

Feeling good and feeling thankful:

The role of positive emotions in sustaining early prosocial behavior

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Abstract

Humans rely heavily on their prosocial, cooperative relationships, and prosocial behavior such as helping and sharing emerge remarkably early in human development. However, given that prosocial actions are personally costly without any assured benefits, what motivates even young children to put aside their self-interest and act prosocially? This chapter proposes that human prosocial behavior is sustained in substantial ways by positive emotional processes: the positive affect (or warm glow) one feels when acting prosocially, and the gratitude one feels when one is the recipient of prosocial behavior. The chapter presents evidence that these positive affective mechanisms play a vital role in creating and maintaining cycles of prosociality from early in human ontogeny. Yet, there is still much to learn about the affective bases of early prosocial behavior, which is essential to gaining a full account of human prosociality.

Keywords: prosocial behavior, gratitude, warm glow, positive emotions, child development

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Humans are a tremendously social and cooperative species. These ultra-cooperative tendencies have a long evolutionary history borne out of necessity. Our stone tool-wielding evolutionary ancestors were competing for limited resources with an ever-growing population of potential competitors due to a period of global cooling and drying (Johanson & Edey, 1981; Tomasello, 2018). With increased competition from other species, early humans needed new and adaptive means of competing and obtaining valuable resources. These environmental pressures motivated humans to band together and form interdependent, cooperative relationships to aid in obtaining much of their daily sustenance (Kuhn & Stiner, 2019). Cooperation thus became essential for our early ancestors' survival as it allowed them to accomplish tasks together that they could not achieve alone (Tomasello, 2009). Our ancestors' dependence on these cooperative relationships meant, in turn, the need to act prosocially toward one another by investing in and ensuring the well-being of their cooperative partners (Tomasello, 2009; Vaish & Hepach, 2020). Such cooperation provided substantial long-term benefits, including increasing the chances that one will be helped later in acts of reciprocity and that those whom one helps now will be available as cooperative partners in the future (Tomasello, 2018; Trivers, 1971).

As our cooperative societies grew, social and evolutionary pressures required humans to extend cooperation beyond repeated encounters with known individuals and establish prosocial relationships with new cooperative partners (Boyd & Richerson, 1989; van den Berghe & Alexander, 1988). Thus, early humans began not only to rely on cooperative relationships with known others, such as kin and friends, but also to form relationships with strangers and acquaintances, with whom there was no prior contact or the social connections were only weakly

established (Seyfarth & Cheney, 2012; Tomasello, 2016). This propensity to form cooperative relationships with kin and non-kin facilitated our survival and the evolutionary success of our species (Tomasello, 2016).

Whereas this account helps explain the evolutionary origins of cooperation, however, it does not explain why individuals are motivated to act cooperatively on a proximate level (i.e., within a given interaction and within an individual's lifetime; e.g., Scott-Phillips et al., 2011). After all, the cooperative individual often risks incurring a greater cost (e.g., time, energy, or material resources) than others, who gain the benefits of cooperation but may not invest (as much of) their own resources (Bartlett & DeSteno, 2006a; Krakauer, 2011; Nowak, 2006). This risk is perhaps most evident in cases of prosocial behavior. Prosocial behavior is voluntarily generous behavior intended to benefit another, which can take many forms such as helping, donating, sharing, and comforting (Eisenberg et al., 2016). Given that at the proximate level, prosociality is personally costly for the prosocial actor with no apparent benefit, why would an individual put aside their self-interest and act prosocially? What can sustain such costly tendencies?

One part of the answer may be that natural selection has favored and selected for a wide range of psychological adaptations that help us put aside our selfish interests and invest in our cooperative, interdependent relationships (Bjorklund, 2018; Tooby & Cosmides, 1990; Vaish et al., 2016; Vaish & Hepach, 2020; see too Moore, this *Handbook*, and Witherington & McCready, this *Handbook*). In particular, we have evolved affective mechanisms that motivate and perpetuate prosocial behavior. This view derives from broader functional theories of emotion, according to which emotions are evolved adaptations that motivate us to behave in ways that help us solve challenges of adaptive and social import (Campos et al., 1989; Keltner et al., 2006a; Nesse, 1990). More specifically, an individual's experience of particular emotions

informs the individual about a given situation and motivates them to respond in situationally appropriate ways (Clore & Huntsinger, 2007; Keltner et al., 2006b). For example, the emotion of disgust is elicited by potential contagions as well as social violations and leads to feelings of revulsion, which motivates an individual to avoid or break off contact with the offending entity (Rottman, 2014; Rozin et al., 1987; Tybur et al., 2013).

Drawing from this functional view of emotions, we propose that at the proximate level, affective mechanisms also support and motivate people's prosocial and cooperative behaviors (see, e.g., van Kleef & Lelieveld, 2022). Moreover, and critically for our purposes here, these affective mechanisms appear remarkably early in development and thus motivate even the youngest members of our species to act in a prosocial manner (Bjorklund, 2018; Vaish & Hepach, 2020). Our broad aim in this chapter is to consider what we believe are some of the key affective motivators underlying early prosocial behavior.

More specifically, we are concerned here with motivators that help sustain *cycles of prosociality*. By 'cycles of prosociality,' we mean that one prosocial act is more likely to lead to a second prosocial act, and then a third, and so forth (see, e.g., Kesebir & Diener, 2014, for related discussion of a 'virtuous cycle'). We argue that these cycles can occur both intra-individually as well as inter-individually. At the intra-individual level, an individual who acts prosocially toward others will, as a result, be more likely to act prosocially again in the future (Aknin, Hamlin, et al., 2012). At the inter-individual level, an individual who is on the receiving end of a prosocial act will, as a result, be more likely to act prosocially toward their benefactor (direct reciprocity) and, remarkably, also toward novel individuals, i.e., non-benefactors (upstream reciprocity) (Bartlett et al., 2012; Bartlett & DeSteno, 2006b; Beeler-Duden & Vaish, 2020; DeSteno et al., 2010; Paulus, 2016; Tsang, 2006a, 2007).

There is accumulating evidence for both kinds of prosociality cycles among adults (Aknin, Dunn, et al., 2012; Bartlett et al., 2012; Bartlett & DeSteno, 2006b; DeSteno et al., 2010; Tsang, 2006a, 2007) as well as children (Aknin, Hamlin, et al., 2012; Beeler-Duden & Vaish, 2020; Paulus & Moore, 2017). The puzzle we are trying to resolve is: What motivates each of these cycles of prosociality from early in development? To answer this question, we turn to the positive emotions, because behaviors associated with positive emotions are more likely to be repeated, providing a powerful mechanism that can sustain prosocial behavior (Jones & Skinner, 1939). Specifically, we propose that at the intra-individual level, acting prosocially is intrinsically rewarding and elicits positive affect (a ‘warm glow’) in the prosocial actor, which motivates further prosocial acts. And at the inter-individual level, receiving others’ generosity elicits gratitude, which motivates both direct and upstream reciprocity. Our aim in this chapter, therefore, is to synthesize the evidence for these two affective mechanisms from early in development.

Our claim is certainly not that these are the only two affective mechanisms that underlie (early) prosocial behavior. There is ample evidence for many others, such as sympathy and guilt. Importantly, although these other emotional mechanisms promote prosocial behavior, they do not directly perpetuate the cycles of prosociality that we have laid out above. Because our goal in this chapter is to understand these cycles of prosociality, we will focus on the two key affective processes that we believe perpetuate them. However, we will return to briefly consider other emotional motivators of prosocial behavior at the end of the chapter.

We begin by first briefly reviewing the compelling evidence that prosocial behavior emerges remarkably early in development. We then discuss each cycle of prosociality in turn, describing first the intra-individual and then the inter-individual cycles and providing evidence

for the proposed early emerging affective mechanism that underlies each. We end the chapter with caveats and open questions for future work.

The Early Emergence of Prosocial Behavior

Children readily recognize, approve, and engage in prosocial behavior from remarkably early in development, and these capacities become more sophisticated with age (Svetlova et al., 2010; Warneken & Tomasello, 2013). For example, by 14 to 18 months of age, infants act prosocially by giving up their time and making an effort to engage in instrumental helping (i.e., helping someone achieve an instrumental or action-based goal) (Warneken et al., 2007; Warneken & Tomasello, 2006). In a now classic study by Warneken and Tomasello (2006), young toddlers helped adults complete their goals. With little to no prompting, children helped the experimenter by handing them several out-of-reach objects, stacking books after the adult failed to do so himself, and opening a cabinet door so that the adult could put a stack of magazines inside. Even when children had to pay a cost by giving up an enjoyable activity or overcome an array of obstacles in order to help, they still helped the experimenter at high rates (Warneken et al., 2007; Warneken & Tomasello, 2008). They did not do these things in control situations that were similar but in which the experimenter did not need help. These early emerging helping behaviors have been documented at the same ages across cultures (Callaghan et al., 2011). It seems, therefore, that children have an understanding of others' goals from an early age and an altruistic motivation to want to see others helped, even at a personal cost (Warneken & Tomasello, 2006).

Young children also show comforting and caring behaviors toward those in need or distress. This form of prosocial behavior is more complex than instrumental helping as it relies on a developing understanding of others as psychological agents (Zahn-Waxler, Radke-Yarrow,

et al., 1992; Zahn-Waxler & Smith, 1992). Nonetheless, rudimentary forms of comforting and caring behaviors emerge during the second year. For example, when 14- to 18-month-old infants witness their parent or another adult bump her knee and express pain and distress, many make some effort to intervene and alleviate the victim's distress, such as through verbal comforting, helping (e.g., putting on a bandage), and indirect helping (e.g., getting their mother to help) (e.g., Zahn-Waxler, Radke-Yarrow, et al., 1992; Zahn-Waxler, Robinson, et al., 1992). These efforts become more common and sophisticated with development such that by the third year, more children intervene and do so more readily and appropriately than during the second year (Svetlova et al., 2010; Zahn-Waxler, Radke-Yarrow, et al., 1992; Zahn-Waxler & Smith, 1992).

Young children also act prosocially by sharing or giving away resources. In naturalistic observations, infants as young as 8 months may show or give toys to parents, other infants, siblings, and strangers, even when resources are low (e.g., Hay, 1979; Rheingold et al., 1976). Children's sharing becomes increasingly selective with development. For instance, 12-month-olds are more likely to share objects with their peers and their own mothers than with the peers' mothers (Young & Lewis, 1979). By preschool age, children demonstrate a knowledge of social norms and prefer to split resources evenly (Baumard et al., 2012; Schmidt & Sommerville, 2011). Nonetheless, sharing can be difficult for young children when it comes at a personal cost such as giving up one's own valued object or having to divide resources between themselves and another person (Brownell, 2013; Harbaugh et al., 2007; C. E. Smith et al., 2013).

Finally, preschoolers also engage in direct reciprocity, or repaying benefits that they received. This act is considered prosocial behavior because, from a purely selfish stance, it would make most sense for the child who received the benefits to subsequently simply hold on to their own resources and not help or share with their benefactor. Yet, by as early as 3 years,

children share more resources with previously cooperative partners and expect others to be more cooperative if they had previously shared with them (Paulus, 2016; Warneken & Tomasello, 2013). Early in development, infants also have an understanding of indirect reciprocity: They expect an individual who acts generously to be the recipient of a new individual's generous behavior in the future (Brandt & Sigmund, 2004; Olson & Spelke, 2008). For instance, when viewing third-party interactions, 10-month-old infants look longer (i.e., show surprise) when an agent chooses to share a resource with someone who they had previously witnessed distributing resources unfairly to others (Meristo & Surian, 2013). By preschool age (4-6 years), children themselves help and share more with individuals whom they have previously seen behaving prosocially toward others (Kato-Shimizu et al., 2013; Olson & Spelke, 2008).

In sum, there is now a great deal of evidence that from a remarkably early age, children engage in a variety of prosocial behaviors including helping, comforting, sharing, and reciprocity. These behaviors start out being relatively simple, and with development, they increase in their complexity and flexibility. Of course, we do not mean to suggest that children (or adults) are always prosocial when given the opportunity, nor that all children (or adults) are equally prosocial; there is certainly a great deal of variability across individuals, contexts, and cultures (e.g., Newton et al., 2016; Trommsdorff et al., 2016). The important point, however, is that from very early in development, children are clearly motivated to act in prosocial ways, which is striking because these prosocial behaviors entail paying at least some (and sometimes substantial) cost to benefit another individual. The question we are concerned with here is: What affective mechanisms motivate young children to act prosocially? Specifically, our focus is on the positive emotions that perpetuate cycles of prosocial behavior. This topic is what we turn to next.

The Rewarding Nature of Prosocial Behavior

In this section, we explore how evolutionary pressures may have fostered our prosocial nature by making the prosocial actions themselves rewarding. We first discuss findings that children have an intrinsic prosocial motivation and their prosocial behavior is driven primarily by a genuine investment in or concern for others' welfare. We then review the growing evidence that, across cultures, young children experience positive emotions when they act prosocially, and these positive emotions may motivate further prosocial behavior, thus helping to sustain the intra-individual cycle of prosociality.

Intrinsic prosocial motivation

One possible explanation for humans' remarkable and early emerging prosociality is that it is motivated by extrinsic rewards. According to this account, young children learn to be prosocial out of a desire for rewards or at least the prospect of rewards (e.g., Bar-Tal, 1982; Cialdini et al., 1981). An alternative explanation is that evolution aided our prosocial nature and reduced our selfish inclinations by making prosocial behaviors rewarding. Under this account, the rewarding nature of prosocial behavior has resulted in prosocial behavior being intrinsically rather than extrinsically motivated (Aknin et al., 2018; Aknin, Dunn, et al., 2012).

One way to tease apart these possibilities is to examine the effects of material rewards on prosocial behavior. According to a phenomenon known as the "over-justification effect," if a given behavior is intrinsically motivated, then extrinsic rewards, such as prizes or praise, will undermine the intrinsic motivation to engage in that behavior (Deci et al., 1999). Warneken and Tomasello (2008) utilized the over-justification effect to investigate whether young children's prosocial behavior is intrinsically or extrinsically motivated. In the study, 20-month-old children were assigned to one of three experimental conditions. Every time the children helped the

experimenter, they received either a material reward (i.e., a small toy), a social reward (i.e., thanked by the adult experimenter), or no reward. The results showed that the children who received material rewards for helping were subsequently *less* helpful than those who received either no reward or social rewards. Similarly, more recent research shows that 3-year-olds who received material rewards for costly sharing (i.e., giving up their own resources to equalize an unequal distribution) were subsequently *less* likely to engage in costly sharing than those who received either no reward or social rewards (Ulber et al., 2016). These findings suggest that extrinsic material rewards *undermined* young children's intrinsic prosocial motivation.

It is noteworthy that the social rewards in these prior studies did not undermine children's prosocial motivation. Indeed, there is some evidence that social rewards such as praise and encouragement may even foster prosocial behaviors when they first emerge (around 13-14 months of age), although this research found that social rewards had no impact just a few months later (15-17 months; Dahl et al., 2017). Although these results suggest that social rewards may help foster prosocial behavior when it first emerges, they do not demonstrate that children are motivated to act prosocially in order to receive those rewards. More importantly, this work and the work on the over-justification effect discussed above both converge on the finding that by 1.5 to 2 years of age, children's prosocial motivation is largely intrinsic.

Further support for children's intrinsic rather than extrinsic prosocial motivation comes from a series of recent studies demonstrating that children are genuinely motivated to see others receive the help they need (Hepach et al., 2012; Hepach & Tomasello, 2020). One study used pupil dilation to measure 2-year-old children's internal arousal in response to prosocial scenarios (Hepach et al., 2012). All children first witnessed a person in need of help, at which point their pupil dilation increased (indicating an increase in internal arousal and specifically, in their

prosocial motivation; see Hepach et al., 2019; Hepach & Westermann, 2016; Sirois & Brisson, 2014). One group of children was then able to help the person themselves, another group of children was prevented from helping but watched someone else provide the help, and for a third group of children, the person did not receive the necessary help. Children's pupil dilation decreased similarly (i.e., their prosocial motivation was similarly satisfied) when they helped a person and when they simply observed the person being helped by someone else, but, importantly, it remained high when the person was not helped at all. These results suggest that toddlers are not primarily motivated to perform the prosocial behavior themselves and thus to receive some form of recognition or reward for acting prosocially; rather, their primary motivation is to see the person in need be helped.

Further research investigated whether what children perhaps really desire when they help others is simply to complete action sequences or to restore the physical order of things (Hepach et al., 2016). One study found that 2-year-old children selectively retrieved for an adult the object the adult needed rather than one the adult did not need, even though the latter would equally have completed the action sequence and thus restored the previous physical order of things. In a second study, children's pupil dilation decreased when they observed someone else give the adult the appropriate object but stayed high when they observed the person give the inappropriate object, whereas this difference was not evident when they observed the same sequences in a non-social context (i.e., when no one needed or provided help: the objects moved by themselves but still restored the physical order of things). Thus, children's helping is not aimed at simply completing action sequences or restoring physical order; rather, they are genuinely motivated to see other people's needs be fulfilled.

This body of work shows that from very early in life, children's prosocial behavior is driven primarily by a genuine investment in or concern for others' welfare rather than by the desire for material rewards or reputational benefits, the desire to complete action sequences, or the desire to restore physical order. But the research allows still stronger conclusions, namely, that from an early age, children find it *rewarding* to act prosocially.

The warm glow of prosocial behavior

In order to engage in behaviors that are costly and require putting aside one's self-interests for the benefit of others, humans are argued to have evolved the proclivity to find prosocial behavior "self-rewarding," that is, to experience positive affect (a 'warm glow') when they engage in prosocial acts (Aknin et al., 2018; Aknin, Dunn, et al., 2012). Specifically, acting prosocially is thought to elicit a sense of happiness and satisfaction within the prosocial actor as a result of "doing good" or "doing their part" (Andreoni, 1990). According to the theory of "warm-glow giving," this positive affect in turn motivates individuals to engage in further prosocial actions, thereby creating a positive feedback loop that sustains the intra-individual cycle of prosociality (Aknin et al., 2018; Andreoni, 1989, 1990). Substantial research with adults supports this proposal. For instance, spending one's financial resources to help others leads to greater happiness across cultures (Aknin et al., 2013; Aknin, Dunn, et al., 2012; Aknin, Hamlin, et al., 2012), and sharing with others and donating to charity activates brain regions associated with reward processing (Harbaugh et al., 2007; Zaki et al., 2011). Additionally, adults' frequency of engaging in prosocial behavior promotes their general sense of well-being (Dunn et al., 2008).

The evidence has also begun accumulating for the rewarding effects of prosocial behavior among young children (e.g., Aknin et al., 2013, 2015; Aknin, Dunn, et al., 2012). For instance, Aknin et al. (2012) found that children as young as 2 years old exhibited greater positive affect

(as measured in their facial expressions) when giving treats to others than receiving treats themselves. Remarkably, these children were happier when their sharing was costly (i.e., when they were required to give up their own resources) than when it was not costly (i.e., giving the same treat at no cost to themselves). Other forms of prosocial behavior increase positive affect as well. For example, Song et al. (2020) found that toddlers and preschool-age children showed greater positive affect after sharing as well as after instrumentally helping an experimenter and, more tentatively, also after helping her empathically (by giving her an object that eased her distress).

Cross-cultural work demonstrates the warm glow effect across populations, including China, the Netherlands, Canada, the United States, Germany, South Africa, and small, rural communities in the South Pacific Ocean (e.g., Aknin et al., 2015; Aknin, Hamlin, et al., 2012; Paulus & Moore, 2017; Song et al., 2020). In one study, for instance, 2- to 5-year-old children received candy and were asked to engage in costly giving and non-costly giving. Consistent with previous research conducted in Canada, children from a small-scale, rural, and isolated village in Vanuatu displayed more happiness when giving treats away than when receiving treats themselves (Aknin et al., 2015). Likewise, Song et al. (2020) found that both Dutch and Chinese toddlers displayed more happiness after acting prosocially.

Novel methodologies have provided additional insights into the rewarding nature of acting prosocially as well as witnessing others' prosocial actions. Specifically, researchers measured changes in 2-year-old children's upper-body posture using motion sensor technology (Microsoft© Kinect), and found that children showed a similar magnitude of positive emotion, as measured by changes in postural elevation, when they achieved a goal for themselves and when they helped another person achieve their goal (Hepach et al., 2017). Importantly, children's

posture decreased in elevation when their actions did not result in a positive outcome for anyone. In related work, Hepach and Tomasello (2020) measured 4-year-olds' postural elevation in response to an experimenter helping them or helping a peer who was playing the same game. Children demonstrated lowered posture if they were helped but the more deserving peer was not helped, and showed postural elevation (i.e., more positive emotion) when the more deserving individual was helped, regardless of whether that was themselves or the peer. Together, these results show that toddlers and preschool-age children find it just as rewarding to help others as they do to help themselves, and are genuinely concerned with and positively motivated to invest in the well-being of others.

The developmental findings reviewed thus far provide compelling evidence that from early in ontogeny, acting prosocially confers emotional rewards in the form of positive affect. Less empirical research has focused on the second part of the theory of warm glow giving, namely, that the warm glow serves as a motivation for future generosity, thereby helping uphold the intra-individual cycle of prosociality. Some research with adults has empirically documented this positive feedback loop (e.g., Aknin, Dunn, et al., 2012; Snippe et al., 2018), and some evidence with children has begun to emerge as well. For instance, recent research suggests that the anticipation of positive affect following prosocial behavior may play a role in children's prosocial decision-making. In one study, preschool-aged children were asked to rate their expectations of their emotional state after choosing to share a resource or not (Paulus & Moore, 2017). Remarkably, children's prediction of their positive emotional state level in hypothetical scenarios was predictive of their subsequent sharing behavior in a resource allocation task. Although more work is needed to directly test for the role of warm glow in promoting subsequent prosociality among young children, the evidence thus far points to the tentative

conclusion that, as with adults, children's experience of positive affect after behaving prosocially may be an important mechanism by which prosocial behavior is maintained from early in development.

Taken together, the growing research indicates that, independent of culture, prosocial behavior may be emotionally rewarding from early in development, suggesting that this phenomenon may be a universal of human psychology (see Aknin et al., 2013). Moreover, this work provides support for an adaptive benefit of these positive affective responses and their potential role in sustaining prosocial behaviors, whereby the experience of positive affect after acting prosocially provides intrinsic rewards and reinforces further prosocial behavior. Limited work, especially in children, has investigated the role of this warm glow in motivating future prosocial behavior, although the research that does exist is in line with the hypothesized link. Still, further research is needed to systematically investigate whether and how warm glow sustains intra-individual cycles of prosociality among young children as we have proposed here.

Additionally, we need to better understand the mechanisms underlying children's experience of warm glow itself. A recent body of research has identified several important determinants of warm glow in adults, including similarity, familiarity, and guilt avoidance (Bohnet & Frey, 1999; Erlandsson et al., 2016; Small & Loewenstein, 2003). The strength of the social tie also plays a role, as spending money on strong social ties elicits greater positive affect than spending on weak social ties (Aknin et al., 2011). Assuming that the warm glow is largely universal, we may hypothesize that at least some of these factors should also impact the occurrence and extent of the warm glow in young children. However, to our knowledge, no existing research has delved into these mechanisms among children; this is a ripe area for future research.

The prosocial functions of gratitude

In this section, we propose that intra-individual cycles of prosociality may be promoted, from early in ontogeny, by the positive emotion of gratitude. We review evidence, including from studies using novel methodologies, that young children experience a nascent sense of gratitude and this early gratitude motivates children to act prosocially. This gratitude-motivated prosocial behavior takes the form of direct reciprocity (paying it back) as well as upstream reciprocity (paying it forward). We conclude the section by discussing the role that displays of gratitude may play in sustaining cycles of prosocial behavior.

Direct reciprocity (paying it back)

As noted earlier, within a functionalist approach, emotions motivate behaviors of adaptive import (Johnson-laird & Oatley, 1992; Rozin et al., 1999). When emotions serve basic survival functions, such as when fear makes us attend to a potential threat and highlights escape-relevant behaviors, they are known as basic emotions (Plutchik, 1980). When emotions help us negotiate the social domain, coordinate our social interactions, maintain cooperative relations, or avoid social threats, they are considered social emotions (Keltner & Haidt, 1999). Over two centuries ago, Adam Smith proposed that social emotions (“moral sentiments”) underlie the building of our social networks and the functioning of a cooperative society (Smith, 2011). Many recent researchers have similarly proposed that social emotions (e.g., gratitude, sympathy, and guilt) are some of the primary motivators of altruistic behaviors (Nesse, 1990; Trivers, 1971).

Although researchers have explored the role that social emotions play in children’s prosocial and cooperative behavior, the focus of this exploration has generally been on negative emotions such as spite, guilt, and anger, or on one’s responses to others’ negative states such as sympathy for distressed others (LoBue et al., 2011; McAuliffe et al., 2014; Vaish, 2018; Zahn-

Waxler, Radke-Yarrow, et al., 1992). Relatively little attention has been paid to positive emotions that may prove equally invaluable in motivating individuals to inhibit their selfish propensities and engage in prosocial behavior. Increasingly, however, psychologists are beginning to recognize the important role of positive social emotions in improving our physical health, collective functioning, and psychological well-being (Fredrickson, 1998; Revord et al., 2021; Sels et al., 2021). This change has also been evident in the developmental literature, including in efforts to explicate the positive social emotions that may motivate young children's prosocial behaviors (Aknin et al., 2018; Vaish & Hepach, 2020). Here we will focus on the development and prosocial functions of one such positive social emotion: gratitude, which we argue plays a critical role from early in development to sustain inter-dependent cycles of prosociality.

Gratitude is the positive emotion one experiences when someone intentionally gives one something of value (McCullough et al., 2001; see too McGrath, this *Handbook*)¹. Researchers have theorized that gratitude has a role in measuring and reinforcing moral actions, supporting reciprocal exchange, and maintaining and building social bonds and relationships (Algoe, 2012; McCullough et al., 2001; Nowak & Roch, 2007; Nowak & Sigmund, 2005). Gratitude is thought to be foundational to human nature and has been recognized as vital for creating and

¹ In addition to an emotional state, gratitude can also be considered a character trait, i.e., the disposition to notice others' benevolence towards oneself and respond with gratitude (e.g., Froh & Bono, 2014; McCullough et al., 2002; see McGrath, this *Handbook*). Research on dispositional gratitude has revealed positive associations with outcomes such as life satisfaction, prosocial behavior, empathy, and lower negative affects such as resentment, depression, and envy (e.g., McCullough et al., 2002; McCullough et al., 2004), and some research on children's dispositional gratitude suggests similar associations (Froh & Bono, 2014). Although the focus of the current chapter is on the emergence and functions of state gratitude, it is interesting to consider that one possible mechanism for the development of dispositional gratitude may be the regular experience and promotion of the emotional state of gratitude (see, e.g., Froh & Bono, 2014). Given gratitude is experienced as a positive emotion and serves positive social functions, it may be self-reinforcing such that the more one experiences and acts on it, the more one is motivated to experience and act on it, thereby building a grateful disposition or character. This is an important and promising direction for future work to explore.

perpetuating prosocial behavior (Algoe, 2012; Harpham, 2012; McAdams & Bauer, 2012; McCullough et al., 2001). In effect, gratitude turns selfish receivers into generous givers, encouraging the inter-individual cycles of prosociality that sustain human cooperation (Bonnie & de Waal, 2012; Trivers, 1971).

Empirical work with adults demonstrates that the experience of gratitude does indeed motivate reciprocity in adults (Algoe, 2012; Bartlett et al., 2012; DeSteno et al., 2010; McCullough et al., 2008; see Ma et al., 2017 for a review and meta-analysis). For instance, participants who were made to feel grateful to an experimenter for helping them avoid re-doing a tedious task were more likely to later help the experimenter than were participants who were not made to feel grateful (Bartlett & DeSteno, 2006). Importantly, gratitude motivates more prosociality than simply a positive mood or a positive evaluation of benefactors (Bartlett & DeSteno, 2006b; Tsang, 2006a, 2006b). Gratitude thus motivates adults to reciprocate, especially toward those who intended to benefit us and thus showed goodwill toward us.

When in development does gratitude emerge and begin to serve these vital prosocial functions? Some early research on the development of gratitude found that the experience of gratitude emerges only in middle childhood. For instance, Graham (1988) presented 6-, 8-, and 10-year-old children with hypothetical scenarios in which a child is chosen for a team by a captain who was either required or not required to choose the child. The 8- and 10-year-olds, but not the 6-year-olds, believed that the child would be more grateful and more likely to reciprocate if the captain picked him voluntarily and thus intended to benefit him (see also Poelker & Kuebli, 2014). Gleason and Weintraub (1976) found that few 6-year-olds spontaneously said “thank you” when given gifts, whereas most 10-year-olds did. Furthermore, beginning around 7 years of age, children’s gratitude becomes increasingly sophisticated, with older children

displaying expressions of “connective gratitude,” which is aimed at engaging and connecting with those who have acted generously toward them (Wang et al., 2015). These studies suggested that gratitude develops slowly and only emerges around 6-7 years of age.

More recent developmental research has begun to address the proposed prosocial functions of gratitude, namely, to motivate direct reciprocity (paying back one’s benefactors). From quite early in development, children begin to recognize when they have been the recipients of someone’s goodwill and are motivated to engage in direct reciprocity to return the generosity. For example, 3-year-olds (but not 2-year-olds) share more resources with an individual who previously shared resources with them than with one who did not (Warneken & Tomasello, 2013). Furthermore, when young children can choose between a person who helped versus did not help them, even 2-year-olds preferentially choose their benefactor (Dunfield & Kuhlmeier, 2010). Direct reciprocity thus emerges early in ontogeny.

However, it remains unclear from these demonstrations of direct reciprocity whether they are motivated by gratitude. One simpler explanation may be that children evaluate all generous individuals positively and thus behave prosocially toward them, regardless of whom those individuals benefited (the child or someone else). Indeed, toddlers and preschool-age children do prefer and act more prosocially toward agents who are prosocial toward third parties than those who are antisocial (e.g., Dahl et al., 2013; Kenward & Dahl, 2011; Vaish et al., 2010). A second simpler explanation is that children experience positive affect whenever they receive benefits from someone, regardless of whether the person intended to benefit them. General positive affect has been shown to increase adults’ prosocial behavior (see Carlson et al., 1988), and may do the same among young children.

Yet, as the definition of gratitude implies, gratitude is not an emotion with just one facet, but rather it is a combination of two facets, that is, it requires that the recipient recognize both that they have received benefits and that the benefits were received through the benefactor's good intentions (McCullough et al., 2001; Ortony et al., 1989; Tsang, 2006b). In other words, if gratitude does motivate early reciprocity, we expect that children should consider both of these factors, such that they are particularly appreciative and prosocial toward a benefactor who *intentionally* benefited *them*.

We teased these mechanisms apart in a study in our lab (Vaish et al., 2018). Three-year-old children were either given resources (e.g., marbles to play a game) by a helpful puppet or the same resources were placed near them by an indifferent puppet (conveying no intention to help). In two other conditions, 3-year-olds watched as another puppet received the resources from the helpful or the indifferent puppet. When children could subsequently provide some of their resources to the benefactor puppet, they were significantly more generous if the puppet had intentionally helped them than in the other three conditions. In other words, children's generosity toward the benefactor was not simply motivated by a positive mood from receiving benefits, or by a positive evaluation of benefactors in general. Instead, young children's reciprocity was sensitive to both of the key factors associated with gratitude such that they reciprocated most toward the benefactor who had *intentionally* benefited *them*. This pattern of reciprocity suggests that both the core elements of gratitude may be present and motivate reciprocity by 3 years of age.

In another study in our lab (Hepach et al., 2019b), we tested a different prediction about gratitude: that gratitude motivates individuals to be "instrumental in promoting" the well-being of our benefactors (Smith, 2011), i.e., to *actively* help those who have helped us before. In this

study, 18- and 24-month-old infants either needed and received help from an adult, or did not need (and therefore did not receive) help. They could then help that adult or observe another person providing help. We measured children's attempts to help the adult as well as children's pupil dilation as an index of their prosocial motivation. We found that the rate at which children attempted to help did not differ across conditions, replicating prior findings that 2-year-olds do not show reciprocal helping (Warneken & Tomasello, 2013). However, children's pupil dilation did vary across conditions. Specifically, if the individual in need had not previously helped them, children's pupil dilation decreased (i.e., their prosocial motivation was satisfied) both when they or the other person provided help. This result replicated prior findings that in general, young children are motivated to see people in need be helped, regardless of who provides the help (Hepach et al., 2012). Critically, though, we found that if the person in need had previously helped the children, then children's arousal remained high if they could not help the person *themselves* but merely saw the other person provide the help. Thus, before 3 years of age, receiving help may not yet increase children's observable reciprocal behaviors but it does seem to alter their underlying motivation to help such that they are particularly invested in actively returning help to their benefactors.

Taken together, these studies suggest that young children are motivated by a nascent gratitude to return the generosity of their benefactors. This motivation is critical for maintaining ongoing cooperative relationships and thus sustaining inter-individual cycles of prosociality.

Upstream reciprocity (paying it forward)

In addition to motivating direct reciprocity, gratitude is also believed to serve the surprising prosocial function of motivating upstream reciprocity, i.e., when individual A benefits individual B and B in turn pays it forward to a new individual C (Bartlett et al., 2012; Beeler-

Duden & Vaish, 2020). Paying benefits forward in this way initiates a new prosocial relationship between B and C and thus helps generate new inter-individual cycles of prosociality; as such, it is thought to be important for promoting cooperation within large groups, particularly of non-kin (e.g., Nowak & Roch, 2007). Research with adults indicates that the propensity to engage in upstream reciprocity is indeed predicted by the degree to which the participant feels a sense of gratitude, rather than a general positive affect, for help received previously (Bartlett & DeSteno, 2006; DeSteno et al., 2010; Tsang 2006, 2007).

Recent research from our lab demonstrated that a nascent sense of gratitude motivates upstream reciprocity among young children as well (Beeler-Duden & Vaish, 2020). In a first study, 3- and 4-year-olds played a challenging game. Half the children received a note that helped them with the game, whereas the other half received a non-helpful note – although importantly, children succeeded equally at the game in both cases. Then children could share resources with a new child (not the helper). The 4-year-olds (but not 3-year-olds) who received help were more generous toward the new child, demonstrating upstream reciprocity.

A second study tested whether a gratitude-like motivation may underlie the 4-year-olds' upstream reciprocity (Beeler-Duden & Vaish, 2020). A new group of 4-year-olds played the same challenging game and again either received a helpful or non-helpful note. However, in addition, we asked children to rate their positive affect after succeeding at the game and to evaluate the helper. These two questions assess the two key situational components of gratitude: (1) positive affect about the personal outcome of the situation, and (2) approval of the benefactor's actions and thus positive evaluation of the benefactor (Clore & Ortony, 2013). We predicted that because children in both conditions (helpful vs. non-helpful note) were equally successful at the game, they should report similarly high positive affect. However, only children

who were helped should evaluate the benefactor positively, and this key component of gratitude should predict their upstream reciprocity. In line with our predictions, 4-year-olds in both conditions reported being similarly happy, but those who had received help evaluated the benefactor more positively, and critically, children's positive evaluations predicted their upstream reciprocity. These findings provide the first evidence that as early as 4 years of age, a nascent sense of gratitude may motivate not only direct but also upstream reciprocity.

Taken together, the burgeoning body of work reviewed here suggests that a nascent sense of gratitude may be present from quite early in development. By 2-3 years of age, this early emerging, positive social emotion seems to motivate children to reciprocate toward their benefactors and thus sustain ongoing inter-individual cycles of prosociality. Just a year later, it may also motivate children to behave prosocially toward new individuals and thus to initiate new inter-individual cycles of prosociality. Early gratitude thus seems to help facilitate the prosocial cycles that are vital to large-scale and long-term human cooperation.

It is important to note that the behavioral studies described above with toddlers and preschool-age children did not directly test children's experience of gratitude (such as by asking them how grateful they felt, which is not feasible at these young ages). Thus, the conclusion that these findings point to gratitude is necessarily tentative. However, the studies were designed to test specific predictions about the prosocial functions of gratitude, and the findings followed those predicted patterns. The more such predictions are tested and supported in future work, the surer researchers can be about the degree to which they are indeed tapping into gratitude versus other processes (see Vaish & Hepach, 2020, for detailed discussion).

One particularly interesting question in this regard is whether young children in these studies were indeed motivated by the positive social emotion of gratitude or instead (or in

addition) by the more negative sense of indebtedness. Indebtedness is a negative experience that generates aversive long-term relational outcomes and motivates negative evaluations of the benefactor (Greenberg, 1980; Greenberg & Shapiro, 1971; Peng et al., 2018). Interestingly, indebtedness gives rise to a sense of obligation to pay back one's benefactor (direct reciprocity) but, unlike gratitude, does not contribute to the more generalized reciprocal behavior of upstream reciprocity (Peng et al., 2018). This distinction is one important way in which the developmental literature can begin to address this issue: Given that young children evinced upstream reciprocity after being helped provides some support for the gratitude rather than indebtedness interpretation (Beeler-Duden & Vaish, 2020).

Furthermore, among adults, benefactors' intentions greatly affect whether recipients feel indebted or grateful (Peng et al., 2018; Tsang, 2006b, 2007). Specifically, indebtedness is thought to be elicited when the benefactor's intentions were malevolent or involved an expectation of reciprocity (de Cooke, 1992; Peng et al., 2018; Tsang, 2006b, 2007). We have therefore recently begun to address the question of benefactor intentions more directly in order to gain traction on the question of early gratitude versus indebtedness. Specifically, we explored whether children are sensitive to the intentions behind others' prosocial actions and how they respond to and use this intention information (Beeler-Duden & Vaish, in preparation). To assess children's sensitivity to intentions, 4- to 9-year-olds heard stories about two prosocial agents who were either motivated by concern for the recipient (selfless agent) or by a desire for reciprocity (selfish agent). We found an outcome-to-intent shift in children's responses such that with age, children increasingly recognized that the recipient would feel happier after receiving help from the selfless than the selfish agent, and judged the selfless agent more positively. Thus, between the preschool to early school years, children began to pay increasing attention to the intentions

behind prosocial actions and to the implications thereof. However, future work must still address whether and how these intentions impact children's experience of gratitude versus indebtedness and in turn, their direct and upstream reciprocity.

The prosocial functions of gratitude displays

Although we have presented warm glow and gratitude as two separate mechanisms, they can of course co-occur and simultaneously foster the intra- and inter-individual cycles of prosociality, respectively. Moreover, we believe gratitude may also contribute to the *intra*-individual prosocial cycle. When a grateful recipient outwardly displays their gratitude (such as thanking the benefactor, expressing their appreciation, and so forth), that display indicates that the recipient has noticed the kindness, appreciates the kindness and the benefactor, and is likely to reciprocate in the future (Keltner et al., 2006; McCullough et al., 2008). As such, the outward display of gratitude may strengthen the benefactor's warm glow or serve as a second positive reinforcer for the benefactor, and thus further enhance the benefactor's motivation to behave prosocially in the future (toward the same recipient but also toward other recipients). In other words, whereas the experience of gratitude motivates reciprocity and thus perpetuates the inter-individual cycle of prosociality, the display of gratitude may boost the benefactor's intra-individual cycle of prosociality.

Support for this proposal among adults comes from findings that, when a recipient displays gratitude, the benefactor views them more positively and is more willing to help them and also to help others, compared with when the recipient does not display gratitude (see Algoe et al., 2019; McCullough et al., 2001). Recent research conducted in our lab with children provides evidence that this function of gratitude displays emerges early (Vaish & Savell, 2022). Four- and 5-year-old children watched videos of a benefactor giving gifts to two recipients. One

recipient displayed gratitude by acknowledging the generosity, expressing appreciation for the gift, and reaffirming the relationship, whereas the other recipient showed happiness but no gratitude. As expected, the 5-year-olds preferred the grateful individual, expected the benefactor to prefer them as well, and distributed more resources to them. The 4-year-olds showed a similar but weaker pattern of responses. Note that children in this study were observers and not the benefactors; we thus do not know whether gratitude displays have a comparable positive effect when children are themselves the benefactors. Nonetheless, the extant evidence from both adults and young children supports our proposal that recipients' gratitude displays are an important additional mechanism through which benefactors (and observers) are motivated to continue to behave prosocially.

Conclusions and Open Questions

The survival and evolutionary success of humans has relied on our ability to collaborate and cooperate with one another (Tomasello, 2016). This interdependence has meant, in turn, that individuals need to inhibit their own selfishness and ensure the well-being of their (potential) cooperative partners. We have argued that natural selection has favored affective mechanisms that, at the proximate level, motivate prosocial behavior and maintain prosocial relationships. Moreover, these mechanisms appear quite early in development and motivate even the youngest members of our species to invest in others' well-being and thereby foster cooperation (Bjorklund, 2018; Vaish & Hepach, 2020).

We focused in this chapter on two positive affective mechanisms that help sustain cycles of prosocial behavior, both intra-individually and inter-individually. At the intra-individual level, acting prosocially is intrinsically rewarding and elicits a warm glow, which reinforces the prosocial behavior and motivates the prosocial actor to engage in further prosocial behavior in

the future. We reviewed evidence that already during the second year, children have an intrinsic motivation to see others be helped and they experience greater positive affect when witnessing or demonstrating prosocial behavior (e.g., Aknin et al., 2012, 2013; Hepach et al., 2012; Hepach et al., 2017). Furthermore, the anticipation of this positive affect can motivate children to act more prosocially (Paulus & Moore, 2017), thus creating, from early in development, a positive feedback loop wherein the warm glow of prosocial behavior motivates further prosocial behavior, and so forth (see Aknin et al., 2018).

At the inter-individual level, receiving others' generosity elicits gratitude, which motivates both direct and upstream reciprocity. This cycle too is apparent surprisingly early in development. Research shows that a nascent sense of gratitude emerges between 3 and 4 years of age and motivates children to act prosocially both toward their benefactors (i.e., those who showed goodwill toward them) as well as toward novel individuals who did not provide them with a benefit and indeed, with whom there has been little to no prior contact (Beeler-Duden & Vaish 2020; Vaish et al., 2018; Vaish & Hepach, 2020). Additionally, by 4-5 years of age, children, like adults, respond positively to recipients' displays of gratitude and are more motivated to act prosocially toward grateful than non-grateful individuals (Vaish & Savell, 2022). Thus, gratitude may, through its display, also help promote intra-individual cycles of prosociality.

Together, these early-emerging, positive affective mechanisms play important roles, at a proximate level, in motivating individuals to be invested in others, have an interest in their well-being, and act prosocially, even at a personal cost. There are, of course, important caveats and open questions that remain. We consider some of these in the remainder of this chapter.

Culture

One important open question concerns how culture and socialization may influence these positive affective mechanisms and their functions. The research described above was predominately conducted in WEIRD (Western, educated, industrialized, rich, and democratic) populations (Henrich et al., 2010). Yet, studies suggest that culture and parental values can influence the types of prosocial behavior children engage in, as well as their judgments and evaluations of others' prosocial behavior (Carra et al., 2013; Kärtner, 2018; Köster et al., 2016; Lavelli et al., 2016). Thus, it is possible that culture may shape whether and the extent to which children find particular types of prosocial behavior emotionally rewarding (see also Winter et al., 2022).

Moreover, culture influences what an individual considers to be the “ideal affect” and this, in turn, shapes their social behavior. Some cultures prefer high arousal positive affective states (e.g., excitement and joy) whereas other cultures prefer low arousal affective states such as calm and contentment (Ruby et al., 2012; Tsai et al., 2006, 2007). Ideal affect can influence how an individual judges and responds to others. In the case of positive affect, it may impact how rewarding an individual finds positive affect and to what extent an individual seeks out the reward of positive affect resulting from prosocial behavior. As described above, recent cross-cultural work does find the warm glow effect across many (though not all) cultures from early in development (Aknin et al., 2012; Aknin et al., 2013; Paulus & Moore, 2015, 2017; Song et al., 2020), although at least among adults, the strength of the association between generosity and happiness varies substantially across populations (Aknin et al., 2013). Investigating why the strength of the association varies, and whether it may show more cross-cultural similarity among young children, remains an important question for future work.

Likewise, culture can also greatly influence the experience and display of gratitude. Most gratitude research is conducted in the United States; yet gratitude may vary substantially between Western, more individualist cultures and Eastern, more collectivist cultures. For example, Americans readily feel positively and promise compensation, Japanese individuals feel obligated to repay the benefit, and for the Tamils of South India, reciprocity depends on the type of favor and social hierarchy (Visser, 2009). Furthermore, intentions shape the types of emotions individuals experience in response to another's generosity. In WEIRD cultures, a benefactor's self-serving and malicious intentions frequently motivate feelings of indebtedness, whereas a benefactor's altruistic and other-oriented intentions motivate feelings of gratitude (Peng et al., 2018). However, recent cross-cultural research finds notable variation in the importance placed on intentions and, thus, the degree to which intentions influence people's moral judgments and behaviors (Clark Barrett et al., 2016; Clark Barrett & Saxe, 2021; Henrich et al., 2010). For example, smaller-scale, non-western societies such as the Hadza, Himba, and Yasawa focus more on the outcomes of actions and place less value on intentions, and intentions exert less influence on their moral judgments (Clark Barrett et al., 2016). These cross-cultural variations lead to fascinating questions about the elicitors, experiences, and displays of gratitude (and indebtedness) across cultures, and thus about the role of gratitude in promoting prosocial interactions and relationships. They also point to important avenues of research regarding the role of socialization in the development of gratitude and its prosocial functions.

Other prosocial motives

As we noted early in the chapter, the two affective mechanisms that we focused on here are certainly not the only ones that underlie (early) prosocial behavior. For instance, one prominent, early emerging prosocial motivator is sympathy (or concern for others). Already in

the first year and increasingly during the second year, infants show facial and verbal expressions of concern for those in distress, and their expressions of concern predict how prosocial they are toward the distressed individual such as in acts of helping or comforting (e.g., Eisenberg et al., 1989; Svetlova et al., 2010; Vaish et al., 2009; Zahn-Waxler, Robinson, et al., 1992). By 2-3 years of age, sympathy becomes increasingly flexible such that children sympathize with victims even if the victims displayed no overt distress, and sympathize less with people who showed unjustified distress (see Vaish, 2016). Thus, from early in development, sympathy robustly motivates us to care about and promote others' welfare.

A second important affective prosocial mechanism is guilt, which is an aversive, self-conscious emotion that follows the realization that one has harmed someone else (Baumeister et al., 1994; Nelissen & Zeelenberg, 2009). The experience of guilt focuses a transgressor's attention on the harm they caused, inflicts subjective discomfort, and critically, motivates the transgressor to make amends by aiding or otherwise compensating the victim, thus repairing the rupture in the cooperative relationship and promoting social attachment (Baumeister et al., 1994; Hoffman, 1982; Keltner, 1995). Research has long demonstrated these prosocial functions of guilt among adults (Brock & Alan Becker, 1966; Ketelaar & Tung Au, 2003), and has also begun to document similar functions in early development. For instance, by at least 3 years of age, children who accidentally cause harm (e.g., break a person's favorite toy) show signs of guilt, such as accepting responsibility and trying to repair the damage and, critically, they do so more when they caused the harm than when someone else caused it or when no harm was caused (Drummond et al., 2017; Vaish, 2018; Vaish et al., 2016; Zahn-Waxler et al., 1990). Thus, although sympathy and guilt do not directly maintain the cycles of prosociality that we focused

on here, they are two vital emotional mechanisms that are critical to a complete understanding of the motivations underlying early prosocial behavior.

Another potentially affect-based, early prosocial mechanism is evident in the ‘identifiable victim effect’ (IVE). The IVE is the well-established phenomenon that adults offer more aid to a specific, identified individual (e.g., by name or a photograph) in need compared to a large or ill-defined group – or even an unidentified individual – with the same need (Erlandsson et al., 2015; Genevsky et al., 2013; Lee & Feeley, 2016). The emotion of compassion may be a potential mechanism for this phenomenon as the self-reported and psychophysiological measures of compassion have been associated with an individual’s choice to act generously toward identified individuals and the magnitude of that generosity (Västfjäll et al., 2014).

Research from our lab has documented this prosocial effect in early development (Beeler-Duden et al., 2022). In this study, 3.5- to 6.5-year-old children were given five stickers that they could distribute as they wanted between themselves and another child, who was either identified by name or unidentified. Across all ages, children were more likely to share, and shared more stickers, with the identified than the unidentified recipient. Although this work demonstrated that, as in adults, recipient identifiability increases children’s prosocial behavior, it did not directly test how emotional processes such as compassion may mediate this effect; this step will be an important direction for future work.

Our focus in this chapter on affective prosocial mechanisms derived from our broader question about the evolved psychological attributes that motivate us to invest in others’ welfare. However, to gain a comprehensive understanding of (early) prosocial motivators, we must also look beyond affective mechanisms. After all, one may certainly choose to act prosocially based

not on affective responses but on a more “rational” approach that, for instance, aims to uphold certain moral principles or determines one’s prosocial acts based on calculations about the most effective ways to benefit others (e.g., Eisenberg et al., 2016; MacAskill, 2017). These prosocial mechanisms are just as important to understand as affect-based mechanisms (and arguably more important to promote; e.g., Bloom, 2016).

Finally, although humans are prepared from early on to care about and for others, people can certainly be motivated at times – and even simultaneously – by self-serving interests such as enhancing their reputations (see Eisenberg et al., 2016; Wedekind & Milinski, 2000). Research shows that strategic and ulterior motives for prosocial behavior become more prevalent with age, including the desire to be chosen as social partners, to elicit reciprocity, and to enhance or maintain one’s reputation (Engelmann et al., 2013; Engelmann & Rapp, 2018; Grueneisen & Warneken, 2022; Kelsey et al., 2018; Leimgruber et al., 2012). For example, by 5 years of age, children act more generously when observed by a peer versus unobserved, presumably in an effort to manage their reputations (Engelmann & Rapp, 2018).

However, it is important to note that in the first 2 to 3 years of life, these self-serving motives do not seem to be the primary drivers of prosocial behavior and may also not be the principal prosocial motivations in later development (Hepach et al., 2016). More critically, the presence of self-serving prosocial motives does not preclude the possibility of genuinely other-focused prosocial motives. Multiple prosocial motivations can co-exist and may work together to promote generosity. Given that the ‘goal’ of natural selection is to bring about behaviors of adaptive import, it is reasonable to think that multiple motivational forces would have been selected for that lead us to those adaptive behaviors (see Vaish & Tomasello, 2014).

To conclude, we proposed that human prosocial behavior is sustained in substantial ways by rewarding affective processes – positive affect and gratitude – that emerge early in human ontogeny. We presented evidence that these positive affective mechanisms play a vital role in creating and maintaining cycles of prosociality among even the youngest members of our species. Yet, there is still much to learn about the affective bases of early prosocial behavior, which in our view is essential to gaining a full account of the evolutionary and ontogenetic emergence of human prosociality.

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