# 8   Mechanisms of Moral Development

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Moral evaluations constitute a fundamental aspect of human psychology. How does moral competence develop? For decades, this question has been addressed within cognitive-developmental frameworks (e.g., Killen & Smetana, in press; Kohlberg, 1971; Piaget, 1932), and the general answer has been that moral development is a *constructivist* process: children develop the ability to make increasingly sophisticated moral distinctions by actively reasoning about their social experiences. This proposal features prominently in "social domain theory" (Smetana, 1989, 2006; Turiel, 1983), which argues for coexisting domains of social understanding. Moral norms (characterized as governing actions with consequences for others' welfare) comprise one domain, and conventional norms (characterized as governing actions that affect social order) comprise another domain. A major claim of social domain theory is that young children construct different domains of social understanding at an early age by interacting with adults and peers and by attending to qualitatively distinct features of these social experiences. Does this account of moral development effectively explain the emergence of moral thought and the changes that occur throughout childhood?

We argue that, although social domain theory and other cognitive-developmentalist frameworks have provided powerful insights into moral development, an even more productive explanation of moral development comes from an analogy offered by Haidt (2012) in which the moral mind is likened to a set of "taste buds." These taste buds consist of receptors that respond innately to particular types of content, and there is a finite range over which these receptors can be adjusted by cultural factors. Thus, moral development may be understood by examining starting states and socially provided external input, rather than by focusing primarily on children's

reasoning about their social experiences. This idea builds off a similar proposal by Mikhail (2007) and Hauser (2006), which applies linguistic theory to moral cognition, thus advocating the existence of a "universal moral grammar." Their principles-and-parameters theory also incorporates innate representations and environmentally induced diversification. However, we adopt the taste bud metaphor here because its proponents have emphasized a plurality of moral foundations (beyond harm and fairness) and an explicit focus on social communication as a mechanism of moral development.

In this chapter we present evidence from developmental psychology and other cognitive sciences to evaluate claims about the mechanisms of moral development. In particular, we first briefly review the constructivist process of moral development as presented in social domain theory. We then review evidence to assess the extent to which recent findings in moral psychology continue to support this model of moral acquisition and change. We find that, although social domain theory may be able to account for a subset of moral competence, other developmental mechanisms beyond constructivism are also crucial. In particular, we argue that moral development can be best explained by a theory focused on innate principles that are modified through social communication, which we refer to as the "taste bud theory."

## The "Social Domain Theory" of Moral Development

### Starting State

Social domain theorists assign little explanatory power to innate primitives and therefore pay minimal attention to the starting state. However, a few important biases are said to be present (Killen & Smetana, in press). First, babies are predisposed to be social; they are interested in other people and motivated to interact with them (see Killen & Rizzo, 2014). Second, beginning in the second year of life, perhaps with the acquisition of self-awareness, children begin to express empathic concern for others' pain and anguish and engage in reparative behaviors to alleviate this distress, regardless of whether they caused or merely observed the distress (Zahn-Waxler, Radke-Yarrow, Wagner, & Chapman, 1992). Third, children use their factual beliefs about the nature of reality to ascribe meanings to the social events they encounter (Turiel, Hildebrandt, & Wainryb, 1991; Turiel, Killen, & Helwig, 1987; Wainryb, 1991).

### Constructivist Processes as the Motor of Moral Development

According to social domain theory, children's own agency is the catalyst of moral change, and the fundamental forces driving moral development are the interactional processes between children and their environments. Specifically, distinctions between different domains of social understanding (e.g., morals and conventions) are presumed to arise from children's reasoning about distinct kinds of social interactions. Therefore, ready-made features, both in the individual (i.e., innate intuitions) and in the environment (i.e., top-down socialization processes), are deemed insufficient for explaining the development of moral competence (Smetana, 2006; Turiel, 1983).

Social domain theory posits that children construct moral concepts from social interactions that involve violations of welfare or justice (Turiel, 1983). Certain actions (e.g., hitting) are characteristically linked to injury and pain, and these readily observed negative consequences lead children to assign moral status to such actions. In particular, children discover (either as observers or as victims themselves) that emotional distress commonly occurs as a result of harmful actions. Consistent with this account of how morals are constructed, research has shown that rowdy, extroverted children may grasp certain moral concepts precociously; active exuberance may relate to increased aggression and therefore greater direct experience with moral transgressions and their consequences (Smetana et al., 2012).

It is not the case that aggressive children have a consistent advantage in acquiring moral competence, however. Empathy and perspective taking also facilitate moral competence. Typically developing children spontaneously take the perspective of victims, allowing them to appreciate the pain that victims feel when they are harmed (Turiel, 1983). This empathic response also leads both children and adults to reprimand perpetrators by responding to the consequences of their actions (Nucci & Turiel, 1978). Therefore, children can construct conceptions of the moral domain both through their empathic reactions to harmful actions and the admonishments that follow such actions.

Not only can children use their own observations of suffering caused by harmful actions to construct an abstract understanding of morality, but they are also able to use their observations of suffering to construct specific moral concepts about unfamiliar actions. When preschoolers learn about a novel action that causes somebody to cry and are shown a picture of this

crying victim, they form a belief that the action in question was immoral; however, a novel action that is prohibited but that does not result in distress tends not to be evaluated as immoral (Smetana, 1985). Similarly, when young children are told about and shown a pictorial depiction of a canonically innocuous action (petting) that causes pain in an unusual animal, they recognize the action as immoral. Conversely, if a canonically harmful action (hitting) causes pleasure in an unusual animal, the positive outcome outweighs the negative action for these children, and the action is judged morally permissible (Zelazo, Helwig, & Lau, 1996).

According to social domain theory, children construct not only moral concepts but also concepts of social convention (e.g., wearing black at a funeral). Children construct conventional concepts by participating in particular institutionalized systems, such as school and family life, and thereby witnessing the arbitrary regularities and expectations that facilitate orderly interactions through group consensus (Turiel, 1983, 2008). The features of these experiences are notably distinct from those in the moral domain. For example, emotional distress is uncommon in the aftermath of a conventional violation, and conventional transgressions primarily elicit responses from adult observers (rather than direct victims of the transgressions), who point out the importance of following rules and maintaining social order (Nucci & Turiel, 1978). Children can therefore recognize that conventions are created by rules and consensual agreement. Thus, conventions are distinguished from morals, which exist due to intrinsic features of actions and independent of the presence or absence of rules.

In sum, qualitatively different kinds of experiences are associated with moral and conventional transgressions. These qualitative differences are present even for toddlers, who are in the process of acquiring the capacity to distinguish between these domains (Smetana, 1989). According to social domain theorists, children as young as 3 years of age (Smetana & Braeges, 1990) actively extract featural regularities from their heterogeneous social interactions to construct a principled distinction between moral transgressions and other kinds of social transgressions (Smetana, 2006; Turiel, 1983).

## Some Challenges to Social Domain Theory

Social domain theory has led to significant progress in understanding moral development (see Smetana, 2006). However, critiques have recently

been mounted on several fronts. After reviewing some of these critiques, we turn to characterizing an alternate theory of moral development.

### The Distinction between Moral and Conventional Domains Is Not Clear-cut

Because social domain theory claims that the construction of different social domains is predicated on reasoning and universally widespread experiences, it follows that conceptions of morality and conventionality should be robust and invariant. However, this prediction has not been borne out. In particular, the moral/conventional distinction is less pronounced, and perhaps even absent, in some traditional or non-Western cultures. Shweder, Mahapatra, and Miller (1987) have found that there is no substantive domain distinction among religious Hindus in India. Instead individuals treat many norms as moral, even when they lack apparent consequences for the welfare of others (but see Turiel et al., 1987). Nisan (1987) has obtained convergent results with religious Muslims in Israel. Similarly, Brazilian children and adults view harmless but disgusting norm violations as possessing moral properties (Haidt, Koller, & Dias, 1993).

More radically, recent research has challenged the idea that the distinction between moral and conventional domains is psychologically meaningful even in Western cultures. Evidence suggests that the difference between these domains breaks down in cases that have not been chosen as exemplars of morals or conventions. For example, whipping derelict sailors is judged to have been more permissible in earlier historical eras, and spanking students is judged to be more permissible when a school principal says it is allowed, demonstrating that some harmful actions do not possess the typical "moral" properties of being wrong independent of contextual factors (e.g., historical time) or authority dictates (Kelly, Stich, Haley, Eng, & Fessler, 2007). Similarly, when harmful actions carry potential utilitarian benefits, the perceived wrongness of these actions becomes more dependent on the existence of rules (Piazza, Sousa, & Holbrook, 2013). Additionally, vegetarian children judge meat consumption to be wrong because of welfare considerations, but they do not believe their own "moral" judgments to be universally applicable (Hussar & Harris, 2010). Strikingly, even prototypical moral transgressions such as hurting another's feelings are not believed to be intrinsically wrong by 3- to 9-year-olds when outgroup members are the targets of the transgressions (Rhodes & Chalik, 2013).

Even social domain theorists have found that distinctions between moral and conventional domains are blurred. For example, this is the case with religious norms for Amish Mennonites and Orthodox Jews (Nucci & Turiel, 1993). A range of other "mixed-domain" actions, such as homosexuality and abortion, also elicit different patterns of judgments than prototypical moral or conventional transgressions, perhaps because they incorporate complex and disparate factual beliefs (Turiel et al., 1991). Finally, there is not a consistently sharp distinction even between prototypical moral and conventional norms; in one study, first- and second-grade children regarded wearing pajamas to school as wrong regardless of an authority figure's dictates, thus assigning "moral" weight to a canonically conventional violation (Tisak & Turiel, 1988).

It is nevertheless true that many studies conducted within the social domain framework have demonstrated a robust distinction between moral and conventional domains (Smetana, 2006). Indeed, these distinctions almost surely have some merit, and the growing divergent evidence may simply lead to friendly amendments to social domain theory. For example, it may be that children do not construct entirely discrete domains of social understanding but instead come to understand that social norms exist along different continuous dimensions, for example, generalizability and authority independence. Yet it is also the case that many other elements of moral competence cannot be easily encompassed within social domain theory, either in its current instantiation or in a modified form. For example, the constructivism posited by social domain theory cannot account for dissociations between judgments and justifications, moral concerns beyond harm and fairness, the innate moral concepts possessed by babies, or the role of intentions in moral judgments—phenomena we discuss below.

### Moral Cognition Is Not Always Conscious, Effortful, and Reflective

A major paradigm shift in moral psychology has occurred in recent years; an ideal of rational judiciousness (Kohlberg, 1971; Turiel, 1983) has largely been overturned by findings that morality is often not grounded in consciously reasoned principles. People are sometimes unable to accurately justify their moral judgments, suggesting that certain moral evaluations result from gut intuitions (Haidt, 2001). Additionally, moral beliefs are often motivated by unconscious ideological biases (Uhlmann, Pizarro, Tannenbaum, & Ditto, 2009). These moral beliefs can in turn distort factual

beliefs (Alicke, 2000; Knobe, 2003; Leslie, Knobe, & Cohen, 2006). For instance, people who are persuaded to believe that capital punishment is wrong subsequently become more likely to believe that it does not effectively deter crime (Liu & Ditto, 2012). Further evidence that morality may not be entirely rooted in carefully reasoned assessments comes from studies demonstrating that irrelevant emotional primes can change moral judgments (e.g., Schnall, Haidt, Clore, & Jordan, 2008; Valdesolo & DeSteno, 2006; Wheatley & Haidt, 2005), and certain moral judgments recruit brain regions associated with emotional processing rather than controlled cognition (Decety, Michalska, & Kinzler, 2012; Greene & Haidt, 2002). Perhaps most strikingly, in a simple deception paradigm, people can be led to endorse reversals of their previously expressed moral attitudes, for example, to support government surveillance or illegal immigration one minute and then to argue against it the next (Hall, Johansson, & Strandberg, 2012). Notably, however, very little research of this nature has been conducted with children, and developmental evidence is needed to determine whether aspects of moral cognition are naturally emotional and automatic even in childhood rather than becoming affect-laden and automatized during development.

### Personal Experience Cannot Account for Moral Judgments of Victimless Actions

As demonstrated by social domain theorists, children may learn harm norms by attending to negative consequences inherent in certain social interactions. However, folk concepts of morality encompass a multiplicity of concerns beyond harm and unfairness, including disloyalty and impurity (Graham, Haidt, & Nosek, 2009; Haidt, 2012; Shweder et al., 1987). For many of these victimless violations (e.g., religious or sexual taboos), no observable features indicate their moral wrongness (Edwards, 1987; Haidt, 2012; Shweder et al., 1987). Indeed, no obvious distress reactions can be used to infer that homosexuality or stem cell research is wrong. At least in these and other similar cases, children will not be able to autonomously construct moral concepts by attending to their own experiences. Even attending to internal emotional states will often be insufficient for robust moral acquisition, as the affect experienced in the wake of many victimless transgressions needs to be linked to these moral violations through sociocultural learning (Nichols, 2004; Rottman & Kelemen, 2012; Rozin, 1999).

**The "Taste Bud Theory" of Moral Development**

Given recent challenges to social domain theory, it is important to consider alternative accounts of moral development. The remainder of this chapter presents the fundamental features of our favored approach, which we call the "taste bud theory" (see Haidt, 2012). This theory proposes that, rather than needing to construct a moral sense through their own efforts, babies are born with certain prepared intuitions (the metaphorical taste receptors) that establish the boundaries for a mature moral sense. These intuitions are then modulated by cultural input, which adjusts the sensitivity of the receptors and the range of content to which they are responsive. This is therefore a form of nativism that allows for a large but finite degree of cultural variability, which can be provided by environmental input including social communication and which does not necessarily require reflective inferences about experienced social interactions (Haidt, 2012; Hauser, 2006; Mikhail, 2007).

There are several ways in which the "taste bud" analogy sheds light on moral development. In particular, taste receptors are biologically prepared to respond preferentially to particular stimulus categories. However, the sensitivity of these sets of receptors and their particular triggering stimuli differ based on cultural learning, and this process is especially flexible during early childhood. Additionally, the degree to which the range of diversity is constrained differs across receptors. For example, although children favorably respond to sugary and fatty foods with minimal experience or cultural input, children are likely to avoid bitter or irritating foods (such as coffee or chili) unless they receive cultural input to the opposite effect. Importantly, the constellation of positive and negative evaluations that a child develops in response to foods is not a product of logical reasoning or autodidactic constructivism but is rather an intuitive, emotionally laden set of responses derived from a complex interplay of innate biases and socially learned norms (Haidt, 2012).

**Innate Primitives**

As noted above, research in social psychology and neuroscience has increasingly demonstrated that many moral judgments are rooted in evolved, automatic, consciously inaccessible intuitions (see Greene, 2013; Haidt, 2012). These findings suggest that some fundamental aspects of moral cognition

are not consciously constructed from experience. Instead, moral concepts have been found to emerge in the absence of relevant experiences and are even detectable in prelinguistic babies (see Baillargeon et al., 2014; Bloom, 2013; Hamlin, 2013b; Hamlin, chapter 7, this volume). Even as disinterested third parties, infants both expect and prefer others to act prosocially (e.g., Hamlin, Wynn, & Bloom, 2007; Kuhlmeier, Wynn, & Bloom, 2003; Premack & Premack, 1997). Relatedly, they also expect and prefer others to act fairly (e.g., Geraci & Surian, 2011; Schmidt & Sommerville, 2011; Sloane, Baillargeon, & Premack, 2012).

Other aspects of moral competence also show signatures of innateness in addition to arising surprisingly early in development. Research using the hypothetical "trolley problem," widely used for studying moral cognition (see Greene, 2013, for details), reveals innate moral principles. In two oft-compared variations of this moral dilemma, a train will imminently kill five people in its current path, but this outcome can be avoided either by pulling a lever that will divert the train onto a track where it will kill only one person (the "switch" case) or by pushing a heavy man off a footbridge that runs above the track, thus killing him and stopping the train (the "footbridge" case). Adults have repeatedly been found to make principled distinctions between the switch case and the footbridge case: the majority judgment is that it is permissible to flip the switch that harms one person but spares five others, but it is impermissible to push the man on the footbridge into harm's way to spare five others. People's stronger moral resistance to the footbridge case can be described by the "contact principle" (i.e., the notion that physical harm is worse than nonphysical harm) or the "doctrine of double effect" (i.e., the notion that it is permissible to cause harm as a side effect but not as a means to an end). However, adults are often unable to coherently articulate either principle when asked to defend their moral judgments (Cushman, Young, & Hauser, 2006; Hauser, Cushman, Young, Jin, & Mikhail, 2007). In age-appropriate versions of these two scenarios, 3- to 5-year-olds make the same distinctions as adults (Pellizzoni, Siegal, & Surian, 2010). Overall, these findings are suggestive of an underlying generative computational structure that is operative and intuitive from early in life (Dwyer, 2009; Mikhail, 2007).

Additionally, young children possess a domain-specific and potentially innate faculty for detecting violators of social prohibitions. In particular, when 3- to 4-year-olds are given the deontic rule that "all squeaky mice

must stay in the house," and are presented with a toy house with squeaky and nonsqueaky toy mice, a majority of them understand that they must squeeze mice only outside the house to check whether the rule has been violated. A dramatic decrease in performance is found when children are instead given the nonsocial, nondeontic rule that "all squeaky mice are in the house." This pattern suggests that children's understanding of the deontic rule is guided not by a domain-general logical ability but by a capacity designed specifically to detect agents engaging in socially forbidden actions (Cummins, 1996). This advantage for detecting violations of prescriptive social rules over violations of descriptive nonsocial rules remains intact even when the rules are unusual and arbitrary, such as a requirement to put on a helmet before painting (Harris & Núñez, 1996). Although this competence has been studied only in relation to social conventions, detecting breaches of deontic rules is also a necessary component of moral cognition.

In general, the evidence reviewed in this section suggests that intuitions about "right" and "wrong" (or at least "good" and "bad") have evolved such that they emerge early in development and continue to play a substantial role in the moral judgments of adults. This pattern of early emergence may hold true especially for harm-based and perhaps also fairness-based moral beliefs. Moral intuitions about harm and fairness are characterized by typical properties of innate faculties, including rapid development despite a poverty of the stimulus (e.g., for the distinctions between trolley scenarios) and specialization for particular forms of input (e.g., for deontic rules or for actions causing distress). Therefore, the hypothesis that certain moral foundations are innate receives substantial support. This makes sense, as "value is not in the world" (Tooby, Cosmides, & Barrett, 2005), and thus it is difficult to determine how moral competence could be fully constructed from basic sensory and motivational primitives and content-independent, domain-general learning processes.

**Sociocultural Learning as the Motor of Moral Change and Differentiation**
According to the taste bud theory, innate intuitions form an initial foundation for moral psychology. On this theory certain types of norms will be more readily acquired than others—for example, those with affective resonance (Nichols, 2004) or those that relate to harm, fairness, loyalty, authority, or purity (Haidt, 2012). The taste bud theory suggests that the acquisition of cultural information through social learning is the paramount process through which mature moral competence becomes elaborated.

In some ways this mechanism of sociocultural change is consistent with social domain theory. Indeed, social domain theorists have acknowledged that children use adult testimony as an environmental input that they actively interpret and evaluate in their effort to construct moral competence (Smetana, 1989, 1999, 2006; Turiel et al., 1987; also see Grusec & Goodnow, 1994, for a similar perspective). As noted above, parental messages are qualitatively dissimilar in different interactional contexts, and these provide children with important information about whether transgressions are moral or not (Nucci & Turiel, 1978). Additionally, the quality of parental affect may influence children's motivational and attentional states (Smetana, 1999). However, although social domain theory acknowledges that parents and teachers can "facilitate" moral development as a component of the environment with which the child actively interacts, the locus of change is proposed to reside within the child, who heavily processes and reorganizes information from social communication. Therefore, although social domain theory and the taste bud theory intersect in assigning importance to social communication, the two theories differ in how much emphasis they place on children's interpretation, evaluation, and accommodation of the messages they receive. In particular, the taste bud theory allows for the possibility that children's moral beliefs are shaped through automatic and potentially unconscious processes (Haidt, 2001).

The taste bud theory suggests that communications from adults may influence moral development considerably more than social domain theorists acknowledge, such that socially transmitted information may even be the primary source of moral development (also see Edwards, 1987; Harris, 2012; Nichols, 2004; Shweder et al., 1987; Sripada & Stich, 2006). Support for this idea has often come from cross-cultural research. Recent research utilizing a series of dictator games has demonstrated that, although there is remarkable cross-cultural consistency in ideas about distributive justice in young children (likely due to shared innate principles), responses begin to diverge around 7 years of age to match the differences that can be observed in the adults of these cultures (House et al., 2013). Other research focusing on more local norms has found that cultural influences become pronounced even before middle childhood. For example, Shweder and colleagues (1987) uncovered substantial agreement between American 5-year-olds and adults, as well as between Indian 5-year-olds and adults, but very little agreement between matched age groups across these cultures. Both

sets of evidence are consistent with the taste bud theory in suggesting that certain values have been emphasized or deemphasized through distinct patterns of cultural testimony.

Further evidence that adult testimony can drive moral acquisition comes in the form of studies showing that children do not need to experience or witness the negative consequences of an action in order to form a belief that it is wrong; merely hearing this information without seeing a bad outcome (as in Smetana, 1985, and Zelazo et al., 1996) can lead to the same effect (see Harris, 2012). Additionally, children's judgments about harm may not entirely result from inferences about their first-person experiences with distressed victims but may instead heavily depend on how their parents communicate to them in the aftermath of these situations of distress. In particular, mothers frequently use instances in which their children cause distress as moments for explicit teaching about morality. Crucially, mothers who explain the consequences of their child's harmful behaviors, using emotional language and absolute principles and rules, have children who are more likely to engage in reparative behaviors toward victims of their own actions (Zahn-Waxler, Radke-Yarrow, & King, 1979).

The taste bud theory proposes that both innate primitives and sociocultural learning will exert some degree of influence on all moral beliefs. However, the relative influence of these two factors is likely to vary, and a number of factors may lead social communication to become more or less effective in modulating moral intuitions. For instance, the impact of cultural input is likely to be moderated by the content of particular moral norms such that different kinds of moral beliefs exhibit distinct developmental trajectories (Jensen, 2008). As already described, some norms (e.g., those involving harm) may be more heavily prepared by innate principles, whereas others (e.g., those involving impurity) may be more heavily shaped by social communication. Additionally, certain routes of social transmission may be differentially effective. For example, some norms may be communicated most effectively through emotional narratives and exposure to moral exemplars (Haidt & Joseph, 2007), whereas other norms may be explicitly taught (Nichols, 2004).

Further research is needed to determine what kinds of cultural input are most influential and whether this changes across developmental time. Overall, however, current evidence suggests that sociocultural learning is responsible for important elements of moral competence and, in particular,

for the incredible diversity of the moral domain. Therefore, adults not only have a facilitative role in moral development, but they are instead largely responsible for shaping children's initial predispositions and for specifying the detailed content of children's moral beliefs.

### Additional Developmental Mechanisms: The Role of Intentions

According to the taste bud theory, conceptual change in the moral domain does not need to occur through the child's own rational efforts. Additionally, conceptual change is likely to be quantitative rather than qualitative, with certain principles being up-regulated or down-regulated over developmental time. Moral development may also involve an increasingly complex integration of various moral and nonmoral computations. This integration process has been demonstrated most fully for attributions of mental states (e.g., Cushman & Young, 2011; Decety et al., 2012; Young & Saxe, 2008).

Assessments of perpetrators' intentions and desires play a crucial role in mature evaluations of moral wrongness (see Young & Tsoi, 2013). Studies with adults have demonstrated that the right temporoparietal junction (RTPJ)—a brain region that supports thinking about agents' mental states (Saxe & Kanwisher, 2003)—is implicated in many moral judgments. This region is especially active for evaluations of attempted harm, which is judged to be immoral despite an absence of negative consequences (Young, Cushman, Hauser, & Saxe, 2007). Indeed, temporarily disrupting activity in this brain region causes people to judge attempted harms as more permissible (Young, Camprodon, Hauser, Pascual-Leone, & Saxe, 2010). The recruitment of mental state information is also necessary for absolving agents who cause harm accidentally, and there is an association between lenience toward accidental harm and enhanced activity in the RTPJ during moral judgment (Young & Saxe, 2009). Intentional and accidental harms are also distinguished by high-resolution spatial patterns of neural response within the RTPJ, as demonstrated by a recent study using multivoxel pattern analysis (Koster-Hale, Saxe, Dungan, & Young, 2013). Incredibly, this differentiation between intentional and accidental harms in the RTPJ occurs within less than one-tenth of a second after a stimulus is perceived (Decety & Cacioppo, 2012), demonstrating that adults automatically and immediately integrate information about intent into their harm-based moral judgments.

This integration of mental state information into moral judgments marks a major developmental milestone in children's moral competence.

As originally observed by Piaget (1932), young children focus more on outcomes than intentions when making moral judgments, whereas older children focus more on intentions. Although recent research has demonstrated even babies can take intentions into account in their moral evaluations (Hamlin, 2013a; Hamlin, chapter 7, this volume), it is still the case that a general shift toward explicitly integrating intentions into moral judgments occurs relatively late in development, by some accounts becoming reliable only around middle childhood (Cushman, Sheketoff, Wharton, & Carey, 2013; Helwig, Hildebrandt, & Turiel, 1995; Killen, Mulvey, Richardson, Jampol, & Woodward, 2011). Although children have acquired a robust understanding of intentions and beliefs by this point in development (see Wellman, Cross, & Watson, 2001), the integration of mental state information into explicit moral evaluations requires an additional step beyond the mere encoding of this information (Killen et al., 2011; Young & Saxe, 2008; Zelazo et al., 1996). This integration occurs more fully for some moral norms than for others; purity-based norms are more resistant to considerations of intentionality than harm-based norms (Chakroff, Dungan, & Young, 2013; Russell & Giner-Sorolla, 2011; Young & Saxe, 2011).

**Conclusions**

This chapter has examined the nature of the mechanisms that support moral development. A review of the research demonstrates that social domain theory can account for some of the evidence. However, moral cognition is incredibly rich and diverse, and some aspects of mature moral cognition are likely to have developed from innate intuitions in combination with sociocultural learning. We therefore argue that the taste bud theory accounts for more phenomena in moral development than social domain theory. There is surely room for the assimilation of these two theories, however. For example, research should examine whether logical inferences and peer interactions might account for some adjustments of innate principles and parameters.

Moral psychology is a quickly growing field, but additional attention needs to be paid to the process of moral psychological growth. In particular, more developmental studies must be conducted to test the veracity of the taste bud theory. Finally, as cognitive developmentalists have long realized, gaining insights into how morality emerges in children will provide scientists with a crucial key to discovering the architecture of the moral brain.

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