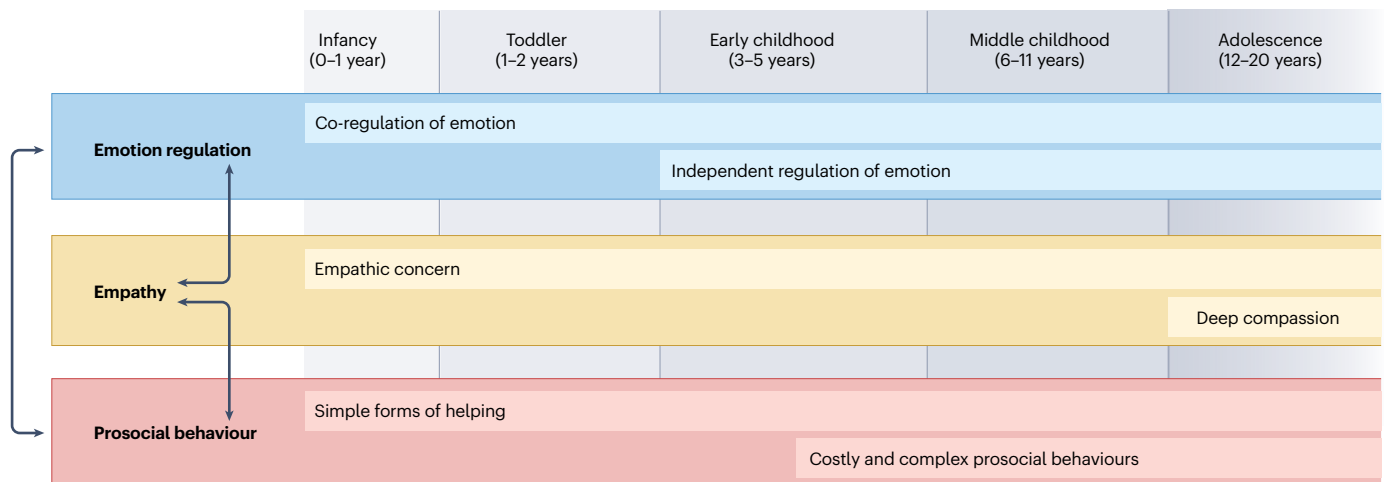


Fig. 3 | Development of prosociality. The prosocial domains of emotion regulation (blue), empathy (yellow) and prosocial behaviour (red) develop from infancy to adolescence. From infancy through adolescence, components

of emotion regulation, empathy and prosocial behaviour grow qualitatively (from simplicity to increasing complexity and maturation) and quantitatively (from single to multiple capacities within each domain).

shape the emergence of increasingly complex prosocial behaviours, emotions and cognitions.

Genetic factors

Genetic factors are also conceptualized as part of the individual level in our web-of-care framework. There is a marked genetic basis to prosociality⁶⁸. For example, twin studies have demonstrated that monozygotic twins (who share approximately 100% of their genetic makeup) show greater similarities in prosociality than dizygotic twins (who share approximately half of their genetic makeup)⁶⁹. Similarly, biologically related siblings who live together have a greater overlap in prosociality than do half-siblings who also live together⁷⁰. Early personality characteristics – which are largely considered to be heritable – have also been tied to individual differences in prosociality⁷¹. For example, agreeableness is a trait that refers to an individual's general disposition to form and maintain caring relationships with others, and has been associated with higher prosociality throughout childhood and adolescence^{72,73}. As much as 35% of the phenotypic variance in agreeableness has been explained by genetic factors⁷⁴.

Rather than nature and nurture having distinct effects, growing evidence illustrates a more complex gene–environment interplay in the development of prosociality. The effect of genetics in explaining individual differences in prosociality seems to increase with age, whereas the effect of shared environment (aspects of the environment that multiple family members experience, such as exposure to family conflict or poverty) seems to decrease. For instance, one study found that the heritability of prosociality increased from 31% to 61% from early to middle childhood⁷⁵. Another aspect of this complexity is that a certain gene (the dopamine receptor D4 (*DRD4*) 7-repeat allele) has been shown to interact with positive parenting in early childhood such that children with mothers who engage in more positive parenting showed higher prosocial behaviour, but only if they carried that gene⁷⁶. In middle childhood, children with secure attachment styles show higher prosocial behaviour only if they carried that gene⁷⁷. Thus, there is evidence of gene-by-environment interplay, whereby genetics impact children's susceptibility to different rearing environments.

Typical prosocial development unfolds with increasing nuance from infancy to adolescence (Fig. 3). Environmental, psychological and genetic factors that are part of a nested web of care (Fig. 2) underlie this developmental process. The body of research suggests that these factors exert direct influences and also interact with each other and other factors to shape the emergence and trajectories of prosocial capacities over time.

The effect of adversity

Adversity encapsulates challenging experiences or circumstances that have implications for human prosocial development. In line with the web-of-care framework (Fig. 2), adversities might include challenges that occur within relationships (such as abuse, neglect and caregiver psychopathology) and communities (such as community violence, poverty and war-related trauma). We focus on several different forms of adversity, including more severe forms of trauma and exposure to violence (such as war and conflict), maltreatment, and child abuse and neglect. Chronic stressors – such as being a member of a minority or marginalized group – and acute or transient stressors – such as relationship conflicts or caregiver mental health issues and parenting stress – are also considered. We chose to focus on these forms of adversity because they are commonly experienced by children around the world and they reflect a diversity of experiences that can range in severity

and chronicity. We highlight the empirical evidence and theoretical discussion regarding the complex link between early adversity and prosociality and several key capacities that have been identified as protective in contexts of adversity.

Associations between adversity and prosociality

Much of the empirical evidence examining the effects of early adversity focuses on internalizing and externalizing behaviours, with relatively less attention given to prosocial behaviours. In general, early adversity tends to be associated with mental health risks, including heightened aggression, risk for anti-social outcomes, and internalizing symptoms in childhood and adolescence^{78–80}. Showing parallels with this pattern of results, childhood adversity is sometimes associated with lower prosocial behaviour. For example, two studies found associations between higher war-related adversity and lower prosocial behaviour in middle childhood among Croatian children and Syrian refugees^{81,82}. However, in other work, no association or the reverse association has been shown between adversity and prosocial outcomes. For instance, one meta-analytic review focused on adults aged 18 and older and showed null associations between acute everyday stressors and prosocial behaviours⁸³. Another study focusing on more severe trauma experiences found no association between war-related adversity and prosocial behaviour among Palestinian adolescents⁸⁴. In other cases, adolescents who experience adversity have been found to show higher prosocial behaviour. For example, experiences of discrimination in school were associated with higher prosocial behaviours among Black male adolescents⁸⁵. Thus, emerging evidence suggests that adversity has multiple effects on prosociality, with adversity sometimes being associated with higher or lower inclinations toward prosociality, and sometimes not being associated at all.

In certain instances, adversity might act to impede prosociality owing to activation of the fight-or-flight response and the need to maximize survival by acting in a self-interested manner⁵¹. In other cases, adversity might encourage a tend-and-befriend response, whereby stress promotes an increase in cooperation, social cohesion and support⁵¹. In such contexts, in which even severe trauma acts to foster other-oriented tendencies such as empathy for others, early adversity is theorized to facilitate 'altruism born of suffering' by helping individuals to understand better how to orient towards and feel compassion for the needs of others^{86,87}. Limited empirical work has examined the altruism-born-of-suffering hypothesis in childhood and adolescence. However, several studies show associations between experiences of discrimination and higher empathy and prosocial behaviour in adolescent samples^{88–90}. For instance, one study found positive associations between adolescent experiences of discrimination and prosocial behaviour, and that higher prosocial behaviour mediates the association between adolescents' experiences of discrimination and their higher life satisfaction, higher self-esteem and lower loneliness⁸⁸. Empirical evidence for the altruism-born-of-suffering hypothesis in early and middle childhood seems to be more mixed. For example, among Syrian refugee children aged 5 to 12 years, higher traumatic life stress was associated with lower prosocial behaviour and this association was mediated by lower levels of trust⁸². In another study of 12-year-old to 15-year-old children, higher war-related adversity was associated with lower prosocial behaviour, but only when parents showed more negative parenting styles⁸¹. Thus, the protective link between adversity and higher prosocial behaviour might be eroded in the presence of additional risk factors or mechanisms, such as reductions in children's trust or lack of supportive relationships. This work suggests that challenges

in individual and community factors (Fig. 2) might be particularly detrimental when they occur in contexts of adversity.

Sources of heterogeneity

Ambiguity remains regarding whether and when exposure to adversity, including stress and trauma, increases or decreases prosociality in childhood and adolescence, or whether there is any association at all. The existing body of evidence paints a complex picture. How adversity is associated with prosociality probably depends in part on the individual's experiences (such as the type of adversity experienced and its timing) and capabilities (including emotion regulation capabilities, and meaning-making or coping capabilities), relationship factors (such as the presence of supportive relationships), and community factors (such as the availability of high-quality and affordable child care and early years programming)⁹¹. Notably, these examples align with elements highlighted in the web-of-care framework (Fig. 2), illustrating that factors that promote prosociality in typical contexts might also reflect protective factors in contexts of adversity. Inconsistencies in the effects of adversity on prosocial development also highlight the possible presence of protective factors that buffer against the detrimental effects on positive development⁹².

The existing literature on the role of the developmental timing of adverse experiences is somewhat inconsistent and rarely includes prosociality as an outcome of interest. Work examining the effects of very early maternal deprivation and institutionalization reveals more substantial risk for negative functioning (as assessed by future psychopathology) among those who experience severe deprivation and omissions of care earlier in development (during infancy and early childhood rather than during later periods of development) probably linked to brain development^{93,94}. However, a meta-analysis revealed no evidence of consistent sensitive developmental periods for increased risk for future psychopathology⁹⁵. We identified one study that examines the effects of developmental timing of adverse experiences on prosociality. This study found no association between the timing of adverse childhood experiences (assessed at 10 years of age, 15 years of age, and currently) for a sample of 16-year-olds to 18-year-olds⁹⁶. Given the inconsistent findings and limited work with a focus on prosocial outcomes, further research on the effects of developmental timing of adversity is warranted.

Indeed, the presence of caring individual and caring relationship factors as identified in the web-of-care framework (Fig. 2) might counteract the negative effects of adversity on a human's potential to become caring and kind. For example, exposure to positive experiences, such as having a reliable, caring adult figure in one's life, might be powerful enough to buffer or even offset the negative effects of adversity on a child's capacity to care and become kind toward others and the self^{66,97}.

Individual capacities such as the ability to orient towards others and react physiologically to needy others might help to nurture prosocial behaviours because they support important underpinnings of prosociality, such as empathy and emotion regulation. For example, an eye-tracking study of children in early and middle childhood revealed that more other-oriented attention compared to self-serving attention was associated with more kind emotions⁹⁸. Further, longitudinal evidence using two samples of children in early and middle childhood also suggests that children's physiological reactivity to ethical transgressions is associated with their empathy for the self (as indexed by healthy guilt) over time in both early and middle childhood⁵⁵. Likewise, character strengths such as courage and bravery, emotion regulation,

and empathy for others might all encourage prosociality amid adverse experiences²². For instance, a study of 5-year-old to 12-year-old Syrian refugee children and their mothers living in Canada tested relations between pre-migratory war-related adversity (such as exposure to violence and family separation), individual capacities, and mental health challenges. Emotion regulation and empathy for others were associated with lower mental health symptoms, and optimism buffered against the positive association between pre-migratory adversity and higher internalizing and externalizing symptoms⁹⁹.

In summary, the existing body of evidence suggests that the association between adversity and prosociality is complex, with adversity sometimes being associated with higher prosociality, sometimes lower prosociality, and sometimes not being associated at all. Notably, research further examining these patterns of heterogeneity highlights that nurturing the environmental and psychological factors that underlie children's emotional well-being could set the tone for healthy prosocial development in contexts of adversity.

Nurturing prosociality

Some scholars speculate that there is infinite human potential for prosociality¹⁰⁰. However, heightened and heightening tensions and aggressions between countries and communities in the world today highlight that prosociality is not universally displayed by all humans. Research-informed efforts to enhance prosociality aim to promote actions and practices that reflect a caring stance toward one another, including careful attention paid to another person, sensitivity to their individual developmental capacities and needs, and the willingness to assume responsibility^{15,16}.

We first provide an overview of the effectiveness of common structured psychological-relational interventions in children and adolescents. Then we turn to our primary focus: relational practices of care to nurture prosociality. Caring relationships are integral to infants' basic needs for safety and security and continue to be integral to relationships throughout development and into adulthood¹⁵.

Prosocial interventions

A range of effective interventions have been developed to facilitate prosocial trajectories in children and adolescents. These include commonly used school-based social-emotional learning programmes, parenting and family interventions, peer-relationship interventions, community-based interventions and peace-building activities^{8,9}. Many of these interventions strive to increase prosociality by targeting the key environmental contexts (such as the school, family and caregivers) and psychological factors (including emotion regulation, empathy for others and empathy for the self) identified above. For example, some interventions focus on providing children with specific opportunities to show care towards others, or to learn to identify and reflect on the feelings and needs of others¹⁰⁰. Other interventions seek to nurture self-oriented and other-oriented social-emotional capacities that underlie prosociality by incorporating reflection and mindfulness-based activities⁹⁸. Beyond the child, some interventions focus on supporting parents and improving parenting behaviours (such as the use of supportive emotion-based dialogue and other-oriented, inductive discipline techniques) and healthy family interactions (such as reducing destructive conflict and improving constructive family conflict)^{101,102}. Prosocial interventions have shown some promise, with evidence of structured interventions improving children and youth's prosocial behaviours spanning early childhood^{97,100,103}, middle childhood¹⁰² and adolescence^{104,105}, including evidence of immediate

short-term^{98,100,102} and longer-term effects (up to 1.5 years later)^{99,101} based on child observation, peer-report and teacher-report of children's engagement in prosocial behaviours (such as helping and sharing) over time.

Intervention approaches that incorporate a focus on building caring relationships within the family seem to be particularly efficacious in supporting prosocial outcomes^{106,107}. For example, the Incredible Years programme is a well established intervention that uses a group-based format to support parents in engaging positively (such as parents' problem-solving skills, emotion regulation and communication) with their children aged 0–12 years using video vignettes and role-play activities¹⁰⁶. The success of these intervention approaches aligns with the role of family and caring relationships underlying the development of prosociality and in moderating the effects of adversity on prosociality.

Notably, although interventions often target factors related to prosociality, such as emotion understanding, emotion regulation and relationship skills, many school-based and family-based interventions primarily index reductions in internalizing and externalizing and mental health outcomes as markers of intervention evaluation, and do not monitor prosocial outcomes⁴³. Intervention studies that include more large-scale screenings and careful assessments of prosocial emotions, cognitions and behaviours at the child, family and community levels might facilitate a better understanding of the diversity of children's needs and prosocial capacities. When implemented more broadly, such tools might inform what kinds of care are needed in a given community to support children's prosocial development. For instance, the consistent use of rigorous social-emotional screening instruments that include measures of prosociality and its psychological underpinnings (such as emotion regulation, empathy for others and empathy for self) might supplement mental health screens to collect information about children's developmental and cultural strengths and needs¹⁰⁸.

Implementing practices of care

Moving beyond structured interventions in specific environments (such as kindergarten or home settings), a newer body of work has emphasized focusing on building practices of care to create sustainable positive change at community levels^{15,16}. At the core of relational care practices is a universal principle that every society retains through caring for the very young: paying attention to a child's needs and applying this capacity in everyday life¹⁰⁹. Paying attention to a child's needs is paramount because thorough observation and recognition of children's needs are required for caregivers to respond in caring ways¹¹⁰. However, paying attention to others' needs can be a costly type of prosocial engagement because it can influence the carer's everyday activities and structures or even their major life plans. Practices of care can also interrupt plans and lives if attention is diverted from one person to another who requires care (perhaps because of a developmental need, vulnerability, or suffering and frailty¹⁶).

Three different patterns of care have been identified¹⁶. The first pattern of care is attentive rehabilitation of the other, or helping someone to repair their situation. Attentive rehabilitative care can occur in numerous types of prosocial behaviours (including helping, comforting and sharing) toward others who are perceived as being in need – these behaviours can reflect an underlying motivation to support the well-being of the needy other^{25,111,112}. The second pattern of care is attentive companionship with and for the other: care that translates into communication, spending time together and being with each other¹⁶. The interaction creates an emotional bond or friendship through predictability, trust and loyalty¹¹³. A reliable, caring adult figure in one's

life (who does not need to be the primary caregiver) can be healing and nurturing for adolescents who are at risk of developing mental health challenges and serve as a protective factor that can help children to foster or maintain resilience amid adversity^{114,115}. Early peer friendships, in which the child is increasingly an active agent and recipient of care, are also important examples of attentive companionship. High-quality friendships among children are often characterized by high levels of prosocial behaviours (such as sharing and helping) and intimacy (such as loyalty and trust)¹¹⁶, reflecting a bidirectional structure of support, attention and care. In fact, empirical work shows links between the presence of high-quality friendships and greater prosocial behaviour in preschoolers¹¹⁷, school-age children¹¹⁸, and adolescents¹¹⁹. Thus, attentive companionship across different relational contexts (such as adult–child, child–child and adolescent–adolescent) supports prosocial development. The third pattern of care is attentive commitment to the other: a deep sense of caring that indicates that the carer has internalized a sense of responsibility and makes a long-term promise to remain involved. In the caregiver–child context, the provision of consistent, sensitive care reflects a commitment and responsibility to support the child's well-being. Attentive commitment relates to broader practices and policies of care because resources need to be in place to make long-term commitments realistic and available. For example, recommendations for parenting interventions at the policy level often include advocating for efforts that support the capacity of caregivers (such as parents, teachers and service providers) to provide consistent care^{120,121}.

The use of participatory-based approaches to intervention, whereby close research–practice partnerships are created and grown, is an important step toward translating research-based knowledge about prosocial development into community settings of care. Participatory approaches use the voices of children and families to directly inform programme adaptation and policy. Attempts to describe children's prosocial capacities, character strengths and existing elements of care at various levels (Fig. 2) can support and complement intervention approaches aimed at supporting prosociality across diverse communities¹²². Community-based evaluative approaches (including surveys, interviews, focus groups and talking circles) can be used to better understand the existing strengths and needs in children and families in different communities of interest. The results of such evaluations can then be directly applied to inform selection, adaptation and implementation of programmes or interventions. A community-based evaluative approach to inform intervention development to promote prosociality and its underlying mechanisms has been used in early childhood¹²³, middle childhood^{124,125} and adolescence¹²⁶. For example, some of these participatory-based approaches apply an 'intervention mapping protocol' in which a series of steps are applied to develop health-promotion programmes through application of past research, theory, and stakeholder and community consultation¹²⁷. By emphasizing community input, community-based evaluative approaches can inform initiatives to use relational practices of care that are tailored to identified strengths and needs to support prosociality in specific communities.

From a developmental lens, the ability to pay attention to others' needs changes across the lifespan and therefore developing practices based in relational care is a lifelong endeavour. This dynamically changing ability requires an understanding of the emergence and development of prosociality and how practices of relational care can nurture a child at a given point in time in a sensitive manner. The way that people express and pay attention to care is also culturally bounded, and the

propensity to attend to caring capacities is therefore embedded in one's cultural meaning system¹²⁸ (Box 1). In sum, attempts to nurture prosociality involve structured intervention programmes at different contextual levels. This work also involves informal approaches and attempts that apply practices of care in the face of vulnerability, frailty and suffering. Such practices should be complemented by careful assessment tools that pay attention to every child's needs and developmental capacities and are most sustainable if embedded in caring communities and policies that reflect such practices.

Summary and future directions

All humans have the potential to be kind and caring, which might be critical for the survival, flourishing and transformation of humanity and the planet. Nurturing prosocial growth in all humans offers the potential to move toward a more empathetic, caring world community, which is essential for humankind's survival and thriving. Ending societal exposure to violence and adversity and creating kinder communities for all children can create the foundations for realizing every child's full prosocial potential because the oppression of children counteracts their prosocial development, cooperative skills and potential to transform violent impulses within themselves.

The environmental, psychological and genetic factors that underlie prosociality provide insights into the relationship experiences and socialization contexts of caring and the degree to which an individual develops prosocial, kind tendencies. Exposure to adversity also has multifaceted but often negative effects on prosocial development.

However, positive experiences and individual strengths and capacities can buffer people against these negative effects. Given that every person is exposed to adversity on some level, this new research angle promises to further the understanding of how humans can overcome challenges and reach their fullest potential through kindness. Future research is needed to understand these protective factors and under which conditions adversity can be transformed into positive growth and help children to become prosocial or maintain caring behaviour. Research–practice partnerships might help to clarify how caring communities can support the prosocial capacities of children even in the face of severe adversity.

Nurturing prosociality might be one of the best long-term strategies to mitigate the effects of violence, cruelty and exclusion because it stimulates benevolent minds and kind hearts. Structured, early psychological-relational intervention approaches aimed at nurturing prosociality at different levels of children's socialization have been widely applied. Yet early interventions might not be sustained, calling for continued care and boosters to maintain and further promote prosociality¹⁵. In addition to more empirical, longitudinal and early intervention research in this area, careful attention should be paid to issues of specificity and commonality when developing interventions across diverse communities (Box 1). Importantly, integrated approaches that identify common, effective principles to nurture prosociality are needed^{10,129}. Implementing relational practices of care at different layers of socialization can contribute to the growth of prosocial mindsets in children.

Box 1 | Tailoring interventions

There are growing calls for culturally appropriate and developmentally tailored interventions to effectively meet the unique needs of every child and community¹³⁰. A thorough description of the many ways prosociality can vary by culture is beyond the scope of this Review. Broadly, differences in cultural processes such as values of individualism versus collectivism, social cohesion and cultural behavioural norms can impact how prosocial tendencies might differ between cultures (for more detailed descriptions of cultural differences in prosociality, see refs. 128,131,132). Here we highlight several examples of how cultural adaptations might be applied to interventions to nurture prosociality in different population groups and communities.

A culturally appropriate intervention considers the specificity of cultural traditions and customs related to nurturing prosocial tendencies. Rather than developing novel interventions from scratch, many efforts aim to adapt and tailor existing evidence-based interventions so that they can better support engagement and improve outcomes among specific cultural and ethnic groups. An illustrative example is a series of cultural adaptations that have been made to parent–child interaction therapy, an intervention designed to support parents in increasing prosocial behaviours and reducing disruptive behaviours in their children aged 2 to 7 years with conduct problems^{133,134}. Cultural adaptation efforts for parent–child interaction therapy include modest, language-based adaptations that primarily involve translating intervention materials into different languages¹³³, moderate adaptations that involve infusing culturally specific examples and content while maintaining core tenets of the

intervention^{134,135}, and more comprehensive adaptations that adjust the content and approach of the intervention^{136,137}.

Notably, it is still unclear whether or how much cultural adaptation is necessary in developmental interventions. In fact, adaptations are not always associated with improved outcomes over and above existing, untailored interventions¹³⁰. However, some culturally adapted interventions are associated with increases in engagement, satisfaction with a programme, and positive developmental outcomes relative to original versions of the intervention, which might have implications for participant buy-in and sustainability in intervention effects^{138,139}. Community engagement strategies have been identified as useful to inform and tailor the development and delivery of such early interventions, especially among racialized communities¹⁴⁰.

At its core, a developmentally tailored approach to intervention considers a child's history, including their specific adverse and positive life experiences (such as forced migration experiences or experiences of abuse)¹⁴¹ along with their unique personal characteristics and potential to become their optimal self¹⁴². Identifying potential protective factors at the individual level might be particularly beneficial when designing or adapting interventions in contexts of adversity given that individual capacities (such as optimism, emotion regulation, empathy and physiological regulation) can be protective factors. As prevention and intervention work that takes a focus on nurturing prosocial outcomes in children expands, the need for developmentally and culturally tailored trainings will also grow. Such efforts could help to maximize the success and effect of efforts across more children and families.

We also highlighted a growing body of work on the role of informal practices of care – such as paying close attention to another’s needs – in nurturing caring children. Such practices are applicable across different contexts and age groups and promise more sustainable interventions. Assessment tools that capture prosociality at the child and community levels might be essential to capture the diversity of children’s latent abilities for prosociality and their unique needs. A deeper understanding of how caring practices can be embedded in caring communities might help to create sustainable conditions that foster the full potential of every child’s prosocial capacity. This understanding can nurture prosocial individuals who care about themselves and others, in turn building peace and creating a kinder society.

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