

## The new science of moral cognition: the state of the art

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**Título:** La nueva ciencia de la cognición moral: estado de la cuestión.

**Resumen:** La necesidad de realizar aproximaciones multidisciplinares al estudio de la naturaleza humana es ampliamente aceptada. Esta perspectiva se ha manifestado especialmente prolífica en el campo de la psicología moral. A pesar que el estudio de temas morales ha sido materia recurrente de las humanidades y de las ciencias sociales, solo la posterior integración de diferentes disciplinas científicas en la ciencia de la “psicología moral” parece haber sido determinante para el desarrollo de este campo de estudio. Así, en los últimos diez años, diversos estudios procedentes de las ciencias cognitivas, la filosofía experimental, la primatología, la psicología clínica y del desarrollo, las ciencias económicas o la antropología han dado lugar a lo que parece ser una “nueva era” en el estudio de la moralidad. En este artículo, revisamos los hallazgos más importantes que constituyen el “estado del arte” de la psicología moral, con el objetivo de facilitar una mejor comprensión acerca del funcionamiento de la mente moral.

**Palabras clave:** psicología moral; juicio moral; cognición social.

**Abstract:** The need for multidisciplinary approaches to the scientific study of human nature is a widely supported academic claim. This assumption has proved to be especially successful in the field of moral psychology. Although studies of moral topics have been ubiquitous in both humanities and social sciences, it is not until the integration of different scientific disciplines in the convergent science of moral psychology that the study of morality seems to start its flourishing age. Thus, in the last ten years, a growing body of research from cognitive sciences, experimental philosophy, primatology, clinical and developmental psychology, economy and anthropology have made possible a “new era” on the study of morality. In this paper, we review the most striking findings that constitute the “state of the art” of moral psychology, with the aim to facilitate a better understanding of how the mind functions in the moral domain.

**Key words:** moral psychology; moral judgment; social cognition.

### Introduction

Recent multidisciplinary approaches to the nature of morality have given rise to important findings, constituting what appears to be a “new era” in this topic. This was largely possible because *a priori* theoretical models of morality are now required to be complemented with experimental data. But, even before the current “boom” of moral research, there was an important tradition in moral psychology, with the paradox that it was not recognized as a research topic *per se*. In other words, during the last century, psychology has made remarkable progress in the study of morality through the study of topics such as empathy, aggression, fairness, norms and obedience without considering them aspects of an integrated moral field.<sup>1</sup>

In this context, an important particularity of morality is that it has been traditionally studied as a part of developmental and educational psychology. Thus, developmentalists believed that children were active actors who constructed much of their morality by themselves. For Piaget (1932/1965) the constructive processes through which children develop respect for rules (their moral understanding) is explained through the progressive development of psychological mechanisms for information processing. The work of Piaget was developed (never better expressed) by Lawrence Kohlberg (1969), who claim that moral reasoning was developed through a progressive and fixed sequence of stages in which children improve their reasoning abilities. Consequently, this model explains children’s ability to reason philosophically about moral (justice) problems.

Despite the fact that developmentalists’ approaches made important contributions to the study of morality, such a rationalist view of our moral seems to undermine the role of emotional processes in the moral domain. Wilson (1975/2000) argued that biology plays a leading part in moral life by providing our species with brain structures that allow us to experience moral emotions in the presence of certain events. However, it was not until the shift of the “affective revolution”—with its emphasis on the study of the automatic affective systems of the mind—and the rebirth of sociobiology as evolutionary psychology that the study of the psychological processes underlying our moral sense suggested whether an emotional explanation of morality was indeed possible.

Indeed, since the modern cognitive sciences, the idea that many of our social behaviors can be explained as the result of automatic processes has found several theoretical and empirical supports (Bargh, 1994). Thus, it is argued that automatic stimulus evaluation occurs at a very early stage in information processing, and that the process is fast, unintentional, efficient and occurring outside of awareness (Öhman, 1987). This claim has direct evolutionary connotations: automatic processes are phylogenetically older than controlled processes, which are slower, effortful and often conscious.

This perspective was reinforced by neuroimaging research and the results obtained from inter-species comparative studies. Thus, from the field of neuroscience, Damasio (1994) showed that patients who suffer lesions in specific brain regions display social deficits (in particular, in their capacity for social decision making). According to the field of

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<sup>1</sup> As suggested by Haidt and Kesebir (2010, p. 797), “(...) just as Moliere’s Monsieur Jourdain discovers that he had been speaking in prose his whole life, social psychology can, perhaps, claim to have been speaking about morality its whole life.”

primatology, research by de Waal (1996) and collaborators has proved to be prolific, making it possible for Darwin's seminal theories about the "moral sense" to find important empirical support.

## Current state of research on moral psychology

Over the last ten years, discoveries about intuitions, emotions and the particular ways in which automatic mechanisms interact with rational processes have led to what appears to be the beginning of a new era in the study of morality. Although there is a broad agreement that morality is an exclusively human phenomenon, the absence of a standard comprehension about the innateness of the moral sense is still an object of scientific debate. Therefore, this review is organized around a preliminary distinction between the study of morality at the level of *capacity* and the study of moral cognition at the level of *content*.

### The study of morality at the level of capacity

Consequently, there are two different ways in which the innateness of morality can be accounted for. Firstly, there is the level of the cognitive and affective mechanisms that are involved in moral cognition (the *capacity* level). Secondly, there is a different level that refers to the psychological predispositions that bias the content of moral judgments and moral systems (the *content* level).

According to the first perspective, the fact that *H. sapiens* is the only living species that can be considered a moral being has been a central claim in biological approaches to morality. In the case of morality, it seems that our species has evolved some psychological mechanisms or "innate hardware" that is not fully present—that is, at least not to the same degree—in any other animal species. This prediction has found support in findings from inter-species comparative studies. Hence, modern sophisticated cognitive faculties appear to be structured on more basic mental capacities that are shared with other primate species. With regard to this issue, parsimony suggests that, if some psychological mechanisms involved in moral cognition are also present in our closest biological relatives, it is feasible that these mind traits evolved before the appearance of humans (Nadal et al., 2009).

Indeed, many non-human primates display human-like methods to deal with conflicts inherent to their social life. Specifically, behaviors such as reciprocity, reconciliation, consolation, conflict intervention or mediation are well documented in several comparative studies, to such an extent that they have been considered the "building blocks" of morality (Flack & de Waal, 2000). Each of these blocks appears to include different cognitive and affective mechanisms that seem to be correlated with the complexity of the behavior and, interestingly, the taxonomical place of the genre. For example, some non-human primates appear to be sensitive to effort (van Wolkenten, Brosnan, & de Waal, 2007) and

capable of detecting and punishing cheaters, abilities that suggest the presence of retributive emotions toward inequity (Brosnan & de Waal, 2003). Likewise, behaviors such as reconciliation, consolation or conflict intervention are associated with an understanding of the distinction between self and other (de Waal, 2007), the ability to make some inferences from the physical world (Tomasello, Call, & Hare, 2003) and even a cognitive level of empathy, which implies an appraisal of the other's contextual/emotional situation (Preston & de Waal, 2002).

However, as noted by Darwin, humans' and non-humans' social behaviors differ substantially in their degree of complexity. For instance, it has been suggested that cognitive capacities, such as symbolic thought and the ability for abstraction, are fundamental in humans' moral cognition. According to Tse (2008), both the capacity to symbolize and the capacity to mentally construct categorical abstractions favored a new scenario in which any event (or individual) that is symbolized could be reconceived as a categorical instance (e.g., good or evil, right or wrong, acceptable or unacceptable). Consequently, any act (e.g., steal/wrong/unacceptable) has the power to make its performer immoral (e.g., thief/wrong/unacceptable).

In addition, neuroimaging results support this account. Moll and Schulkin (2009) found that ancient limbic-neurohumoral systems of social attachment and aversion—which are involved in non-human primate behaviors such as altruism or aggression—are tightly integrated with "newer" cortical mechanisms in the making of moral sentiments and values. This suggests that the motivational-emotional neural mechanisms that underlie prosocial behaviors in other species acquire a new dimension when they are integrated with brain regions associated with complex social knowledge, supporting the hypothesis that morality is not a unified neurological phenomenon (Parkinson et al., 2011).

### Morality understood as a set of innately co-determined social concerns

The debate about the innateness of morality seems to become more controversial when it refers to the specificity of the biological influences in the content of morality. As Sripada (2008) points out, the discussion about "content nativism"—which refers to the specific set of actions that moral norms prohibit, permit or require—does not need to be reduced to a contraposition between the human mind as a blank slate versus the mind as fully programmed by genes. Although empirical evidence supports that the "ingredients" that make moral life possible are indeed given by evolution, it has not yet delimited the precise extent to which biology can also constrain human's moral "products." In the present section, three approaches to the innateness of the content of morality are reviewed: (a) moral judgments understood as evaluations driven by innate principles; (b) moral judgments understood as automatic-affective evaluative processes; and

(c) moral norms understood as psychologically constrained cultural constructions.

*Moral judgment understood as an evaluation driven by innate principles*

The first approach to the innateness of moral content argues that we are born with a moral faculty akin to the language faculty. Thus, it has been proposed that moral judgments are structured on a set of implicit principles that constitute the “Universal Moral Grammar” (Hauser, 2006), understood as an innate device of morality acquisition (Mikhail, 2007). In other words, the human mind is born equipped with a set of domain-specific rules, principles and concepts that can produce a wide range of mental representations. These implicit principles determine the deontological status of an infinite assortment of acts (and non-acts, see Mikhail, 2007). As a result, moral intuitions are structured on these psychological guidelines that constitute the moral faculty.

For instance, it is argued that, although there are domain-general mechanisms underlying the moral faculty, some cognitive mechanisms are moral-specific (Cushman, Young & Hauser, 2006). These authors believe that such mechanisms “translate” general principles into specific moral judgments, because each one of them is understood as “a single factor that, when varied in the context of a moral dilemma, consistently produces divergent moral judgments” (Cushman, Young & Hauser, 2006, p. 1082).

Therefore, they found support for the existence of three particular moral principles. Action principle causes that people judge harm caused by action as morally worse than harm caused by omission. Intention principle causes that people judge intended harm as morally worse than foreseen harm. Lastly, contact principle causes that people judge harm involving physical contact as morally worse than harm caused without contact.

Research conducted by Knobe (2010) is an interesting counterpoint to this perspective. This author has found evidence suggesting that the “moral status” of an action (that is, whether it is judged as morally right or wrong) influences the perception of the intentionality of the action judged. For instance, Knobe and his team found that the same action was judged as intentional or unintentional depending on the wrongness or rightness of the action, respectively.

Likewise, a growing body of studies from the field of neuroscience suggests that there might be some unconscious principles underlying moral judgments. Consider the following scenario:

A runaway trolley is going to kill five people if it continues its present course. The only way to avoid this tragedy is to hit a switch that will change the trolley course, of which the major problem is that, in its new side track, it will run over—and of course, kill—one person instead of the initial five. Is it morally acceptable to hit the switch? (Greene Somerville, Nystrom, Darley, & Cohen, 2001, p.2105)

Diverse studies on this topic show a large inclination to immediately consider the affirmative response morally ac-

ceptable (Greene et al., 2001; Greene, Nystrom, Engell, Darley, & Cohen, 2004). Interestingly, responses were quite different when participants were asked to evaluate a similar recreation of the trolley dilemma. In this second case (the “footbridge dilemma”), all the variables were controlled to be identical than in the trolley dilemma. Thus, in this second version, the only modification was that, in order to stop the train and save five people, participants have to push a “big” person instead of performing the action of “hitting the switch.” Despite the obvious similarities, results show that people respond in an opposite way: they tend to immediately consider as “not permissible” to push one man off in order to save five (Greene et al., 2001).

What makes it morally acceptable to sacrifice one life in order to save five in the first case but not in the second one? For Greene and collaborators (2001), the main distinction between the two situations is that the simple thought of pushing someone to certain death with one’s hands in an “close-up and personal” manner is likely to be more emotionally salient than the “impersonal” thought of hitting a switch, even if both responses have similar consequences. It is noteworthy that, despite that the explanatory validity of this distinction has been seriously questioned (Kahane et al., 2011; McGuire, Langdon, Coltheart & Mackenzie, 2009), it appears that there is *something* about the actions in the footbridge and the switch dilemma that elicits different behaviors.

*Moral judgments understood as an automatic-affective evaluative process*

The possibility that the evaluation of both types of dilemmas engage dissociable processing systems has been proposed as an explanation for this phenomenon. Neuroimaging studies have reported activity in several brain regions during the evaluation of moral events (Moll & Schulkin, 2009), which shows that the process of moral judgment involves several brain areas working integrally. Some of these areas are associated with emotional processes, and others areas are related to rational processing, a fact that has favored the discussion about the function of rational and emotional processes in moral judgments.

For example, Greene (2009) proposes a dual-process theory of moral judgment, according to which automatic emotional responses drive characteristically deontological judgments, and controlled cognitive processes drive utilitarian judgments. Thus, Greene claims that moral cognition functions like a picture camera: there is an “automatic” (emotions-intuitions) and a “manual” (conscious reasoning) mode. Depending on the situation being judged, one setting could be more efficient than the other. However, as a general rule, the automatic mode is more efficient in everyday situations to which we are to some extent habituated. Conversely, in novel situations that require of more flexible responses, the manual mode is more efficient. These differentiated processes can enter into conflict in the moral situa-

tions where a rational evaluation clearly favors the “right” response, but the implication of such a choice elicits a negative emotional reaction (Greene et al., 2004). Supporting this claim, a neuropsychological study by Koenigs et al. (2007) found that ventromedial prefrontal patients made about five times more utilitarian judgments than control subjects.

The dual conception of moral cognition is amply shared among moral psychologists. Moreover, a recent body of research favors the characterization of a typical moral judgment as an automatic process. For example, Jonathan Haidt (2001) found an important battery of evidence supporting his central claim that most moral judgments are caused by moral intuitions.

Based on this conception, Haidt (2001) proposes the Social Intuitionist Model of moral judgment (SIM), which, essentially, captures the interaction between moral intuitions, moral judgments and moral reasoning. Therefore, in daily life, affect-laden intuitions drive moral judgments, whereas moral reasoning-when it occurs- follows these intuitions in an ex-post facto manner. From this perspective, moral judgment is much like aesthetic judgment: in the presence of a moral event, we experience an instant feeling of approval or disapproval (Haidt, 2001). Thus, moral reasoning also plays an important “social” role in moral cognition, being very common in conversation and moral decisions (Haidt & Bjorklund, 2007). In particular, moral arguments should be understood as attempts to trigger the right intuitions in others. As a consequence, moral discussions are understood as processes in which two or more people are engaged in a battle to push the rival’s emotional buttons.

The characterization of moral judgment as a response resulting from intuitive-affective processes has found support in two central claims. Firstly, the fact that people often have the feeling that something is wrong but find it extremely difficult to find reasons that justify their evaluation. Thus, Haidt (2001) identified the cognitive phenomenon of “Moral dumbfounding,” which consists of the fact that, in the absence of a truly comprehension of a given moral judgment, people tend to search for plausible explanations about why *anyone* in a similar situation would have proceeded in the same way. Therefore, it can be said that in those situations, people intuitively “know” whether something is right or wrong, but faced with the lack of a logical understanding of the response, they tend to rationalize a justification for their initial intuition. In other words, the reason why we are often unconscious of the cognitive processes that influence moral judgments is because the “moral mind” acts more like a lawyer trying to build a case rather than a judge searching for the truth (Haidt, 2001):

People have quick and automatic moral intuitions and, when called upon to justify these intuitions, they generate post-hoc justifications out of a priori moral theories. They do not realize that they are doing this. (...) Rather, people are searching for plausible theories about why they might have done what they did. Moral arguments are therefore like shadow-boxing matches: each contestant lands heavy blows to the opponent’s shad-

ow, then wonders why he doesn’t fall down (Haidt, 2001, p. 12-13).

The second claim that supports the characterization of moral judgments as automatic-affective evaluative processes is the sensitivity of moral judgments to affective influences. For instance, there is evidence suggesting that disgust exerts a special influence on moral judgments (Eskine, Kaciniak, & Prinz, 2011; Eskine, Kaciniak, & Webster, 2012; Schnall, Haidt, Clore, & Jordan, 2008; Olivera La Rosa & Rosselló, 2012, 2013). Also, it seems that the reverse of this pattern also mediates moral cognition. Ritter and Preston (2011) found that disgust towards rejected religious beliefs was eliminated when participants were allowed to wash their hands. Moreover, there is evidence that both the cognitive concept and the sensation of cleanliness can make moral judgments less severe (Schnall, Benton, & Harvey, 2008) and reduced the upsetting consequences of immoral behavior (Zhong & Liljenquist, 2006).

#### *Moral norms understood as psychologically constrained cultural constructions*

The affective-intuitive approach to morality is largely sustained by the claim that moral beliefs and motivations are ultimately derived from moral emotions. These emotions are understood as evaluations (good or bad) of persons or actions, with the particularity that the object evaluated can be the self or another. Thus, Haidt (2003) proposes that moral emotions can be divided into other-condemning emotions (like contempt, anger or guilt), self-condemning emotions (shame, embarrassment and guilt), other-praising emotions (gratitude, admiration and elevation) and self-praising emotions (pride and self-satisfaction). These emotions are typically triggered by the perception of a moral violation and normally motivate actions directed at the reestablishment of the “broken” moral value (Nichols, 2008).

A distinctive feature of moral emotions is that their subjective experience is especially sensitive to cultural factors and social dynamics. Thus, the fact that *some* moral emotions are associated with *some* social situations across different cultures suggests that there may be some psychological foundations underlying the development of moral systems. For instance, Haidt and Joseph (2004) argue that we are born with a “first moral draft” that is constituted of (at least) five sets of affect-laden intuitions, of which one is easily triggered by the perception of (at least) five sets of moral situations. In other words, the human mind has evolved these sorts of “social receptors” or “moral buds” (Haidt & Joseph, 2004, p. 57) that are sensitive to the recognition of social patterns (such as actions, relationships or intentions) and can “translate” the perception of these patterns into emotional states. Further, it is argued that evolutionary pressures structured the human mind to intuitively develop concerns about five moral foundations (Haidt & Joseph, 2004).

Therefore, harm/care is associated with the emotion of compassion and concerns for other-suffering, including virtues such as caring and compassion. Fairness/reciprocity involves concerns about unfair treatment, inequity, and abstract notions of justice. Moral violations within this domain are associated with the emotion of anger. In-group/loyalty is associated with emotions of group pride and rage against traitors and concerns derived from group membership. Authority/respect involves concerns related to social order and obligations derived from hierarchical relationships, concerns that are mediated by the emotion of fear. Lately, purity/sanctity involves concerns about physical and spiritual contagion, including virtues of chastity, wholesomeness, sanctity, control of desires and is regulated by the emotion of disgust.

Thus, Haidt and Bjorklund (2007) argue that the process of moral development should be understood as an externalization process: our mind has evolved five moral foundations that function as “learning modules,” which, when working together with cultural elements, facilitated the emergence of moral knowledge.

Moreover, an important aspect of this theory is that each moral foundation is understood as largely independent from an evolutionary perspective. That is, each set of psychological mechanisms (moral emotions and intuitions) can be explained as shaped by different selective social pressures. This hypothesis is derived from the fact that four of them (all but *Purity-sanctity*) appear to be built on psychological mechanisms that are present in non-human primates (Haidt & Joseph, 2004).

These findings call attention to the significant influence of emotional processes in moral life. For instance, it has been proposed that the moral dimension of rules is psychologically grounded on moral emotions (Nichols, 2008). Like Greene (2009) and Haidt and Joseph (2004), the author believes that we have evolved an innate psychological predisposition to feel negative affective responses when in the presence of an action that involves another’s suffering. According to his approach, this aversive mechanism constitutes the “emotional support” for the emergence and transmission of moral norms. In other words, for the “cultural fitness” of a moral norm, there must be some emotional congruence between the content of the norm and its implications.

Therefore, affective mechanisms appear to constitute an important factor mediating the moral/conventional distinction. Rozin, Markwith and Stoess (1997) proposed the concept of moralization to explain the phenomenon in which objects or activities that were originally neutral acquire a moral status. For example, they found that participants who reported avoiding meat for moral reasons found meat more disgusting and offered more reasons in support of their position. In the same line, Rozin and Singh (1999) found that participants’ disgust measures were highly correlated with their (negative) moral judgments against smokers, suggesting

that disgust toward smoking is correlated with strong beliefs that smoking is immoral.

## Conclusion

Summarizing, the approaches reviewed above suggest that emotional processes play a motivational role at the normative level of morality. Such a claim implies that there are no rigid parameters constraining moral norms, only innate predispositions that can potentially shape the content of those norms. As Sripada (2007) points out, although there are “*high-level themes*” in the content of moral norms that are nearly ubiquitous among moral systems—such as harm, incest, helping, sharing, social justice, and group defense—, the specific rules that operate within each theme are culturally idiosyncratic and highly variable.

Therefore, the innateness of moral systems should be understood in terms of a set of social preparedness—like a “*universal menu of moral categories*” (Prinz, 2007, p. 381)—that constrains the construction and functioning of moral systems. In this context, the cuisine analogy created by Haidt and Bjorklund (2007) might be illustrative: although cuisines are unique cultural products, they are also built on an innate sensory system that includes five different taste receptors on the tongue. These biological structures constrain cuisines while at the same time allow them a wide range of creativity in the final products, also constraining our preferences. In short, it can be said that the human mind is endowed with “conceptual moral seeds” that are typically externalized through individual development if the right “weather” (the cultural inputs) does its part.

The present review has some limitations. Due to the broadness of the research’s theme different approaches were not considered in the current discussion. For instance, morality has been a major theme in Western philosophy. Although the discussion of philosophical approaches to the moral domain certainly exceeds the scope of this review, it is important to mention that recent findings from neuroscientific and clinical studies have provided new insights into traditional philosophical debates. With regard to this issue, Damasio (2004) research strongly suggests that the human mind is essentially embodied (as Spinoza believed) which implies that body-states often precede higher-order mental processes and not the other way around (as Descartes claimed).

In addition, further studies on clinical populations that involve affective-related impairments and dysfunctions can provide key insights to the understanding of the influence of affective variables on the moral domain. In this line, further research is needed to address the specific role of emotional processes in moral judgments. Moreover, future studies should be designed to test whether the influence of incidental affects on moral judgments is indeed moral specific or it can be extended to other type of affective judgments (e.g., aesthetic judgments).

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