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## Abstract

Although developmental psychologists traditionally explore morality from a learning and development perspective, some aspects of the human moral sense may be built-in, having evolved to sustain collective action and cooperation as required for successful group living. In this article, I review a recent body of research with infants and toddlers, demonstrating surprisingly sophisticated and flexible moral behavior and evaluation in a preverbal population whose opportunity for moral learning is limited at best. Although this work itself is in its infancy, it supports theoretical claims that human morality is a core aspect of human nature.

## Keywords

moral development, infancy, evolution

Ask a group of 5-year-olds to tell you a story, and they will likely regale you with tales of virtuous princesses and evil stepmothers, of superheroes and supervillians, or perhaps of the time someone misbehaved and was sent to bed without dessert. This tendency to see certain actions and individuals as right, good, and deserving of reward, and others as wrong, bad, and deserving of punishment—generally referred to as a *moral sense*—is often considered a defining feature of what it means to be human. Indeed, although there are considerable cross-cultural differences regarding which actions are considered obligatory, permissible, or forbidden, and a wide variety of prescribed responses to violations across societies, all normally developing adults in all cultures have the basic notion that some things are right and others are wrong (Brown, 1991). Where does this moral sense come from?

## Traditional Accounts: Morality Is (Completely) Learned

Traditionally, psychologists have probed moral origins from a learning and development perspective (e.g., Kohlberg, 1969; Piaget, 1932; see Killen & Smetana, 2006, for reviews). These accounts posit that infants start out as fundamentally different moral creatures from adults—either *amoral* (possessing no moral sense) or *immoral*

(possessing a moral sense that opposes adults', perhaps because of selfishness or cognitive limitations)—and acquire a mature moral sense over time through various developmental processes. Indeed, extensive empirical work demonstrates that as children become increasingly other-focused, experienced, socialized, and cognitively skilled, they show corresponding improvements in morally relevant cognitions and evaluations (see Killen & Smetana, 2006); furthermore, cross-cultural variation in the moral sense in adulthood can only have resulted from varied input during development.

However, development and cultural variation do not themselves preclude the existence of innate capacities. As has been argued for humans' "core" understanding of certain conceptual domains—including objects, numbers, geometry, agents, and groups (see Spelke, 1994; Spelke & Kinzler, 2007)—there may be aspects of morality that emerge in the absence of specific experiences, such as (among others) being helped or harmed in particular ways/situations, observing others be similarly helped or harmed, or being explicitly taught which acts are right

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and which are wrong. This moral core would remain essentially intact throughout the lifespan, constraining how subsequent experiences and advances in other domains influence moral development. Indeed, scholarly interest in such an innate moral core has blossomed in recent years (e.g., Haidt & Joseph, 2007; Hamlin, 2010; Joyce, 2006; Katz, 2000; Mikhail, 2011; Premack & Premack, 1994).

### Morality for Cooperation

Evolutionary biologists, anthropologists, and primatologists are increasingly exploring the integral nature of morality to successful group living (see Alexander, 1987; Cosmides & Tooby, 1992; de Waal, 2006; Henrich & Henrich, 2007; Joyce, 2006; Katz, 2000; Price, Cosmides, & Tooby, 2002). Though the details vary, these functional accounts generally posit that the moral sense evolved to sustain collective action and cooperation—which lead to great mutual gain but sometimes require personal sacrifice—within groups of unrelated individuals. Cooperative systems require (at least) three abilities/propensities, all relevant to the moral sense: (a) moral *goodness*: the tendency to feel concern for and help others despite personal costs, presumably rooted in empathetic processes; (b) moral *evaluation*: the ability to identify and dislike those who are uncooperative/unempathetic/unhelpful or who are likely to be in the future, requiring an ability to analyze others' social behaviors; and (c) moral *retribution*: the tendency to carry out, or to support, punishment of those who misbehave, which could involve emotional processes, behavioral analyses, or both. Because humans are arguably the most cooperative, empathetic, and altruistic species on earth (e.g., Tomasello, 2009), they should also be the most evaluative and retributive.

### Requirement 1: Moral Goodness

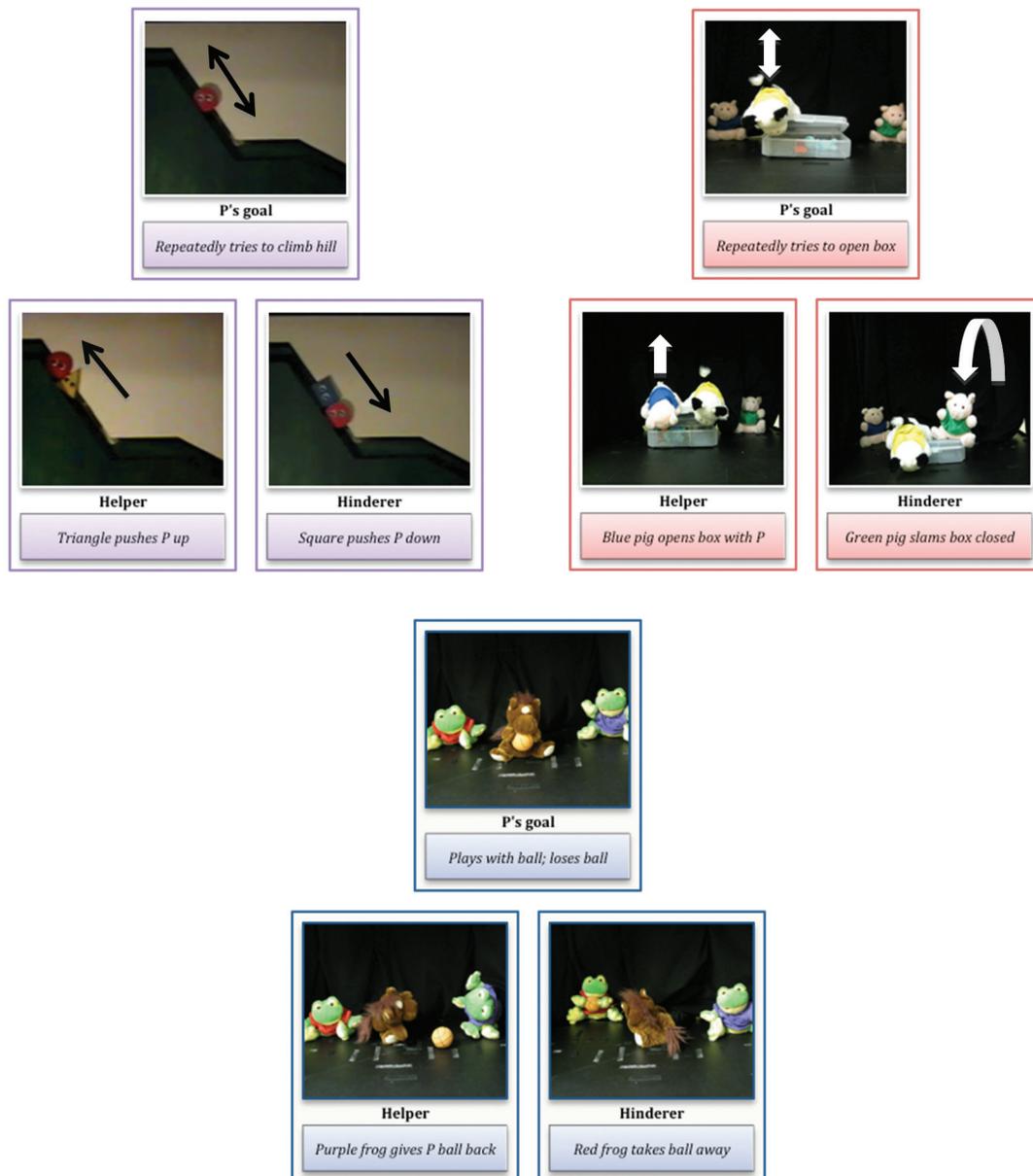
A growing body of developmental data suggests Requirement 1, moral goodness, is present in infancy and is rooted in empathy. From birth, newborns show rudimentary emotional reactions to others' suffering (Martin & Clark, 1982; Sagi & Hoffman, 1976). As soon as they are physically able, infants begin to supplement these emotional responses with a variety of active prosocial behaviors, including comforting those in distress, helping others achieve goals, informing others of things they should know, and sharing their own resources (see Dunfield, Kuhlmeier, O'Connell, & Kelley, 2011; Eisenberg, Fabes, & Spinrad, 2006; Warneken & Tomasello, 2009, for reviews). Although active prosocial behaviors emerge after birth, they are unlikely wholly the result of brute socialization: They occur spontaneously, are present in

our primate relatives, and are intrinsically motivated (see also Aknin, Hamlin, & Dunn, 2012; Hepach, Vaish, & Tomasello, 2012).

### Requirement 2: Moral Understanding and Evaluation

If arguments regarding the coevolution of cooperation and morality are correct, early prosociality should be accompanied by capacities for moral understanding and evaluation. Specifically, these capacities should relate to behaviors that are relevant to cooperation, such as helping/assisting, hindering/preventing, giving/receiving/taking, and fairness/inequity. Consistent with this requirement, a growing body of work suggests that preverbal infants understand several types of cooperative behaviors that occur between third parties. By the end of their 1st year, infants grasp that agents work together toward shared goals (Henderson & Woodward, 2011), categorize goal-helping as positive and goal-hindering as negative (Premack & Premack, 1997), and understand how being helped and hindered influences one's social preferences (e.g., Kuhlmeier, Wynn, & Bloom, 2003). By the middle of the 2nd year, toddlers expect individuals to treat others fairly (equally dividing resources; e.g., Geraci & Surian, 2011), as long as everyone has contributed equally to the cooperative endeavor or is in the same group (Sloane, Baillargeon, & Premack, 2012).

In addition to understanding cooperatively relevant behavior, infants positively evaluate those who cooperate and negatively evaluate those who do not. We reported the first studies of this nature (e.g., Hamlin & Wynn, 2011; Hamlin, Wynn, & Bloom, 2007, 2010). Infants viewed live "morality plays," in which a "protagonist" puppet (P) tried, but failed, to achieve a goal. Several goal-failure scenarios were tested, including a wooden, googly eyed puppet trying to reach the top of a hill (adapted from Kuhlmeier et al., 2003); an animal puppet trying to open a box containing a toy; and an animal puppet requesting the return of a ball it accidentally dropped (stimuli depicted in Fig. 1; videos available at [http://www.cic.psych.ubc.ca/Current\\_Directions\\_Media.html](http://www.cic.psych.ubc.ca/Current_Directions_Media.html)). On alternating events, a "Helper" facilitated P's goal (bumped P up the hill/opened the box/returned P's ball), and a "Hinderer" prevented P's goal (bumped P down the hill/slammed the box closed/stole P's ball). Infants' preference for the Helper versus the Hinderer was determined by reach behavior (see Fig. 2). Remarkably, from as early as they can physically reach for objects (by about 4.5 months of age), between 75% and 100% of infants in every single study preferred the Helper to the Hinderer. In follow-up experiments, we measured the preferential attention of 3-month-olds who could not yet reach, and we discovered that infants'



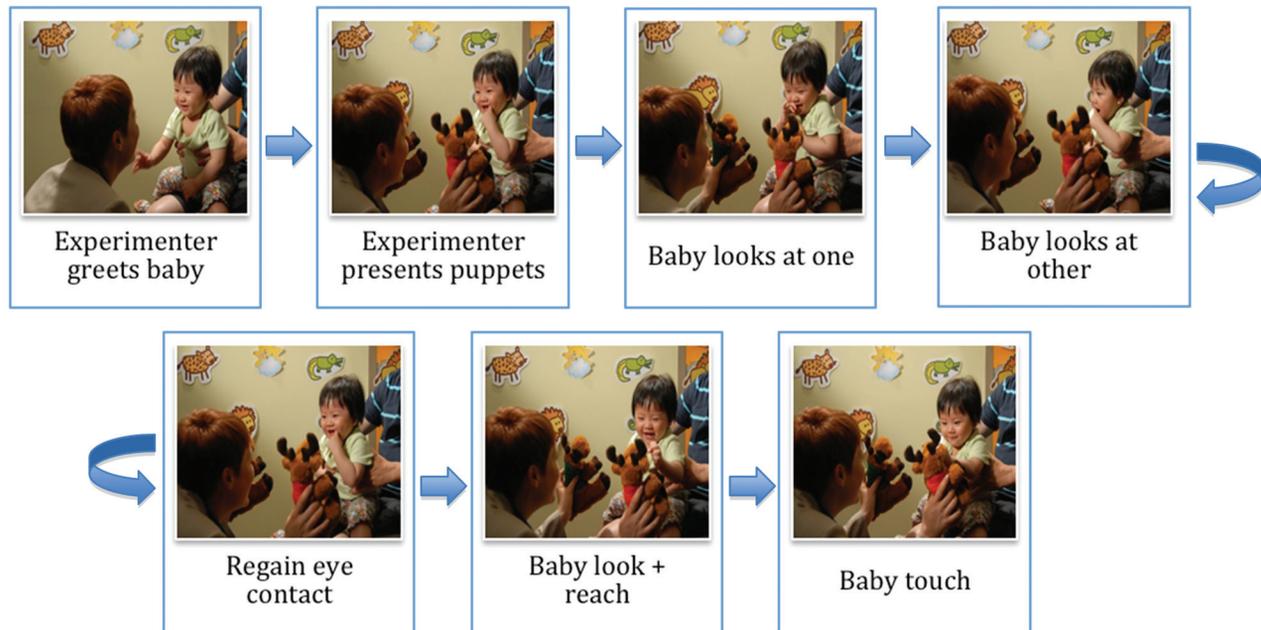
**Fig. 1.** Morality plays shown to infants. Purple boxes represent the Hill scenario used in Hamlin, Wynn, and Bloom (2007, 2010). Red boxes represent the Box scenario used in Hamlin and Wynn (2011; Hamlin, Wynn, Bloom, & Mahajan, 2011). Blue boxes represent the Ball scenario used in Hamlin and Wynn (2011; Hamlin, Mahajan, Liberman, & Wynn, 2013; Hamlin et al., 2011). P = protagonist puppet.

evaluations were initially driven by an aversion to Hinderers (Hamlin & Wynn, 2011; Hamlin et al., 2010). By 6 months of age, infants' choice behavior indicated that they both positively evaluated Helpers and negatively evaluated Hinderers (Hamlin et al., 2007).

### ***Evaluating low-level cues?***

Infants' preferences were consistent across several puppet types, goal scenarios, and preference methodologies; thus, it seems unlikely that they stemmed from particular

perceptual cues in the stimuli (although this must be ruled out for each case; see Scarf, Imuta, Colombo, & Hayne, 2012, and response by Hamlin, Wynn, & Bloom, 2012). To ensure that perceptual cues could not underlie infants' preferences for characters in the box and ball scenarios, we showed age-matched infants "control" plays, in which an inanimate claw, rather than an animate puppet, tugged on a box lid or bounced a ball (Hamlin & Wynn, 2011). Identical puppets then directed the exact same actions toward the claw as they had directed toward P during "test" plays (opened/slammed box or gave/stole



**Fig. 2.** Choice procedure utilized with infants 4.5 months of age and older.

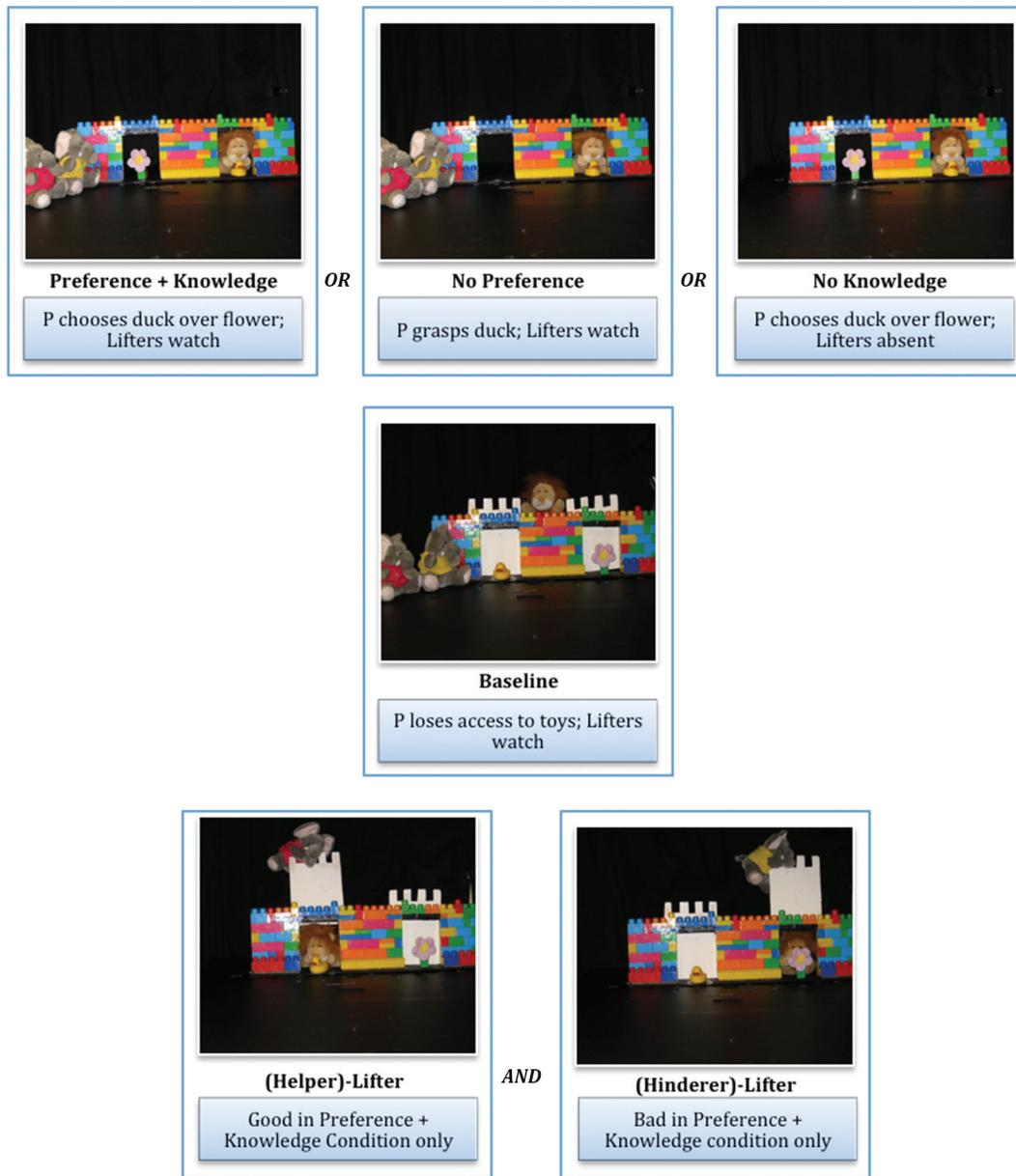
ball); yet, infants did not prefer box-opening or ball-giving puppets. This result is consistent with empirical work suggesting that infants do not attribute unfulfilled goals to nonagents, such as claws (e.g., Hamlin, Newman, & Wynn, 2009; Meltzoff, 1995): Because only agents have goals, puppets' actions toward nonagents are neither prosocial nor antisocial. Like adults do when making moral judgments, then, infants evaluate Helpers and Hinderers for their goal-relevant, social behaviors, rather than for performing some specific physical act or causing some outcome.

### ***Evaluating mental states?***

When determining moral responsibility, adults consider not only whether an individual facilitated or blocked a goal but the *mental states* that drove the action. Indeed, because humans sometimes act in error (e.g., unintentionally, naïvely), and because sometimes prosocial and antisocial behaviors are physically identical, mental states are critical for accurately understanding what individuals are really like and how they will likely behave in the future—in this case, cooperatively or not. For example, consider the act of giving chocolate. If a chocolate giver is unaware that a potential recipient hates chocolate, he or she can hardly be blamed for giving it: The giver might have been trying to be prosocial, and one should expect him or her to cooperate during future interactions. If, on the other hand, the giver knows the recipient hates chocolate but gives it anyway, this same chocolate-giving act

is antisocial, and one might wish to avoid this individual in the future. To accurately evaluate a giving behavior, then, one must read the mental states of all parties: the giver's intention (Mental State 1) toward the recipient, which is based on the giver's knowledge (Mental State 2) of the recipient's preference (Mental State 3).

Do infants consider mental states when evaluating others for their helpful and unhelpful acts? Although failure to take mental states into account has long been considered fundamental to young children's moral immaturity (Piaget, 1932), several recent studies demonstrate that infants successfully analyze actions that involve higher order mental states, such as ignorance and false belief, if tested nonverbally (e.g., Kovacs, Teglas, & Endress, 2010; Luo, 2011; Onishi & Baillargeon, 2005; see also Perner & Ruffman, 2005). We explored whether 10-month-olds incorporated such mental-state reading abilities into their social evaluations (Hamlin, Ullman, Tenenbaum, Goodman, & Baker, 2013). In a preference + knowledge condition (see Fig. 3), P exhibited a preference for one of two toys by repeatedly grasping one toy and not the other. Two additional "Lifter" puppets sat onstage facing P, implying they knew P's preference. P then lost access to both toys, and one Lifter acted (lifted a door) to allow P to reach the toy he had chosen (Helper), and the other Lifter acted identically (lifted a door) to allow P to reach the toy he had avoided (Hinderer). Despite their physically identical actions, infants strongly preferred the Helper-Lifter to the Hinderer-Lifter. Two additional conditions systematically removed either P's, or the Lifter's,



**Fig. 3.** Morality play shown to infants in Hamlin, Ullman, Tenenbaum, Goodman, and Baker (2013). P = protagonist puppet.

mental states: In the no-preference condition, only one toy was present during P's grasps, and no preference was attributable to him; in the ignorance condition, the Lifters were off-stage during P's initial toy-grasps and were therefore ignorant of P's preference. Infants chose Lifters equally in each of these conditions, indicating that in the preference + knowledge condition, they did not simply prefer the puppet who happened to facilitate P's goal or who allowed P to grasp the toy he had grasped before: Infants evaluated Lifters on the basis of their prosocial and antisocial mental states.

Critically, these results demonstrate that infants' evaluations are not limited to simple heuristics like "causing-someone-to-do-X = good," "former-action-facilitating = good," or even "intention-facilitating = good"; these heuristics applied to conditions in which infants failed to distinguish characters. Instead, like adults, infants evaluate others as good and bad mentalistically: Good guys are those who knowingly and intentionally facilitate a third party's goal; bad guys are those who knowingly and intentionally block it. These results add to a growing body of evidence that infants can appreciate the critical

role that mental states play in others' actions, if they are tested with developmentally appropriate methodologies (e.g., Kovacs et al., 2010; Luo, 2011; Onishi & Baillargeon, 2005). Indeed, as prosocial and antisocial mental states should predict others' likelihood to cooperate in the future, such a mentalistic evaluative capacity is crucial for supporting cooperation on a group level, allowing individuals to selectively cooperate with prosocial, and avoid antisocial, others.

### Requirement 3: Retribution

The third requirement for the evolution of cooperation is moral retribution: There must be a way to punish those who cheat the system and to deter potential free-riders, or else the cooperative system would collapse. In other words, moral evaluations need "teeth." On the surface, retaliation appears to conflict with the tendency to negatively evaluate those who intentionally block others' goals (Requirement 2): Punishment is inherently goal-blocking. Yet, adults easily solve this conflict by interpreting actions in terms of their global, rather than their local, value (see Heider, 1958): In some cases, intentionally and knowingly blocking others' goals is considered the "right" thing to do, whether it be to punish bad behavior, keep vulnerable individuals safe, be loyal to one's allies, and so forth. Thus, a core system for moral goodness should allow for goal-preventing behaviors, and a core moral evaluation tendency should excuse, or even celebrate, those who perform justified goal-blocking acts intentionally.

Before they are 2 years of age, toddlers direct their own antisocial behaviors appropriately, selectively taking resources from someone who previously hindered a third party (Hamlin, Wynn, Bloom, & Mahajan, 2011). In addition, rather than always liking those who intentionally facilitate goals, preverbal infants prefer appropriately antisocial characters (who harm Hinderers) over inappropriately prosocial ones (who help Hinderers; Hamlin et al., 2011). This effect has been demonstrated in infants as young as 5 months of age (Hamlin, 2012), many of whom had presumably never seen an act of punishment (the majority were first-born infants), much less been urged to positively evaluate one.

Two possible mechanisms could underlie infants' tendency to prefer those who harm Hinderers: They might believe Hinderers deserve punishment and, thus, like those who perform it; alternatively, infants might positively evaluate those who hinder antisocial others as enemies of their enemy. Either mechanism is flexible enough to support cooperation on a grand scale. However, an enemy-of-my-enemy mechanism is presumably more beneficial: It can be applied to anyone who is likely to cause harm, including Hinderers, but also to outgroup members, friends of enemies, and so forth. Indeed, infants also prefer those who hinder (vs. help) puppets

who are different from them (Hamlin, Mahajan, Liberman, & Wynn, 2013), suggesting the enemy mechanism may underlie their nuanced evaluations.

### Conclusion

In sum, recent developmental research supports the claim that at least some aspects of human morality are innate. From extremely early in life, human infants show morally relevant motivations and evaluations—ones that are mentalistic, are nuanced, and do not appear to stem from socialization or morally specific experience. Indeed, these early tendencies are far from shallow, mechanical predispositions to behave well or knee-jerk reactions to particular states of the world: Infants' moral inclinations are sophisticated, flexible, and surprisingly consistent with adults' moral inclinations, incorporating aspects of moral goodness, evaluation, and retaliation. This research supports theorizing on the coevolution of cooperation and morality, and it suggests that morality is a core aspect of human nature. Future researchers should focus on how this early emerging moral core combines with experience and other developmental mechanisms to create a culturally specific, adult moral sense.

### Recommended Reading

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The author declared no conflicts of interest with respect to the authorship or the publication of this article.

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