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The Adaptive Functions of Morality

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The Adaptive Functions of Morality

Introductory philosophy classes paint moral dilemmas as low-probability, high-cost scenarios. One of the most well-known is the trolley problem: a trolley is going to run over a person. You can pull a lever and divert the trolley to kill five people. Should you pull it? What if the one person is your spouse or child? What if the five people are criminals? While this scenario seems unlikely, people face low-cost, mundane moral dilemmas daily. Imagine riding on a crowded bus. Person A bumps into person B. Is person A malevolent or was he thrown off balance because of the momentum of the bus? In short, judgements about this situation lead to determining whether person A was right or wrong.

Morality is the principles that distinguish right from wrong. Humans maintain a *moral self-image*: the views, judgements, and actions that reflect a sense of right or wrong (Jordan, Leliveld, & Tenbrunsel, 2015). In order to study the impact of moral attitudes on behavior we must understand why certain moral beliefs persist, the function of morality, and why errors in moral judgement occur. With an evolutionary framework, studying the adaptive significance of morality may provide answers to these questions. Researchers have studied morality in non-human animals, the development of moral principles, cultural factors that influence ethical frameworks, how morality functions, and finally the persistence of immoral behavior or other errors in moral judgements. Findings suggest morality serves two functions. Primarily, morality increases *direct fitness*, how well an organism fits into their environment (measured by number of viable offspring), by reducing harm, which leads to large-scale cooperation in humans.

Non-human animals may not possess the complex cognitive processes that give rise to moral attitudes, but certain *behavioral syndromes* (“personality” in animals) are reminiscent of human morality. While *reciprocal altruism* (providing assistance to *conspecifics*, organisms of

the same species, with the understanding that they will help you in the future) has helped large-scale human societies flourish, examples in nature are sparse because reciprocal altruism relies on multiple-interactions and memory.

Past studies have pinpointed non-human species that display moral behavioral syndromes. For instance, pied flycatchers engage in *mobbing behavior*, coordinated assaults to drive away predators, which has been observed in the field (Krams, Krama, Igaune, & Mänd, R. 2007). The researchers predicted that mobbing behavior may function as a “tit for tat” strategy, such that if an initial pied flycatcher (mobbing initiator) is joined by a co-operator, then the mobbing initiator is more likely to help the co-operator fend off a predator in the future. Alternatively, if the mobbing initiator is abandoned by a defector, the mobbing initiator will be less likely to act altruistically towards the defector in the future. To test this, Krams et al. (2007) randomly assigned pairs of pied flycatchers to one of three positions (A, B, C) representing nests. In phase one, B birds were removed and a predator (a stuffed owl) was placed in nest A. The researchers observed the mobbing behavior of A birds and any assistance from C pied flycatchers. In phase two, B birds were brought back and predators were introduced to both B and C nests. The dependent variable was which group A birds would help: B (defectors) or C (co-operators). In the 41 cases of phase one, group C birds always helped group A birds. In the 32 phase two trials, nest box A birds helped C birds mob in 30 of the trials and never responded to group B birds. Given mobbing behavior’s potential for serious injury or death, these experimental results suggest the principle of reciprocal altruism explains both rewards for cooperation and punishment for defectors.

While these results suggest fitness is increased via reciprocal altruism, the specific cognitive mechanisms by which reciprocity functions in non-human species is still unknown.

Animal reciprocity appears to be *symmetry-based* (mirroring actions with conspecifics in close proximity), but evidence of *calculated reciprocity*, where an animal weighs the pros and cons of acting altruistically, is scarce (Dufour, Pelé, Sterck, & Thierry, 2007). Since reciprocity in humans depends on understanding the value of goods and calculating the gain/loss of these goods over time, Dufour et al. (2007) explored chimpanzee's capacity for self-control and anticipation over time to serve as a model for expectation management in animals. Five chimpanzees were tested in their ability to wait to exchange a cookie for a larger reward (a bigger cookie). The researchers found that chimpanzees can wait longer durations for larger rewards, suggesting chimpanzees have the ability to weigh the benefits of a larger reward versus the costs of a longer wait time. Dufour et al. (2007) concluded that the small time scale of delay in chimpanzees (minutes) compared to humans (days, weeks, or years), suggests that chimpanzees do not have the ability to predict, plan, and execute complex reciprocal behaviors.

Moving away from reciprocal altruism, there is evidence that behaviors some humans consider immoral serve an adaptive function in animals. For instance, deception is common in animals and it may increase fitness (Krebs, 1977). Given the findings of these three studies on non-human species, it is tempting to conclude that moral behavior increases the fitness of animals, however studying morality in animals is limited in three ways: 1) animals do not possess the cognitive abilities humans do and as a result 2) research is limited to behavioral measures, 3) to classify animal behavior as "moral" or "immoral" is anthropomorphizing. Transitioning from animal to human research, studies explore a wide variety of factors: the development of moral identity, the influence of culture and religion, how humans make moral judgements, and the persistence of immoral behavior.

Developmental research focuses on *empathy*, the ability to understand what another person is feeling. *Empathic concern* is a component of empathy and refers to the emotional response to another person in need. Roth-Hanania, Davidov, and Zahn-Waxler (2011) studied infant reactions to maternal and peer distress because past research suggests empathy leads to prosocial behavior. Infants were exposed to videos of both their mother being injured and an unfamiliar infant crying, measuring affective expressions such as gestures, facial expressions, and sounds. The researchers found that infants age 8-10 months display emotional and cognitive empathy, but do not display prosocial behavior (trying to comfort their mother or peer) until after 24 months. However, early affective/cognitive empathy predicted future prosocial behavior (Roth-Hanania et al., 2011). While this study is limited by a homogenous sample and analysis based on subjective emotional cues, it provides evidence that empathy develops earlier than previous research suggests, and this empathy leads to future prosocial behavior. Future studies should explore the specific types of prosocial behavior, such as reciprocal altruism or kin selection, that are predicted by past empathy.

Infant reactions to the distress of others may function as building blocks for future cooperation. In addition, infant reactions may serve to increase direct fitness by helping them stay alive long enough to reproduce. This is supported by how infants react differently to prosocial versus antisocial behaviors in others (Hamlin, Wynn, & Bloom, 2010). To test this, researchers simulated “helper” versus “hinderer” situations, varying whether it was a person or object that was acted upon (Hamlin et al., 2010). For instance, infants were assigned to view a helper or a hinder person (represented by a human-like shape, like a square with googly eyes). This person was shown helping another person go up a hill or pushing a person down the hill. In addition, the person was shown pushing an inanimate object (a non-human-like shape, like a

triangle without googly eyes) up or down the hill. Researchers measured the reactions to each of the four scenarios and then measured how long infants looked at helpers versus hinderers.

Hamlin et al. (2010) found that infants prefer characters that help other people up the hill, but do not have a preference for inanimate objects being pushed up or down. In addition, infants spend significantly less time looking at hinderers rather than neutral or helper characters. These results are limited by the fact that non-human objects were used to test infant reactions. However, this study suggests infants have the ability to discriminate between stimuli that could potentially harm them. Future studies should improve ecological validity by exploring infant reactions to real-world prosocial and aversive stimuli.

Infants may possess the innate ability to recognize the emotions of others, act compassionately as they mature, and recognize harmful stimuli, all of which increase fitness. Even so, cross-cultural variability in moral self-image suggests cultural factors further the development of morality after infancy (Jordan et al., 2015). Religion has been cited as a critical determinant in the formation of moral self-image. Researchers have considered how numerous religious traditions have been grounded in ethical principles such as compassion and forgiveness, leading to the creation of many hospitals, homeless shelters, and charities (Biblemesh, 2012; Hardy, 2013). While evaluating the morality ratings of the self and peers Furrow, King, and White (2004) found high school students endorsed the idea of an implicit morality derived from religion, such that prosocial personality traits and religious identity were strongly correlated. Furthermore, self-reports suggest a relationship between religion and specific moral attributes. For instance, those with high self-reports of empathy, altruism, and honesty also scored highly on religiosity indexes (Saroglou, Pichon, Trompette, Verschueren, & Dernelle, 2005). These self-reports were confirmed by evaluations of siblings and friends. In addition,

specific attributes of religion may contribute to the perception of morality in others. Ward and King (2019) found that engagement in religious behaviors and maintaining a belief in God increased the mortality ratings of a religious target, which indicates that both self-reports and perceptions of the morality of others vary based on religiosity.

The apparent ethical benefits of religious involvement (at least in regards to the impact on moral self-image) are supplemented by personality traits, which can influence how people act. Furnham and Cheng (2015) found that high scores on religious background and service attendance measures were related to higher education and employment, in addition to greater agreeableness, extraversion and conscientiousness. Furthermore, Tiggermann and Hage (2019) found that religion and spirituality were positively correlated with maintaining a positive body image in a sample of 345 women. In sum, religion may be perceived as generative of morality and it is related to adaptive traits such as higher socioeconomic status, education, empathy, and altruism. However, given how personality traits constitute trade-offs (Nettle, 2006) more research is needed on the specific combinations of adaptive traits in relation to religiosity. As mentioned, infants possess the innate ability to recognize harm, notice pain in others, and to prefer prosocial over antisocial individuals. These responses may be strengthened by religion to form the dynamic ethical concepts adult humans possess, which serve many purposes.

A function of morality is to help make moral judgements about the relationship between mental states of others and personal agency (Cushman, 2008). With implications in the legal system, Cushman (2008) argues that people distinguish between intent and responsibility when making moral judgements. Two experiments test whether judgements of punishment/blame are different from judgements of morality/wrongness (Cushman, 2008). In experiment one, participants were presented situations in which a person intentionally or unintentionally harms or

does not harm (2x2) another person (Cushman, 2008). Results suggest judgements about wrongness depend on the beliefs of the agent, but not on the consequences. For instance, if a person desires to burn another individual by pouring hot coffee on the victim, but fails to actually pour the coffee, this would still be perceived as wrong. In contrast, judgements about blame depend on both desire and consequences. Using the same example, the perpetrator would not be blamed because the consequence (i.e. coffee spilled on the other person) did not happen.

Experiment two was designed to test if the results from experiment one are applicable across a variety of moral judgements. Using the same design as experiment one, participants were asked additional questions about permissibility and punishment, rather than wrongness and blame. The results suggest judgements about permissibility are dependent on desires whereas judgements about punishment depend on consequences. The results of these two experiments suggest there are competing mental operations for different types of moral judgements, which contradicts the idea that humans only punish wrongful acts (Cushman, 2008). Future research should explore these two types of moral judgements (analyzing harmful consequences versus considering the mental states of underlying actions) to understand the adaptive significance of both individually and their interaction.

Regardless of how different moral judgements function in adults, they serve a similar role as for infants—harm prevention via empathic concern. Cushman, Grey, Gaffey and Mendes (2012) designed two experiments to test this idea. In experiment one participants were asked if it is morally permissible to push one person off of a lifeboat to save everyone else on board. The researchers found that heightened physiological measures correlate with lesser willingness to do so. Experiment two was designed to clarify whether the willingness to kill one person to save the lives of many is dependent on empathic concern for the victim, perceptions about the action of

killing itself, or both (Cushman et al., 2012). Participants were told to act out pretend harmful behaviors, such as smashing the experimenter's hand with a brick, and were explicitly told that no actual harm would occur. The experimenters found that performing pretend harmful actions increased physiological responses more so than witnessing the same harmful actions or performing equivalent non-harmful actions. These results suggest that aversion to harming others has physiological and psychological roots. Conducting this experiment with a sequential design would shed light on the *self-domestication hypothesis* (humans domesticated themselves by selecting for reduced aggression), testing whether humans have stronger aversive reactions to harming others over time.

Adding to the potential of morality to evoke prosocial behavior, ethical frameworks at the society-level may help increase cooperation, allowing humans to flourish. Curry, Mullins, and Whitehouse (2019) find fault with past research on cooperation. On one hand, previous studies focus on narrow cooperative behaviors (e.g., reciprocal altruism) and do not take into account the cumulative effects of the wide range of cooperative behavior in humans. In addition, past research has not studied whether the cooperative function of morality is present across cultures. To improve upon these limitations, Curry et al. (2019) identified seven cooperation problems and tested whether these behaviors are considered morally good across cultures. The researchers gathered ethnographic information and categorized the database into each of the seven cooperation behaviors (helping the group, helping your kin, positive reciprocity, negative reciprocity, hawk/dove traits, dividing resources, and possession). The researchers found that all seven cooperative behaviors were perceived as morally good in 60 cultures. However, this study failed to take into account personality traits that may contribute to these behaviors (e.g. generosity, empathy). In addition, the researchers coded for the moral endorsement of

cooperative behaviors in a binary manner (either a society endorsed or did not endorse a moral behavior). Future studies should take this into account by exploring the degree to which a society endorses a moral idea, rather than if the endorsement is simply present or not.

Given the ability of morality to increase direct fitness, improve psychological sturdiness, regulate willingness to harm others, and cooperate, the persistence of immoral behavior is puzzling. Psychopaths violate social norms, harm others, lie, deceive, and represent a significant portion of the incarcerated population, despite being a tiny fraction of the general population. Krupp, Sewall, Lalumière, Sheriff, and Harris (2012) studied a mechanism by which psychopathy may persist, given the fact that many of their characteristics are contra to traits that allow most humans to flourish: reciprocity, cooperation, and empathy. By analyzing hundreds of cases of violent offenders, the researchers found that psychopathy was negatively associated with relatedness to the victim. Krupp et al. (2012) argue that psychopathy may be adaptive because it does not share the characteristics of other severe mental disorders, it is related to social exploitation, and psychopathy is positively related to reproductive efforts. In other words, psychopathy increases the direct fitness of the individual by decreasing the fitness of others. Furthermore, psychopathy increases *indirect fitness* (the fitness of kin) by focusing harmful behavior on non-kin. The main limitation is that while antisocial behavior is often directed to non-kin, this study failed to measure the drawbacks of psychopathy on kin. For example, the impact of finding out a family member was placed in jail for violent assault. Future studies ought to embrace the trade-off model of personality traits (Nettle, 2006) and behavior by studying the specific combinations of psychopathic traits and environmental factors that maximize fitness.

This paper outlined evidence that reciprocal altruism exists in non-human animals, however it likely does not function through the complex cognitive mechanisms that humans use.

In addition, “immoral” behavior such as deception increase fitness, similarly to how combinations of psychopathic traits such as directing antisocial behavior to non-kin increase fitness. From birth, humans have some innate understanding of morality. Research on infants suggest they prefer prosocial individuals and that they can understand the pain of other people. Innate moral beliefs may be bolstered by religious teachings, leading to significant relationships between religiosity/religious involvement and adaptive personality traits. Furthermore, some perceive religion as necessary for morality. Moving from the origins of morality to its function, adult research suggests morality helps with harm aversion and making judgements about blame, wrongness, and punishment. However, past experimental research both on infants and adults lack ecological validity, often using contrived simulations to measure moral judgements. Future studies should create more realistic experimental situations. For example, when studying infant reactions to prosocial versus antisocial behavior, a useful future study would expose infants to real-life behaviors, rather than shapes with googly eyes. In addition, brain imaging research would supplement Cushman’s (2008) work on the different moral judgement pathways. A key question to answer is: do different types of moral judgements correlate with differential brain activity? Another interesting area of research would be determining the relationship between the two functions of morality presented in this paper: harm prevention and cooperation. Can morality function as cooperation by itself or does harm-prevention lead to cooperation? In other words, does the development and function of morality follow a temporal order? Given the complex nature of morality, future studies should incorporate cross-cultural designs to understand the dynamic psychological and cultural factors that contribute to understanding right and wrong.

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Reflection

How might morality help our ancestors survive? This is the question I sought to answer in my Evolutionary Psychology (PSYC 346) term paper. The prompt was to pick a topic describing its connection to both evolutionary theory and psychology. I became interested in moral psychology after reading a paper by Trémolière and Bonnefon (2014), which explores how cognitive interference, time pressure, and framing effects can impact utilitarian moral judgements. From there, I saw the importance of moral psychology: by understanding how, why, and when we make decisions about what is right and wrong, we make better judgments and reduce unnecessary suffering

Once I settled on my general topic, my first stop was the Copley Library website. I went under the “Research Help” section, then I clicked on “Subject Specialists”. I scrolled down to “Psychological Sciences” and clicked on the link. From there, I began my research. I went to the “Databases” tap and opened PsycINFO and PsycARTICLES, both holding thousands of peer reviewed journal articles, books, chapters, and dissertations. Of the two, I rely more heavily on PsycINFO because it is larger and more comprehensive.

After reaching the PsycINFO search page, my first task was to figure out what specifically I would be writing about. To do this, I used the Advanced Search feature to narrow my search to only reviews. From there, I typed “morality” and hit enter. After reading several reviews, I narrowed “moral psychology” down to five areas of exploration: (1) is there evidence of morality in non-human animals, (2) developmental perspectives on morality, (3) cultural factors that impact moral reasoning, (4) how morality functions, and (5) the persistence of errors in moral judgments or immoral behavior (e.g., psychopathy is related to adaptive traits).

At this point, I thought to myself: *now that I have my paper narrowed down to these specific subtopics, I need to treat each one as their own research area.* So, I decided to return to the Advanced Search feature to answer these five questions. For each, I focused on peer reviewed journals to increase the likelihood of reading quality research. I made other specifications for some of the subtopics. For instance, when researching morality through a developmental lens, I limited age group to those younger than 17.

I treated each subtopic as a miniature introduction section of an APA paper. I began each with a broad discussion of definitions, followed by commentary on specific studies. To structure the body of my paper, I used the “Writing & Citing” tab of the psychology research guide, which had links to examples, outlines, and tips for writing in APA style. To judge the quality of the sources, I looked for key information such as author contact information, institution, and journal name. I confirmed that I only read articles from peer reviewed journals with Ulrich’s Periodical Directory on the library website.

My final task was to proofread and format my paper. While checking for errors and ensuring that my writing was clear and precise, I found links to the Purdue OWL APA guide on the Copley Library website. I followed the instructions to ensure that I adhered to APA style. When formatting, I relied on the Copley Library APA Formatting and Style Guide. Specifically, I used it to structure my paper, write in-text citations, and create the reference list. I especially liked the color-coded citation example on the Reference List tab. In addition, I like using PsycINFO because often times an already-prepared APA style citation will be available at the click of a button.

The Copley Library search features, databases, and style guides helped streamline my research and writing process. I appreciate the specificity in search functions and the breadth of resources relevant to psychology.