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The prosocial functions of guilt in early childhood

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Abstract

Humans are immensely social and cooperative beings: We rely heavily on our cooperative relationships to survive and succeed as individuals and as a species. When such relationships break down, therefore, it is vital that they are repaired. This chapter argues that the prosocial emotion of guilt helps us meet this requirement, and that a nascent guilt does so from remarkably early in development. By 3 years of age, and to some degree, even 2 years of age, when children cause someone harm, they show an increased motivation to repair that harm, and to do so themselves. This nascent guilt allows even the youngest members of our species to participate in and maintain their valuable cooperative relationships. However, future work will need to clarify the nature of early guilt and to more clearly differentiate it from related but distinct psychological processes.

Keywords: Cooperation; Guilt; Prosocial behavior; Prosocial emotions; Shame
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Humans are a highly prosocial species. Our survival and success depend on living and cooperating with one another, such as by helping people in need, working together to build shelters and find food, assisting each other with childcare, and so forth. Strikingly, we cooperate not only with kin but even with strangers, and often at a cost to ourselves (Sober & Wilson, 1998). Equally strikingly, cooperation is evident from early in development: Across cultures, infants and young children demonstrate a remarkable propensity for prosocial behaviors such as helping, sharing with, and comforting others (Callaghan et al., 2011; Warneken, 2015).

However, cooperation can result in greater loss for cooperators than non-cooperators because they invest resources (such as time and money), whereas non-cooperators can benefit from the products of the cooperation without investing any resources at all (Fehr & Fischbacher, 2004). This raises the question: If cooperators stand to lose more than non-cooperators, how can cooperation be maintained? Why would an individual ever put aside their selfish interests to benefit others?

One answer is that natural selection has favored psychological mechanisms that help us solve the problem of cooperation (see chapter Viana, this volume). In particular, we have evolved emotions that nudge us towards prosocial behaviors and away from selfish behaviors, thereby enhancing our ability to engage in and benefit from cooperative enterprises (Fessler & Haley, 2003). A great deal of theoretical and empirical work has already laid out which emotions serve these prosocial functions and how they do so (e.g., Fessler & Haley, 2003; Frank, 1988; Nesse, 1990; Tangney, Stuewig, & Mashek, 2007), but until recently, relatively little attention had been paid to the prosocial functions of emotions in early development. Yet, if we aim to understand the roots and mechanisms underlying human prosociality, we must necessarily understand their
ontogenetic emergence (Vaish & Hepach, 2019). This, broadly, is the aim of the current chapter. In particular, we will focus on the emergence and prosocial functions of one important motivator of prosocial behavior: guilt.

**What is guilt?**

The emotion of guilt has been of interest to psychologists and clinicians for a long time. In psychoanalytic theory, for instance, guilt is viewed as the superego’s response to one’s own inappropriate impulses, often rooted in childhood conflicts and anxiety about parental punishment or abandonment (Eisenberg, 2000). This type of guilt is typically seen as the source or symptom of psychological distress, anxiety, depression, and problems with adjustment (Eisenberg, 2000; Kroll & Egan, 2004). In behaviorist approaches, guilt is a conditioned anxiety response to anticipated punishment, or is learned by watching others being punished for particular behaviors (Katchadourian, 2010).

More recently, however, some researchers have emphasized the interpersonal nature and prosocial functions of this emotion. According to this view, although guilt can be elicited by a variety of events (including simple norm transgressions or being better off than others), the core elicitor is the infliction of intentional or unintentional harm on another person, particularly in relationships with valuable social partners (Baumeister, Stillwell, & Heatherton, 1994; Hoffman, 1982; Keltner & Buswell, 1996). The aversive feelings of guilt after causing harm motivate transgressors to repair the damage they caused and alter their future behavior (to avoid further guilt); these actions serve in turn to maintain and strengthen our valuable relationships (Baumeister et al., 1994; Tangney & Dearing, 2002). Guilt may also become a core aspect of children’s conscience and thus contribute to the development of prosocial behavior (Dahl, Campos, & Witherington, 2011; Kochanska & Aksan, 2006). The emotion of guilt is thus finely
tuned to help us sustain our valuable social relationships.

Seen this way, guilt is closely related to but importantly distinct from shame. Though both emotions are aversive and both are elicited by moral transgressions, guilt involves a negative evaluation of the specific transgressive act (“I did that terrible thing”) whereas shame involves a negative evaluation of the global self (“I did that terrible thing”) (Lewis, 1971; Tangney & Dearing, 2002). A negative evaluation of the transgressive act allows the person who feels guilty to focus on making amends, such as by confessing, apologizing, and repairing the harm or otherwise mending the valued relationship. On the other hand, a negative evaluation of the global self, as in the context of shame, is both more painful (because one’s core self is seen as defective) and less likely to motivate adaptive, reparative behavior (because simply repairing the damage cannot repair one’s whole self). Research with adults provides evidence for these differential effects of shame and guilt (de Hooge, Zeelenberg, & Breugelmans, 2007; Tangney & Dearing, 2002). Guilt is thus generally considered an adaptive, prosocial emotion whereas shame is seen as maladaptive and an inhibitor of prosocial behavior (but see de Hooge, Breugelmans, & Zeelenberg, 2008; Leach & Cidam, 2015; Sznycer, 2019; Tangney, Stuewig, & Martinez, 2014).

Feeling guilty is also importantly distinct from the fear of punishment. Whereas guilty feelings involve distress about the transgression and its harmful consequences on a potential victim, fear of punishment involves distress about the expectation of negative consequences for the self (Baumeister et al., 1994). Furthermore, guilt can clearly be experienced in situations in which there is no likelihood of punishment, such as when the victim is not in a position to retaliate or when no one will find out who caused the harm. Of course, distinguishing the emotion of guilt from these related phenomena does not preclude the possibility that guilt co-occurs with them. Thus, we may simultaneously experience shame and guilt, or guilt and fear, or
even all three emotions. Nonetheless, guilt is the clearest prosocial motivator among them.

A great deal of research with adults provides evidence of the vital prosocial functions that the emotion of guilt serves. In one study, college students were asked to carry out a task using a machine, but to be careful because the experimenter would not receive his degree if the machine broke. Then, participants were made to believe that they had damaged the machine either mildly or severely. Later, the experimenter asked participants for help on an unrelated task. Participants who believed they had severely harmed the experimenter (and thus presumably experienced greater guilt) helped the experimenter more than those who caused mild harm (Brock & Becker, 1966). Similarly, individuals in another study who were made to feel guilty after behaving uncooperatively in a decision-making game were more likely to behave cooperatively on subsequent rounds of the game than people who did not feel guilty (Ketelaar & Au, 2003; see also Carlsmitth & Gross, 1969; de Hooge et al., 2007; Regan, Williams, & Sparling, 1972). Feelings of guilt thus increase the motivation to make amends or to otherwise compensate the person one has harmed, thereby helping repair and sustain valuable cooperative relationships.

The question of interest to us here is: When in development does the emotion of guilt begin to serve its vital prosocial functions? Does it allow even young children to repair and maintain their valuable relationships? The remainder of this chapter will review what we know so far and lay out some open questions for future work.

The development of guilt and its prosocial functions

The empirical study of the early development and functions of guilt proves to be rather challenging. One reason is that the emotion of guilt seems not to have a single, identifiable facial expression; instead, transgressors who feel guilty generally express contrition and the desire to repair, sometimes accompanied by some negative affect (Fessler & Haley, 2003; Keltner &
Buswell, 1996). Furthermore, one cannot rely on conventional verbal expressions of guilt such as “sorry” because young children rarely produce these spontaneously (Kochanska, Casey, & Fukumoto, 1995). And of course, one cannot simply interview toddlers or preschoolers about their experiences of guilt, as their verbal and introspective abilities are not yet well developed.

To tackle this challenging question, then, researchers of early guilt generally observe children in mildly guilt-inducing situations, that is, situations in which children believe they have caused a minor mishap or harmed someone. Within these situations, they measure children’s affective and behavioral responses. Research using this approach has revealed that as early as 2 years of age, children show guilt-like responses after they have caused someone harm. For instance, when children believe they have broken an experimenter’s favorite doll, they often respond with negative affect, confessing, apologizing, and making reparative attempts or comments (Barrett, Zahn-Waxler, & Cole, 1993; Kochanska et al., 1995; Zahn-Waxler & Kochanska, 1990). This hints that even young toddlers may experience guilt after causing harm, which may motivate them to make amends.

A concern with this interpretation, however, is that in the absence of comparisons with appropriate control situations (that is, situations that have a similar structure but are missing the critical guilt-relevant elements), it is difficult to be confident that these responses really do reveal the workings of guilt. For instance, young children may show similar responses even when they did not cause the other person’s distress but only observed the other in distress and thus experienced sympathy (or feelings of concern) for the victim. There is a great deal of evidence that by 14-18 months of age, children sympathize with and act prosocially towards those in distress or victims of harm (e.g., Bischof-Köhler, 1991; Vaish, Carpenter, & Tomasello, 2009; Zahn-Waxler, Radke-Yarrow, Wagner, & Chapman, 1992). Moreover, in some studies in which
1.5- to 2-year-olds sometimes caused and sometimes observed another person’s distress, children displayed similar levels of prosocial and reparative behaviors in both types of situations (see Zahn-Waxler & Kochanska, 1990; Zahn-Waxler & Robinson, 1995; though see Demetriou & Hay, 2004). It is thus possible that even when young children cause another’s distress, their reparative and prosocial behaviors are motivated by sympathy rather than guilt.

Interestingly, 1.5- to 2-year-old children do show some evidence of differentiating between the caused and witnessed harm. For instance, they make more active efforts to understand the witnessed harm than the harm they caused (Zahn-Waxler et al., 1992). Though suggestive, such differences are also inconclusive because children may simply show these distinct reactions when they cause versus witness any outcome, whether harmful or not. For instance, children may work more actively to find out why a toy is making an interesting sound if they did not cause it to make the sound.

In sum, observing young children’s responses in guilt-inducing situations is an extremely important first step, but is not by itself sufficient to inform us about whether those responses are indeed motivated by guilt. To draw somewhat more confident conclusions, we must build on this foundational step and conduct controlled experiments that allow us to compare children’s responses in guilt-inducing versus similar but non-guilt-inducing situations. Some recent research has begun to move in this direction (see also Vaish, 2018).

One relevant experimental study, for example, sought to distinguish guilt from closely-related but distinct processes. Guilt is argued to emerge from the conjunction of two key components: sympathy for a victim of harm, and awareness that one is responsible for causing that harm (Hoffman, 1982). Though both components may separately promote reparative and prosocial actions, neither by itself qualifies as guilt, and thus neither should enhance reparative
and prosocial motivations as effectively as guilt. To test this idea, my colleagues and I designed a study that attempted to tease apart guilt from its two proposed components (Vaish, Carpenter, & Tomasello, 2016; see Figure 1). Here, 2- and 3-year-old children either caused harm to a victim (the marble they were playing with rolled away and broke an intricate tower that the victim had built) or caused the identical but non-harmful outcome (their marble broke the same tower but the tower did not belong to anyone). In two other conditions, children witnessed someone else cause the same harmful or non-harmful outcome.

![Figure 1](image1.jpg)

**Figure 1.** Materials and procedure from Vaish, Carpenter, and Tomasello (2016). a) The two marble runs (one for the child and one for the other player – an experimenter), and the intricate tower that would later break. b) A child in the guilt-inducing condition watches as her marble rolls out of her marble run’s garage and breaks the victim’s tower (highlighted here with a white oval and arrow); the victim is absent during this mishap. Note that in the conditions in which the child’s marble broke the tower, the other player’s marble stayed securely in its garage (as shown), and vice versa. c) The victim then returns to the scene, after which children’s reparative attempts and reparative comments are assessed.

We found that 3-year-old children made significantly more attempts to repair the damage and more reparative comments such as “I’ll fix it” when they had caused harm to the victim than in any other condition. In other words, 3-year-olds’ motivation to repair damage was higher in the guilt-inducing situation than in both the sympathy-inducing situation (when they witnessed harm) and when they caused a non-harmful outcome. Two-year-old children, however, did not show this specific prosocial effect of guilt; rather, they showed an overall effect of sympathy
such that they were more prosocial towards the victim when she had been harmed by them or by another person than when no one was harmed. Other measures suggested that the problem for these younger children was not a failure to keep track of cause and outcome. For instance, 2-year-olds spent more time looking at the other perpetrator when she had caused the damage than when they had themselves caused it, and more time looking at the victim when she had been harmed than not. Nonetheless, they did not make increased reparative attempts in the guilt-inducing situation. Together, these results suggest that between 2 and 3 years of age, guilt begins to motivate reparative behavior above and beyond sympathy or the desire to fix any unintended outcome of one’s actions.

In a second study, my colleagues and I shifted focus to a different aspect of the reparative functions of early guilt, namely, repairing the damaged relationship (Hepach, Vaish, & Tomasello, 2017). We reasoned that if the central function of guilt is to mend the ruptured cooperative relationship, then a transgressor who feels guilty should be motivated not only to ensure that the physical damage is repaired, but also to be the one to carry out that repair. By investing their own time, energy, or resources into the reparative process, transgressors can convey their concern for the victim and commitment to the relationship in a way that they cannot if someone else steps in and carries out the repair instead.

To assess children’s motivation to repair and dissatisfaction when they were unable to repair, we measured children’s pupil dilation, i.e., the degree to which the pupils of their eyes were dilated compared to a neutral, baseline phase. Systematic changes in pupil size index activation of the sympathetic branch of the autonomous nervous system and are indicative of experienced internal arousal (Bradley, Miccoli, Escrig, & Lang, 2008; Loewenfeld, 1993; see also Hepach & Westermann, 2016), and have recently been shown to index children’s motivation to help.
Specifically, children’s pupil dilation increases in response to seeing others in need of help, and the greater the increase, the likelier and faster children are to subsequently provide help to that person (Hepach, Vaish, Grossmann, & Tomasello, 2016; Hepach, Vaish, Müller, & Tomasello, 2019; Hepach, Vaish, & Tomasello, 2012).

Crucially, when children simply observe others in need of help, their pupil dilation decreases to a similar extent when they see help being provided by someone else and when they provide help themselves (Hepach et al., 2016; Hepach et al., 2012). Thus, all things being equal, young children’s primary motivation is apparently not to get recognition for their helpful actions but rather to see the person in need be helped. However, in our study on children’s motivation to repair the damaged relationship, we predicted that feeling guilty should alter this motivation such that when children have caused someone harm, they should be not only motivated to see the victim be helped, but also to provide the help themselves (Hepach et al., 2017). The result should be that when they have caused harm, their pupils should remain dilated if they are unable to repair the harm and someone else repairs it instead.

We tested this prediction by placing 2- and 3-year-old children in a situation in which they either caused accidental harm (by spilling water on an experimenter’s work) or they witnessed an adult accidentally causing the same harm to the experimenter. Then children either had the opportunity to wipe up the spill themselves or were unable to do so themselves and instead watched as a different (second) adult wiped it up. Before and after the spill was wiped up, we measured children’s pupil dilation. As predicted, we found that 3-year-olds (and less robustly, even 2-year-olds) showed decreased arousal when they could repair harm that they had caused, but their arousal remained high if someone else repaired harm that they had caused. In contrast, and replicating prior work (Hepach et al., 2012), if the adult had caused the harm, then children’s
arousal similarly decreased, regardless of whether they or the second adult repaired it. This is the first evidence that by 2-3 years of age, children are not only motivated to see people in need be helped or the damage they caused be repaired; rather, in contexts in which their valuable relationships are at stake, they are additionally motivated to carry out the necessary repair themselves. This modified prosocial motivation may serve to convey their continued commitment to the victim and thus help secure the relationship.

Together, these new experimental directions suggest that a nascent form of guilt may emerge and serve critical prosocial functions as early as the toddler years. By age 2, rudimentary guilt may change children’s prosocial motivation towards people whom they have harmed (Hepach et al., 2017), though it does not yet boost children’s overt reparative behavior itself (Vaish et al., 2016). But by age 3, children show a reparative motivation that is clearly in line with guilt: After they harm someone, they want to repair that harm themselves and engage in increased reparative behaviors (Hepach et al., 2017; Vaish et al., 2016).

**Can this really be considered guilt?**

The above conclusions about the early prosocial functions of guilt are necessarily tentative because these studies did not directly tap into children’s experiences of guilt (and indeed, it is unclear how one would do so given the constraints of measuring guilt, particularly in young children). The approach in these studies was thus to make specific predictions based on the hypothesized prosocial functions of guilt and to conduct controlled experiments to test those predictions. Converging support for multiple predictions allows us to be increasingly confident that we are indeed tapping into the emotion of guilt. It is thus vital for future work to make and test additional predictions to further tease apart the functions of guilt from those of related but distinct processes.
As mentioned earlier, two other emotions that might be suggested as underpinning these behaviors include shame and fear of punishment. Shame, unlike guilt, is thought to lead to withdrawal, avoidance, and lack of reparative behavior among adults (Tangney et al., 2007). Observational studies reveal such guilt-like versus shame-like responses in young children as well. For instance, when 2-year-old children believe they have broken an experimenter’s favorite doll, some show a coherent set of guilt-like responses, including approaching the victim, telling her about the mishap, and attempting to repair, whereas others show a coherent set of shame-like responses, including distress, averting gaze or body position from the victim, being slow to tell her about the mishap, and being slow to repair (Barrett et al., 1993; Kochanska et al., 1995; Ross, 2017; Zahn-Waxler & Kochanska, 1990). A more recent observational study replicated these findings and further showed that guilt-prone toddlers were more likely than shame-prone toddlers to help alleviate the victim’s distress in a novel situation (Drummond, Hammond, Satlof-Bedrick, Waugh, & Brownell, 2017). Guilt-like responses thus seem to be distinguishable from shame-like responses from early in ontogeny, and as predicted, guilt-like responses correlate with increased prosocial behavior.

However, because these studies involved observing naturally occurring differences among children, it is possible that the behaviors used to categorize children as guilt-prone or shame-prone were in fact indices of other, more general differences, such as children’s sociability or dispositional prosociality (Ross, 2017). That is, more sociable children may be more comfortable approaching, engaging with, and providing help to relative strangers; these behaviors might not reflect guilt-proneness as such. Here again, therefore, we must complement observational studies with controlled experiments that manipulate feelings of guilt and shame. Research with adults suggests that guilt and shame are elicited in similar circumstances (Tangney et al., 2007), making
it difficult to experimentally create separate guilt- versus shame-inducing situations. Rather, in experimental work with adults, guilt and shame are typically manipulated using verbal priming such as reporting a personal experience in which they felt guilty or ashamed (de Hooge et al., 2007; Ketelaar & Au, 2003). This kind of manipulation is unfortunately not feasible among young children (Drummond et al., 2017). Thus a crucial challenge for future work will be to find innovative ways to elicit guilt separately from shame in order to examine whether, as predicted, it is indeed guilt and not shame that motivates young children’s reparative behavior. Equally importantly, however, given recent findings that shame does promote prosocial behavior among adults under specific circumstances (de Hooge et al., 2008; Leach & Cidam, 2015; Sznycer, 2019; Tangney et al., 2014), future work must ask whether and when in ontogeny shame may also promote prosocial behavior. Finally, we must also consider the possibility that guilt and shame may be undifferentiated in early ontogeny and become separate emotions over the course of development. If that is the case, then the challenge for researchers will be to explicate the nature of the initial, undifferentiated emotion and when and how the differentiation occurs during development.

Further research is also required to consider a second, alternative emotion: fear, specifically fear of punishment. To my knowledge, no existing empirical work has directly attempted to tease early guilt apart from fear of punishment, either in observational or experimental studies. However, some existing findings may speak indirectly to this question. For instance, children’s guilt-like responses have been found to be unrelated to their temperamental fearfulness (Drummond et al., 2017), though other work indicates some correlation between the two (Kochanska & Aksan, 2006; Kochanska, Gross, Lin, & Nichols, 2002). Further, in Vaish et al.’s (2016) study, the person whose tower was destroyed was looking elsewhere when the
transgression happened and thus did not know who the culprit was (the child or the other person). If children were afraid of being punished by the victim, they should have been equally afraid when they caused the harm as when the other person caused it, and should thus have shown similar reparative effort in both cases. Yet this was not the case, suggesting that young children’s guilt-like responses are not (solely) motivated by fear of punishment. Nonetheless, future work must examine this alternative possibility head-on. It may be feasible, for instance, to place children in guilt-inducing situations in which there is no likelihood of punishment and examine whether children persist in showing guilt-like behaviors (Baumeister et al., 1994).

Alternatively, one could examine children’s reactions when they are accused of causing damage they did not cause. If they fear punishment, they should repair the damage despite their innocence, whereas an alternative response such as moral indignation (at being wrongly accused) should instead result in protest and less reparative behavior. These future directions will greatly help clarify the early emergence and prosocial functions of guilt as well as related emotional processes.

Finally, it is worth reiterating that while our focus here has been on the most basic – and likely ontogenetically primary – forms and functions of the emotion of guilt, more complex varieties demand attention as well. For instance, adults can experience guilt over violating norms even when no one is harmed, omissions of prosocial actions, imagined or anticipated offenses, and having more than others (e.g., Ahn, Kim, & Aggarwal, 2014; Baumeister et al., 1994). Though these complex forms may well be too cognitively and socially demanding for toddlers, it is vital that we begin to study their emergence and prosocial functions to gain a more comprehensive picture of guilt (Hoffman, 1982, 2000; see also chapter Thompson, this volume).

Equally, if guilt and shame are one undifferentiated emotion in early development (a possibility I
suggested above), then we may consider that common emotion to be an “early variety” of guilt (a kind of pre-guilt) that would also deserve careful study in order to complete the picture.

In sum, to understand the emergence of prosociality, we must understand the emergence of prosocial emotions. Developmental research has recently made great advances towards this end. From a remarkably early age, children seem to experience nascent guilt, which motivates them to repair the damage they have caused and restore their ruptured cooperative relationships. Much more work is undoubtedly needed to better clarify the nature of this nascent guilt and its developmental course. It seems clear, however, that from a young age, humans have a burgeoning capacity to participate in and sustain their vital cooperative relationships.
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Feelings of guilt are often conveyed outwardly through facial and verbal expressions of remorse. Indeed, expressing remorse is an effective way to signal feelings of guilt to victims and bystanders, by showing that the transgressor is also suffering, she did not mean harm and is not generally a harmful person, and she plans to make amends and do better in the future (Castelfranchi & Poggi, 1990; Keltner & Anderson, 2000; Leary, Landel, & Patton, 1996; McGraw, 1987). As a result, remorseful transgressors are judged as more reliable social partners and as deserving of more forgiveness, affiliation, and cooperation than unremorseful transgressors (Darby & Schlenker, 1982, 1989; O’Malley & Greenberg, 1983; Ohbuchi, Kameda, & Agarie, 1989). It is useful to note, though, that feelings of guilt are not interchangeable with expressions of remorse, that each may occur without the other, and that guilt may alternatively or additionally be expressed in other ways such as attempts to make amends.


Researchers are often also interested in understanding the intrinsic and socialization factors that impact the development of guilt and thus include additional measures such as children’s temperament or maternal parenting styles. However, we will not delve into those aspects of this research here as our focus is on the prosocial functions of guilt. The interested reader may refer to the following papers as a starting point:


This definition of guilt accounts for the most basic or core form of guilt; more complex or nuanced forms of guilt will require other components and capacities. For instance, guilt about violating social norms requires some understanding and internalization of social norms, and anticipatory guilt requires the capacity for prospective thinking. However, we will be concerned here with the most basic – and thus likely ontogenetically primary – form of guilt. We will return briefly to this point at the end of the chapter.

Due to space constraints, I will not delve into possible developmental mechanisms underlying the emergence of guilt around these ages. These are discussed elsewhere, including:


