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Choosing between the Emotional Dog and the Rational Pal: A Moral Dilemma with a Tail

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ABSTRACT Neuroscientific studies indicate moral cognition involves a cognitive struggle between two systems in the brain: the emotional “hot” system and the rational “cold” system. Past research has shown that when presented with personal dilemmas, individuals showed greater brain activity in the hot system areas. However, when further probed about their decisions, moral dumbfounding often occurs. Family selection may help explain moral judgments. Oftentimes, people consider their pets as part of their family. Based on the past research on moral decision-making, the current study presented a novel approach to exploring moral decision-making by forcing participants to choose to save the life between biological family and psychological-kin. Participants ($n = 573$) were given moral dilemmas and forced to decide whether to save humans or pets from imminent death. The level of relationship between the human shifted six times (foreign tourist, hometown stranger, distant cousin, best friend, grandparent, and sibling), while relationship to the pet had two levels (your pet, someone else’s pet). Willingness to save a pet over a human consistently decreased as level of relationship between the participant and the human in the scenario increased. Participants were also more likely to save their own pet over a human life than someone else’s pet over a human life. The results suggest that pets are often viewed as psychological-kin. Females were found to be more likely to save their pets over non-immediate family members than males (all $ps < 0.05$), suggesting that males and females may differ in the structure of their moral reasoning.

Keywords: evolutionary psychology, gender differences, kin selection, moral reasoning



Morality, specifically moral cognitions and moral decision-making, has been the subject of debate amongst philosophers for centuries. Immanuel Kant posited the notion that moral decisions

are the result of slow, reasoned processes (Kant 1785/1959). Conversely, David Hume argued that moral decisions result from emotional reactions to events (Hume 1739/1979). More recently, Carol Gilligan proposed a theory of sex differences in the development of moral reasoning. She argued that men organize relationships in a hierarchical manner and base morality on justice (Gilligan 1982; Muuss 1988). She purported that women focus on care and connectiveness in relationships and judge morality as a responsibility to people. This theory and others have made moral reasoning the subject of empirical research for experimental philosophers and evolutionary psychologists (Haidt 2001, 2007; Hauser 2006; Pinker 2008).

To test models of moral decision-making, researchers often require participants to make moral decisions in life-or-death scenarios, where two or more individuals face imminent death and the participants must choose to save one or the other. One moral scenario used to study this sort of ethical reasoning is the trolley dilemma (Thomson 1986). In this dilemma, a runaway trolley is headed toward five workers down a track. You, a bystander, see the trolley and spot a switch that, if pulled, would divert the trolley to another track. On the other track, one worker is present. The question is: do you pull the switch? A variation of the trolley dilemma is the footbridge dilemma (Thomson 1986). In the footbridge dilemma, the scenario is the same in that there is a runaway trolley about to kill five workers, but now the only way to stop the trolley is to push an obese man standing next to you onto the tracks; ostensibly stopping the trolley. Moore, Clark and Kane (2008) observed that individuals rated impersonal killing (i.e., pulling the switch) as more permissible, while personal killing (i.e., pushing someone off a footbridge) was rated less permissible.

Greene and his colleagues have used functional magnetic resonance imaging (fMRI) to explore brain activity during the moral decision-making process (Greene et al. 2001; Greene et al. 2004). These neuroscientific studies follow a dual process account of human cognition (see Evans 2008 for review), which suggests moral cognition involves a cognitive struggle between two systems in the brain: system 1, the emotional “hot” system and system 2, the rational “cold” system. The hot system is believed to be an evolutionarily older system, evoking more primitive areas of the brain. Some of these areas found to be involved with this “hot” emotional system include the medial frontal gyrus, posterior cingulate gyrus, and bilateral STS. This hot system arguably connects humans to other primates, thus making it an evolutionarily hard-wired system. Primatologists believe our common ancestors shared this hot system with the great apes, whose lives were guided by social emotions devoid of abstract moral reasoning (de Waal 1996). The cold system is found in the newer areas of the brain involved with rational processing and working memory (i.e., dorsolateral prefrontal and parietal areas). The cold system, specialized for abstract reasoning, is species specific to *Homo sapiens*. In their research, Greene et al. (2004) found that when presented with impersonal dilemmas (i.e., the trolley dilemma) individuals typically showed greater brain activity in brain areas responsible for the cold system. In contrast, when presented with personal dilemmas (i.e., the footbridge dilemma), individuals showed greater brain activity in the hot system areas. Recent research shows that the cold system has the capability of overriding the hot system (Greene et al. 2004).

Providing further support for a dualistic model of moral judgment, Greene et al. (2008) found that placing participants under cognitive load increased the reaction time for utilitarian moral judgments, but did not increase the reaction time for non-utilitarian judgments. Showing the interactive nature of the dualistic model of moral judgment, Moore, Clark and Kane (2008) studied working memory capacity (WMC) and found that higher WMC resulted in a greater ability to override the hot system and produce more consistent judgments of

impersonal and personal moral dilemmas. Valdesolo and DeSteno (2006) found that systematically altering the affective states of participants influenced their moral decisions, but only in the footbridge dilemma, not the trolley dilemma. This finding further supports the notion that the hot system is highly engaged during emotionally laden dilemmas, and provides further support for a dualistic model of moral judgment.

Harenski et al. (2009) observed gender differences in participants' moral evaluations of photos. Utilizing fMRI techniques to record neural activity, females were found to show higher neural activity in the areas utilized in the "hot" system, whereas males were found to show higher neural activity in the areas utilized by the "cold" system. Studies such as this suggest that females may engage in more emotional processing while evaluating moral stimuli, while males employ more executive processing while evaluating moral stimuli. It is important to note that one system is not better than the other. For humans, both systems significantly contribute to our moral reasoning.

Researchers have also found that participants, when asked to explain and provide reasons for why an individual chose a certain moral decision, often cannot provide adequate rationale (Hauser et al. 2007). Haidt and Hersh (2001) refer to the inability to justify one's moral decisions as "moral dumbfounding." Haidt and others have identified five intuitive moral foundations upon which humans are believed to base most of their moral judgments. The five foundations include: Harm/Care, Fairness/Reciprocity, Ingroup/Loyalty, Authority/Respect, and Purity/Sanctity (Haidt 2007; Haidt and Graham 2007; Graham, Haidt and Nosek 2009). The moral foundations of Harm/Care and Ingroup/Loyalty likely contribute to moral attitudes involving family and loved ones.

Preservation of family and family selection are essential traits found across many species, including humans (Cheney and Seyfarth 2005). For instance, studies show that humans tend to see individuals with whom they have formed close relationships as extensions of themselves (Krebs 2008). This extension of self can be seen as an emotional attachment or bond. Emotions and emotional bonds, seen through the lens of evolution, are adaptations used to reproduce, protect offspring, maintain cooperation among friends and family, and avoid threat (Keltner, Haidt and Shiota 2006). This emotional attachment can also transcend species.

Alexander (1987) stated that individuals often consider their pets as friends, even as family. The American Veterinary Medical Association (2000) found that 84% of survey respondents refer to themselves as the pet's mom or dad. The statement "my pet is a part of my family" is endorsed between 48% (Weise 2007) and 87% of the time (Albert and Bulcroft 1988). Cohen (2002) conducted a two-part exploratory study to investigate this claim. In phase one, 201 participants completed a questionnaire packet, including answering the same survey twice, once for the human family member the participant felt closest to and again for the pet the participant felt closest to. Cohen was interested in how the role of pets compared with the role of human family members. Results revealed that women reported greater feelings of intimacy and psychological kinship with pets and more psychological kinship with humans than did men. Also, participants who had not graduated from college reported higher levels of psychological kinship and intimacy with humans and pets than those who were college graduates.

In phase two, Cohen (2002) utilized a stratified random selection method to choose 16 people from phase one to participate. Participants completed a social network assessment and were asked questions about the roles and boundaries in their family. Cohen presented them with forced-choice scenarios. In one scenario, participants were asked whom they would rescue first if a boat tipped over. Seven people said they would save their pet first, five would

save their significant others, three stated it would depend who was in the boat, and one declined to choose. Ten of the participants justified their decisions by saying they chose to save the family member whom they believed was the most incapable of saving himself. In the final scenario, participants had to choose whom to give a scarce drug to, either their pet or a stranger they would never meet. Although only one participant selected her pet as the first choice, 13 of the 16 said there were certain circumstances where they would select their pet. Cohen concluded from the results that pets are viewed as part of the family circle and that women have a stronger emotional bond with their pets than men.

However, there are several limitations with Cohen's study. First, the sample consisted of 16, mostly well-educated, childless, Caucasian females recruited from a state-of-the-art veterinary clinic in New York City. Second, the forced-choice dilemmas were vague regarding the level of threat and individuals involved.

Given the strong emotional bond and anthropomorphic relationship most people have with their pets, for the purposes of this study, we use the term "psychological-kin" to denote one's acceptance of his or her pet(s) as family. Psychological kinship "is defined as feeling and behaving toward others as family, irrespective of actual genetic relatedness" (Bailey 1988, p. 134). Based on past research, the current study presents a novel approach to exploring moral decision-making by forcing participants to choose to save the life of either biological family or psychological-kin. The current study used a modified trolley dilemma and varying degrees of relatedness to other humans to investigate moral reasoning. Participants were forced to choose to save their pet/someone else's pet or a human from a quickly approaching bus. By forcing this dilemma, we hoped to shed light on the relationship between kin selection, hot and cold processes, and moral judgment. We hypothesized, consistent with Cohen's results (2002), that when presented with a moral choice between saving an unrelated stranger or one's pet, a substantial number of participants would choose to save the life of the pet. We hypothesized that the choice of one's pet over a human would wane as the degree of relatedness between the participant and the individual in the scenario increases. In addition, we predicted gender differences would be found, with more females choosing to save their own pet than males. Participants were asked to provide a rationale for their moral decisions. We hypothesized that the rationales provided for saving one's pet over a human would reflect more emotionally laden, care-based responses than the rationales provided for saving a human over one's pet. Furthermore, in concert with Gilligan's theory on moral reasoning (1982), we predicted that women would provide more emotionally laden, care-based responses than men.

Methods

Participants

A total of 573 participants were included in the sample. In an effort to produce a representative sample, participants were recruited from a variety of sources including two institutions of higher education in southeastern United States, a social website tailored toward pet owners (AnimalAttraction.com), a social website not tailored toward pet owners (Facebook), and local community events. University students participated in the study for extra credit or as part of a course requirement for introductory psychology courses. No compensation was offered to the online participants or those recruited from community events who volunteered to complete the questionnaire. All participants were informed the study examined moral reasoning and pets, and would take approximately ten minutes to complete. Participants recorded their ages by indicating which age range they fell under from the following options: "18 to 25," "26 to 35,"

“36 to 45,” “46 to 55,” “56 to 65,” “66 to 75,” and “above 75.” Participants’ ages ranged from “18 to 25” to “above 75,” with a median and modal age range of “26–35.” Other demographics were: male 183 (31.94%), female 390 (68.06%); current pet owners 425 (74.17%), non-current pet owners 146 (25.83%); and have previously owned a pet 524 (92.45%), never owned a pet 49 (8.55%).

Materials and Procedure

Participation in the study occurred in person or online, individually or in small groups. Three hundred and eighty participants completed the questionnaire online and 193 completed the paper-and-pencil version of it. The questionnaire, developed for this study, was made up of the 23 items: the first 11 items were participant variables (i.e., age, race, gender, religiosity, pet ownership history), while the remaining 12 items provided the moral dilemmas. Moral dilemmas were constructed by placing two lives (e.g., human, animal) in imminent danger (e.g., about to be killed by a bus), with the participant instructed that they could save only one life. The scenario went as follows: “If you do not own a pet, imagine you do own a pet in the following situation. A bus is traveling down a busy street. **Your pet** runs out in front of the bus. Unfortunately, at the same time a **foreign tourist** steps out in front of the bus. Neither **your pet** nor the **foreign tourist** has enough time to get out of the way of the bus. It is clear given the speed of the bus it will kill whichever one it hits. You only have time to save one. Who would you save?” Participants who took the questionnaire online responded by clicking either “my pet” or “foreign tourist,” while participants who took the written form responded by circling their choice. After providing a response, we asked participants to provide a rationale for their choice.

The scenario was presented 11 more times with the following modifications. Emotional distance to the human in peril was examined by first proposing the person most distant in the relationship, “a foreign tourist.” Level of relationship was manipulated by reintroducing the scenario while systematically increasing the degree of intimacy of the relationship. For instance, “A foreign tourist” was replaced with “a hometown stranger,” “a distant cousin,” “your best friend,” “a grandparent,” or “a sibling.” Emotional distance to the animal was manipulated by having the participants work through the entire progression of “humans in peril” twice: once with their own pet in danger and once with someone else’s pet in danger. The level of relationship to the animal was manipulated to compare pet relationship versus a general value for animal life. The order of presentation for animal relationship was counterbalanced across participants. That is, half the participants first received the “your pet” scenarios followed by the “someone else’s pet” scenarios, while half first received the “someone else’s pet” scenarios followed by the “your pet” scenarios. The order or presentation for human relationship was always presented as most distant (“foreign tourist”) progressing toward family members (“grandparent, sibling”). The questionnaire took approximately ten minutes to complete, after which participants were debriefed.

Results

The responses for saving a human or animal life served as the primary dependent measure. Overall, 40.2% of participants said they would save their own pet over a foreign tourist, but only approximately 2% would save their pet over an immediate family member (grandparent [2.3%] or sibling [2%]) (see Figure 1). Willingness to save an animal life over a human was much more pronounced when the animal was “your own pet” (40.2%), as compared with “others pet” (12.6%), indicating that level of kinship with the animal strongly influenced their decision.

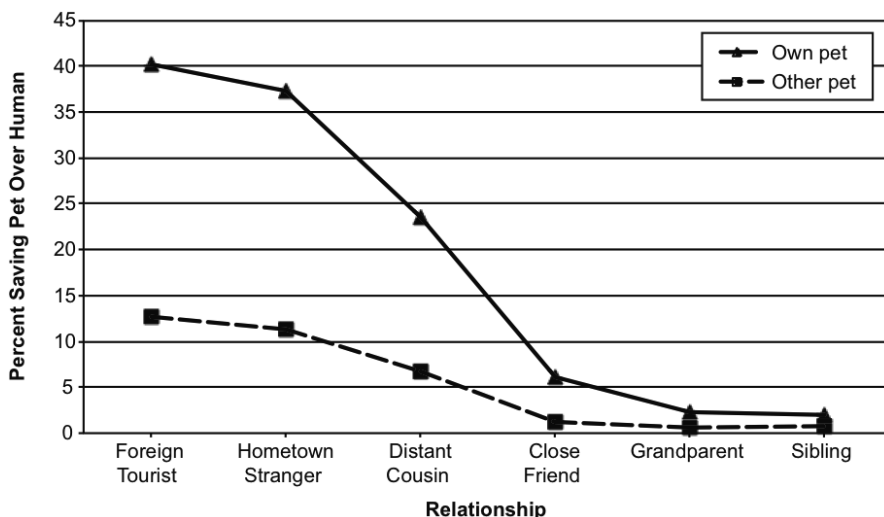


Figure 1. Participants' willingness to save a pet over a human.

To test for gender differences, a series of chi-square analyses were performed on the data. Bonferroni corrections for familywise comparisons were conducted to control for type-I error. Gender differences were found: females were more likely to report they would save their own pet over non-immediate family members (foreign tourist, hometown stranger, and distant cousin) than males (all $ps < 0.004$) (Table 1). However, no differences were found across gender for choosing to save one's own pet before immediate family members (grandparent, parent, sibling) (all $ps > 0.004$) (Table 1). Notably, even at the level of attachment of "best friend," women were more likely to save either their pet or someone else's pet, which goes against the adage "a dog is a man's best friend."

Participants' rationales for their decisions were examined for emerging themes. Of the 573 respondents, 368 provided rationales for their decisions. Two independent raters, who were blind to the hypotheses, scored the rationales. Cohen's Kappa for inter-rater reliability indicates there was excellent agreement between the two raters ($k = 0.82$). The analysis examined two variables: 1) are more emotionally laden, care-based responses associated with saving a pet, and 2) do the number of emotional versus rational decisions vary according to gender.

Overall, the data support the notion that the decision to save human life was controlled by the "cold" rational system and the decision to save a pet was emotionally laden. For participants who chose to save a foreign tourist over their pet, 91.9% stated, "Human life is more valuable than animal." An additional 5.9% provided a religious rationale for their decision, "Humans have a soul; God gave us dominion over animals," while only 1.8% of the participants' rationales were guilt-based: "I would hate to think what others would think of me if I didn't save the human." Thus, only a fraction of responses directly related to an emotional response, guilt.

Six themes emerged from participants who provided a rationale for why they would save their pet over a foreign tourist. A majority of the responses (59.7%) referred to the strong emotional bond they have with their pet/animals: "I love my pet. They are family." A large percentage of the remaining responses represent what the authors consider "moral scapegoating." That is, when participants provided a rationale that would allow them to avoid responsibility for

Table 1. Participants' willingness to save a pet over a human according to level of kinship to human and pet, and by gender.

Human in Scenario	Animal in Scenario	Participant's Gender	Percent Report Saving Animal	χ^2	df	p
Foreign Tourist	Own Pet	Female	44.9%	11.37	1	0.001*
		Male	30.1%			
	Someone Else's Pet	Female	14.9%	6.01	1	0.010
		Male	7.4%			
Hometown Stranger	Own Pet	Female	41.9%	11.31	1	0.001*
		Male	27.3%			
	Someone Else's Pet	Female	12.7%	2.67	1	0.100
		Male	8.0%			
Distant Cousin	Own Pet	Female	27.3%	9.91	1	0.002*
		Male	15.3%			
	Someone Else's Pet	Female	7.4%	1.58	1	0.210
		Male	4.6%			
Best Friend	Own Pet	Female	11.9%	5.69	1	0.020
		Male	3.5%			
	Someone Else's Pet	Female	5.1%	4.48	1	0.034
		Male	0.0%			
Grandparent	Own Pet	Female	4.8%	1.19	1	0.280
		Male	2.8%			
	Someone Else's Pet	Female	2.5%	0.00	1	1.000
		Male	2.3%			
Sibling	Own Pet	Female	4.6%	2.45	1	0.118
		Male	0.9%			
	Someone Else's Pet	Female	4.2%	3.31	1	0.070
		Male	0.0%			

Note: Bonferroni corrections were made for familywise comparisons resulting in an alpha of 0.004.

*significant differences at 0.004; *df* = degrees of freedom.

the decision by attributing the decision to situational variables (27%): "I would be so focused on my pet I wouldn't see the tourist," or holding the tourist accountable, "The tourist should be smart enough to get out of the way." The remaining four themes were a mix of emotional and non-emotionally themed responses: 5.2% stated they would save their pet out of instincts, "Natural instincts to save what is mine"; 3.8% indicated they were dumbfounded, "I can't explain why"; 2.4% expressed disdain or distrust of the foreigner, "The foreigner has no business being here, he could be a terrorist"; and 1.9% referred to the value of animal life, "An animal's life is just as important as a humans."

To examine the relationship between gender and emotional/rational rationales, only those rationales that reflected a clear emotional or rational reasoning were included. That is, "moral scapegoating," "natural instincts," "dumbfounding," were omitted. In addition, only care-based emotional rationales were included, which resulted in the omission of instances of "distrust and disdain." Overall, of the participants who provided an emotionally laden, care-based response, women (81.6%) outnumbered men (18.4%) more than four-to-one ($\chi^2_{(1)} = 8.94, p = 0.003$). This number was significantly greater than the gender makeup of the sample: male (31.9%), female

(68.1%). For participants who provided a rational reason for their decision, the percentages mirrored that of the sample: male (34.5%) and female (65.5%) ($\chi^2_{(1)} = 0.20, p = 0.66$).

As predicted, the rationales seem to provide evidence for a dual system of moral reasoning. Most participants who indicated they would save the human operated on the cold rational system (“value of human life”), while most of the participants who indicated they would save their pet operated on the emotional hot system (“I love my pet”).

Discussion

The current study found that kin selection plays a significant role in moral judgments and decision-making when using novel groups to represent biological family, psychological-kin, or pets. Over 40% of participants chose to save their pet over a foreign tourist. Psychological-kin selection is fairly strong when the other human is unrelated to a distal relation (i.e., distant cousin), but begins to decisively wane as the relation to the human grows stronger, eventually turning over to kin selection, where participants virtually always chose their kin over psychological-kin. Thus, the claim many pet owners make, “my pet is family,” is only true to a degree; biologically related kin are typically valued more than psychological-kin.

The choice to save pet over human was often not rationalized, but instead seemed to follow from an intuitive, emotional decision. These individuals seem to be making moral judgments that run against great social institutions set up to value human life over all other life. All cultures have rules and laws in place that emphasize the sanctity of human life. For example, Simpson (1933) found that when asked to rank the Ten Commandments in order of importance, with 1 being most important to 10 being least, approximately 75% of individuals rated the commandment “Thou shalt not kill” as most important. The high social value for human life is also reflected by two-thirds of the world’s countries abolishing capital punishment (Amnesty International 2010). A majority of the countries which still actively use capital punishment only enact it for the most serious offenses: murder and other violent crimes.

Framing the current findings in the context of Greene et al.’s (2001, 2004) research, the individuals who chose their pets over human strangers and distantly related family members are likely being influenced by the hot system. Though social influences push humans to value the sanctity of human life over other life forms, the hot system is powerful and quick, probably intuitively selecting psychological-kin over the foreign stranger. For the individuals choosing the stranger over their pet, the cold system is likely engaged and is overriding the hot system. Though their visceral reaction is to save their kin (in this case the pet), they are rationalizing and taking into account societal taboos and norms, reasoning that it would be better socially to protect human life over their pet.

Petrivonich, O’Neill and Jorgensen (1993) found what may be viewed as seemingly contradictory results to the current study and to Cohen’s (2002) findings. Individuals were presented with a series of moral dilemmas involving trolley and lifeboat dilemmas. Multiple factors were examined using the dilemmas including: action-inaction (cause death verse no action leading to death), number of lives (save one life versus multiple lives), inclusive fitness (kin/friend or stranger), and species (human or endangered species). Among other results, the researchers found a strong effect for species in that participants responded they would be much more likely to save a human over an endangered animal, indicating that the participants valued human life more than animal life. However, it is important to note that our study differs from theirs in one critical dimension. In the current study, the animal lives at stake were the participants’ pets, which likely raised the emotional valence between the

participants and the animal in peril relative to the animals depicted in Petrivonich, O'Neill and Jorgensen's (1993) scenarios: endangered Highland Gorillas and dogs that are not the pets of the participants. The emotional bond between an individual and a pet is apparently strong enough to make a significant number of individuals value their animal's life over that of some humans.

Some of Petrivonich, O'Neill and Jorgensen's (1993) results are consistent with the results of the current study. Both studies showed strong gender effects, with females being more willing to save the lives of animals than males. In their study, women were less likely to throw a dog overboard instead of a human, more willing to open a barrier to killing a human to allow five dogs to live, and more willing to kill a human to allow 1,000 dogs to live. The authors suggest that their results mirror the findings of Gillian and Attanucci (1988) in that women are more likely to operate on a care-based moral reasoning system.

In the current study, females were more likely to save their pet over non-family members than males. Females could be seen as engaging in hot, emotionally laden processing when contemplating the moral dilemma, whereas males are engaging in cold, rational processing, following the results of Harenski et al. (2009). The finding is also in concert with research that found women express more empathy for pets than men, and thus may have a stronger emotional attachment toward pets (Angantyr, Eklund and Hansen 2011). In this instance, females are protecting their pet from harm as if they are their own offspring. The results from the current study and those found by Harenski et al. (2009) indicate that gender differences may exist in moral decision making, as suggested by Gilligan (1982). While past research has failed to show consistent differences (Jaffe and Hyde 2000), further research is certainly warranted.

Analyzing participant justifications, the researchers found only a small percentage of participants, 3.79%, experienced what Haidt and Hersh (2001) termed "moral dumbfounding." Most participants were able to quickly produce a reason, either rationally or emotionally based, as to why they chose as they did. Most who saved humans over pets seemed to operate on the rational "cold" system, while those who saved their pet operated on the emotional "hot" system. A novel finding here was the large percentage, approximately 27%, of participants who saved their pet over the foreign tourist but insisted on avoiding responsibility for their decision. The researchers have termed this avoidance of responsibility "moral scapegoating." The moral scapegoaters use a rationale to avoid responsibility for their decision, possibly alleviating cognitive dissonance between the emotional desire to save one's pet versus the social pressure to preserve human life at all cost. This novel finding necessitates further research to explore the extent to which, as well as conditions under which, it occurs.

Finally, it is important to note that the current study examines moral judgments and not moral behavior. Participants' actual behavior in these situations may vary greatly from the way they report they would act in these situations. Obviously, it would be unethical and dangerous to place individuals in the actual situations. However, future research may incorporate forced-choice, reaction time measures and virtual reality technologies to explore further moral judgments and behaviors.

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