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Modifying Moral Dilemma Judgments: How the priming of Moral Rules Modifies Responses to Moral Dilemmas

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Modifying Moral Dilemma Judgments:

How the Priming of Moral Rules Modifies Responses to Moral Dilemmas

by

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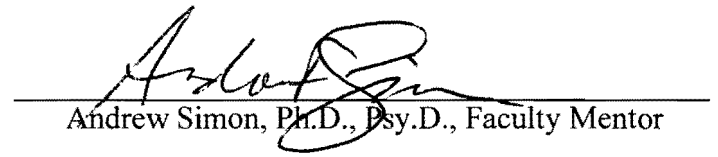

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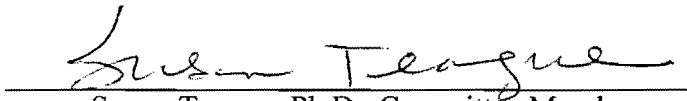

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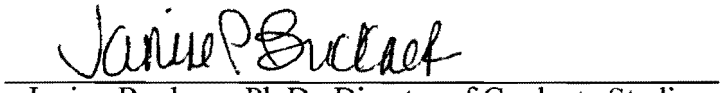

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Abstract

Prior decision making research has covered issues ranging from economic decisions to moral judgment. Moral judgment studies indicate that the use of hypothetical dilemmas presents the ability to explore decision processes regarding morality (Greene, Sommerville, Nystrom, Darley, & Cohen, 2001; Hauser, 2006; Koenigs et al., 2007). Largely, judgment is measured by asking respondents to comment on the permissibility of an action presented in the moral dilemma (Ham & Van den Bos, 2010; Hauser, Cushman, Young, Jin, & Mikhail, 2007; O'Neill & Petrinovich, 1998). A variety of explanations have been used to try and explain moral judgment, but rarely have attempts been made to modify judgment. The present study examines the possibility of using priming to alter moral judgment. Prior results indicate that conceptual priming is sufficient in the modification of moral judgment (Broeders et al., 2011). The results of the experiment indicate that priming may not clearly alter permissibility beliefs in moral judgment. Overall, decision makers did not find the moral dilemma permissible, which may have countered any priming effects.

Introduction

Decision making is evident in many aspects of life. People decide what clothing to wear, what friends to have, and what food to eat. The commonality of making decisions has resulted in a large amount of decision making research. Much research in decision making investigates how people deal with economic issues. Some research attempts to explain how people should act (Von Neumann & Morgenstern, 1953), while other research describes how people actually act (Kahneman & Tversky, 1979).

The first widely used decision making model was called expected utility theory (Von Neumann & Morgenstern, 1953). Expected utility theory is considered a normative model because it predicts normal behavior rather than describing actual behavior. The theory is based on the idea that people will behave rationally when faced with economic decisions. Dawes (1988, p. 8) indicates that rational decision makers will follow the following criteria when making a choice: base the choice on their current state (i.e. psychological, physiological, social relationships); consider the consequences (outcome); and if they are unaware of the outcome, then they will use mathematical probabilities to estimate the outcome. However, research indicates that people do not always follow the rational criteria, which limits the usefulness of expected utility theory.

First, people tend to modify their evaluations from choice to choice. People may prefer the highest expected outcome in one instance, but decide a higher certainty is more important in another case. For example, people prefer a 20% chance to win $45 to a 25% chance to win $30, which highlights a preference for the higher expected outcome (Dawes, 1988). Conversely, people prefer a guaranteed $30 to an 80% chance of $45, which highlights the preference for

certainty (Dawes, 1988). These findings indicate that people may not always follow rational criteria when making decisions.

Tversky and Kahneman (1973; 1974; 1981; 1986) performed a variety of experiments and found that decision makers largely do not follow the rational criteria required for expected utility theory. Prospect theory (Kahneman and Tversky, 1979) was presented as a descriptive model to replace expected utility theory. The major point in prospect theory is the existence of a baseline, or reference point. Any experience is considered positive if better than a set baseline, and negative if worse than the baseline (Schwartz, 2005). Individual baselines may be formed in a variety of ways. The first major area of research in the creation of baselines involves heuristics, or personal rules and beliefs that speed up the decision making process (Tversky & Kahneman, 1974). The next major area, known as framing, concentrates on the way a problem is presented to the decision maker (Tversky & Kahneman, 1981).

Heuristics

Heuristics are composed of personal experiences, rules, and beliefs and help people reduce time and stress in decision making (Tversky & Kahneman, 1974). Unfortunately, heuristics may lead to incorrect assumptions, or biases. Tversky and Kahneman (1974) examined several types of heuristic processes used by decision makers. Research on the adjustment and anchoring heuristic is directly related to the aspect of baselines in prospect theory.

The adjustment and anchoring heuristic suggests people make an estimate by starting from an initial value (baseline), which is adjusted to yield a final answer (Tversky & Kahneman, 1974). The initial value may be derived from the problem that has been presented or from a partial computation. For example, people may be asked to estimate 8x7x6x5x4x3x2x1, and others may be asked to estimate 1x2x3x4x5x6x7x8. People that have been presented the numbers

in descending order tend to make higher estimates than the group presented with numbers in ascending order (Tversky & Kahneman, 1974). Anchoring effects are present even when individuals are offered incentives for accuracy (Wright & Anderson, 1989). People would still produce higher estimates in the descending order frame than the ascending order frame even if given financial incentive for a correct answer. The different frames of the problem result in different choices.

Framing

Framing research indicates that there is a difference in response patterns based on the wording of a problem, which may modify decision frames. Tversky and Kahneman (1981) suggest that a decision frame is the decision maker's concept of the acts and outcomes associated with a particular choice. Framing research attempts to identify situations where decision makers' decision frames are altered due to the wording of outcomes.

The most common type of framing research, valence framing, involves the presentation of the same information in a positive or negative light (Levin, Schneider, & Gaeth, 1998). For example, researchers could inform a participant that they will end with 40 dollars. They could tell the participant that they start with $20 and gain $20 (positive) or start with $60 and lose $20 (negative).

Within valence framing, much concentration is placed on a specific type of framing known as risky choice (Tversky & Kahneman, 1981). Risky choice framing varies the amount of risk associated with given outcomes. The "Asian disease" problem highlights the different aspects of risky choice. The Asian disease problem is as follows (Tversky & Kahneman, 1981):

Imagine that the U.S. is preparing for an outbreak of an unusual Asian disease that is expected to kill 600 people. Two alternative programs to combat the disease have been proposed. Scientific estimates of the consequences of the programs are as follows:

- If program A is adopted 200 people will be saved. (72%)
- If program B is adopted, there is a 1/3 probability that 600 people will be saved and a 2/3 probability that no people will be saved. (28%)

Which of the two programs would you favor?

Another group of students was presented with the same prompt, but slightly different programs.

- If program C is adopted, 400 people will die. (22%)
- If program D is adopted, there is a 1/3 probability that no one will die and a 2/3 probability that 600 will die. (78%)

Which of the two programs would you favor?

In their classic study, Kahneman and Tversky (1981) identified that students in the first condition preferred program A (72%), while students in the second condition preferred program D (78%). When saving was mentioned people preferred the certain option, and when dying was mentioned people preferred the uncertain option. Several concepts arise when examining these results. First, mathematically certain programs are equivalent. Program A is the same as program C, and program B is equivalent to program D. A rational decision maker would be predicted to answer in the same fashion for each prompt because the expected outcomes are equivalent, yet the data clearly show this is not the case. The main difference between the conditions is the framing of the outcome. Condition one frames the programs in terms of gains, while condition two frames the programs in terms of losses.

Tversky and Kahneman (1981) suggest that people react in predictable ways when dealing with gains (i.e. lives saved, money received) and losses (i.e. lives lost, money lost). When dealing with gains (i.e. lives saved) there is a tendency for people to prefer the certain option, and therefore be risk averse (avoid risk). When people are presented with an option between a guaranteed 200 lives saved (program A) and a chance of 600 lives saved (program B), the certain option is preferred. Similarly, people would be likely to prefer a guaranteed $30 over an 80% chance of $45. Decision makers avoid the uncertain option when they are dealing with outcomes that will result in personal gain. There is a preference to have a guaranteed gain instead of a chance of nothing at all.

Conversely, when dealing with losses people tend to prefer the risky option. If presented with the option between a certain 400 lives lost (program C) and a chance of 600 lives lost (program D), people prefer the uncertain option (program D). The preference for the uncertain option is considered risk seeking. People prefer to risk a greater loss (600 lives vs. 400 lives) if there is a chance that they will experience no loss. The chance of no loss is preferred over the guaranteed loss.

Tversky and Kahneman (1986) mention that these tendencies are evident even after inconsistencies are explained to participants. Tversky and Kahneman (1986) explained the discrepancy in responses to participants, but participants still preferred to be risk averse in the lives saved condition and risk seeking in the lives lost condition. Participants expressed a want to be consistent in their answers, but struggled to alter their preferences.

Research on heuristics and framing has helped to strengthen the concept of prospect theory. The creation of a baseline is known as the editing phase of prospect theory (Edwards, 1996). All gains and losses are calculated based on the initial reference point. Also, probabilities

are computed, risky components are identified, and commonalities are disregarded. Using the Asian disease example, people would create a reference point (no lives lost/saved), figure out probabilities (50% chance of saving/losing 600 lives), identify risks (identical to probabilities), and finally ignore any common features.

After the editing phase occurs, decision makers go through an evaluation phase (Edwards, 1996). In this phase, people attempt to determine which outcome will provide the highest overall personal value. Included in this stage is the realization that people place a higher value on losses than gains (Kahneman & Tversky, 1979). In other words, the displeasure felt after losing $20 dollars is greater than the pleasure felt after gaining $20. Also, people do not have a linear evaluation of value. To clarify, the difference between $10 and $20 is considered more than the difference between $1000 and $1010.

Prospect theory led to an influx of research on decision making and has been expanded to understand group processes in the business world. Fiegenbaum and Thomas (1988) found that U.S. industrial firms tended to be risk seeking when suffering losses, and risk averse after achieving their goals. Later, Fiegenbaum (1990) found that firms tend to set a target level and evaluate their success relative to the target level. Anything below the target level led to risk-seeking behavior and anything above the target level resulted in risk-averse attitudes. Marketing research found interest in the possibility of using heuristics to influence buyers (Shanteau, 1989). Darke and Freedman (1993) found consumers were willing to exert more effort to save money if a large amount (or percentage) of money was taken from the base price. In other words, consumers would travel from one store to another in order to receive a discount on a product. This is just a small glimpse of the variety of research conducted using tenants of prospect theory.

Prospect theory seems to have been accepted as a better model for explaining human behavior than the expected utility model. It provides a model that is able to predict behavior while accounting for irrational behavior. Prospect theory also represents the first major decision making model that is able to predict human behavior outside of monetary evaluations (i.e. Asian disease problem). One realm of decision making that utilizes aspects of prospect theory is known as moral judgment research.

Moral Judgment

Some human decision making research focuses on how people make choices when confronted with moral issues. Morality has been a common area of research throughout history and may be thought of as an interpretation of making choices that are moral versus immoral (Beauchamp, 2001). One argument suggests individuals make moral decisions based on automatic emotional responses, which is known as moral intuition (Hume, 1888). These individuals would make decisions based on how they feel immediately after reading about or experiencing a situation. A higher value is placed on their initial feelings than on the potential outcomes. These tendencies are usually examined through the observation of peoples response to hypothetical situations called dilemmas (Greene, Nystrom, Engell, Darley, & Cohen, 2004; Hauser, 2006). Dilemmas are used because they present a situation that puts competing rules or duties into conflict (Hauser, 2006). Many dilemmas place in conflict the social rules "save lives" and "do not kill" (Broeders, Van den Bos, Ham, and Müller, 2011). The trolley dilemma (Foot, 1967) is the most common dilemma used in moral judgment research and is presented as follows:

A runaway trolley is heading down the track towards five hikers. A person is able to pull a lever to switch the trolley onto an alternate track, but there is one person on the other track. Is it permissible to pull the switch?

Those that immediately feel uncomfortable allowing five to die would deem pulling the switch permissible if using moral intuition. The number of lives saved would only be an issue if it changed the initial emotional reaction to the scenario. Alternatively, some believe judgments are based on careful conscious thought, or moral reasoning (Kant, 1785; Kohlberg, 1971). Individuals using moral reasoning would first consider the outcomes of any action before making a decision. Their focus is largely on the outcome of an action, rather than the action itself. An individual presented with the trolley scenario would evaluate the potential lives saved and reason that saving five lives was greater than pulling a switch to cause the loss of one life. Emotion is included in moral reasoning, but is evaluated as less than the value of the predicted outcome.

Moral reasoning is largely focused on the consequence of an action, and is often associated with consequentialism (Greene et al., 2008; Broeders et al., 2011). Darwall (2003) describes consequentialism as the idea that the correct decision is the one that brings about the best consequences by any means, regardless of costs. An individual using consequentialism ignores emotion and focuses strictly on the consequence. However, consequentialism does not translate well to decision making research. Instead decision making research uses a form of consequentialism that maintains a focus on the consequence of an action, but expands to include the maximization of gains and the minimization of losses (Darwall, 2003). This utilitarian thinking must be made from a neutral perspective (Darwall, 2003). In other words, an individual would value an item equally, regardless of who receives the item. For example, personally gaining five dollars would be equivalent to a stranger gaining five dollars. Someone gaining five

dollars is better than no one gaining five dollars. Therefore, utilitarian choices strive to produce the greatest good for the world as a whole, not just those involved in the situation (Broeders et al., 2011; Mill, 1906). Using the trolley dilemma, it would be considered permissible to pull the lever because five lives are greater than one life (Greene et al., 2008; Petrinovich, O'Neill, & Jorgensen, 1993).

In contrast, moral intuition involves a focus on action and is often associated with deontological thought (Broeders et al., 2011; Greene et al., 2008). Deontology represents decisions based on individual moral rules, similar to the concept of heuristics. Actions are based on reason and principles irrelevant of the outcome (Broeders et al., 2011; Darwall, 2003; Davis, 1993). People may draw from personal experiences, social institutions, and other individuals to develop their individual moral rules and set their baselines. In some instances a belief is very concrete, which is known as a protected value (Baron & Spranca, 1997; Ritov & Baron, 1999). When a protected value is evident, framing of a problem may lose some effectiveness at modifying a response. The baseline is such that any act of killing, no matter the outcome, is considered a loss and is therefore not preferred. If killing is against an individual's protected values, then the act of killing would be prohibited and deemed a loss and wrong in all situations no matter the outcome (Hauser, 2006; Kant, 1785). To borrow from the aforementioned scenario, it would not be permissible to pull the switch even though more lives would be saved. Deontology also helps to explain emotion in decision making. An individual may consider an outcome impermissible because it does not feel right, regardless of the potential benefits or a conscious realization of a protected value.

Utilitarianism and deontology have been examined using a wide range of moral dilemmas in moral judgment research (Greene, Sommerville, Nystrom, Darley, & Cohen, 2001; Hauser,

2006). Research suggests that when individuals are presented with a variety of moral dilemmas framed in different ways reaction times differ and individuals are not always able to explain the basis for their choices (Greene et al., 2004; Greene et al., 2008; Hauser, 2006; Koenigs et al., 2007). Differences in reaction times between dilemmas and an inability to explain thought processes suggest that certain dilemmas result in more tension and uncertainty in people than others. Identifying differences in tension aroused by dilemmas led to the creation of dilemma classification systems.

Dilemma Classification

Greene et al. (2001) created the first widely used classification system, which labeled dilemmas as personal or impersonal. Personal moral dilemmas meet the following three criteria: the outcome must lead to serious bodily harm, the harm must befall a person or set of persons, and the harm must not result from deflection of an existing threat to a different party (Greene et al., 2004). For example, the trolley dilemma would be considered impersonal because there is a transfer of an existing threat (trolley on tracks) to a different party (man on side track). Alternatively, pushing a man in front of a train would be considered personal due to the direct cause of personal harm. Brain imaging is a common research method that has been used to support and create dilemma classification systems.

Initial brain imaging research attempted to examine the neurological differences in uncertainty between personal and impersonal dilemmas. Research indicates regions of the brain associated with cognitive conflict and feelings of uncertainty, the anterior cingulate cortex (ACC) and the dorsolateral prefrontal cortex (DLPFC), were activated more during personal dilemmas than during impersonal dilemmas (Botvinick, 2001; Greene et al, 2004). The ACC is associated with processing conflict, so more activation suggests personal dilemmas require more

processing than impersonal dilemmas. The DLPFC is associated with abstract reasoning and cognitive control. Higher activation suggests that abstract reasoning and cognitive control is more evident in personal dilemmas than impersonal dilemmas. The increase in activation of certain brain regions suggests personal dilemmas result in more cognitive conflict than impersonal dilemmas.

Koenigs et al. (2007) compared personal moral dilemma responses among normal and brain damaged individuals to achieve further classification of personal dilemmas. Brain damage was specific to an area associated with moral values and social emotions, the ventromedial prefrontal cortex (VMPC). Koenigs et al. (2007) indicate that individuals with damage to this area of moral values and social emotions would provide more utilitarian thinking due to a focus on outcomes rather than actions. When the utilitarian responses were significantly higher than the control group, dilemmas were classified as high conflict. When there was no difference between the control group and the brain damaged group, dilemmas were labeled as low conflict. The data suggest a conflict between utilitarianism as measured by the activation of the ACC and DLPFC (more cognitive conflict) and deontology as measured by the VMPC (social emotions).

Brain imaging research supports the assumption that individuals have feelings of uncertainty when responding to moral dilemmas (Greene et al., 2008; Hauser, 2006; Koenigs et al., 2007). Classification of dilemmas allows research to explore specific categories of dilemmas that are known to be similar, or different. However, much dilemma research examines participant responses to a variety of different dilemmas in one sitting (Greene et al., 2004; Cushman, Young, & Hauser, 2006). This adds the possibility that previous responses will affect subsequent responses. The initial response to a dilemma may be used to set a reference point, which would affect all subsequent responses. For example, if the trolley dilemma is presented and a participant

indicates the act is permissible, the participant may wish to maintain consistency and regard any similar acts as permissible. Therefore, concentration on one dilemma may present a better picture of the decisions people may make in a novel situation. There is a smaller likelihood that people can use a prior experience to compare to a dilemma, which may increase the generalizability of the results. One high conflict personal moral dilemma that has been used in prior research is the sacrifice dilemma (Greene et al., 2004).

Sacrifice

The sacrifice dilemma (Greene et al., 2004) describes a hypothetical situation regarding a family. The overall numbers are very similar to the trolley dilemma, with one key difference. If one person is not sacrificed, then the entire family will die. The dilemma can be summarized as follows (Greene et al., 2004): A family of six has unknowingly set up camp on a local clan's sacred burial ground. The leader of the clan threatens to kill the entire family unless the oldest son is killed as a sacrifice by one of the parents.

A participant is asked about the permissibility of sacrificing a family member. The utilitarian option is to find the killing of the oldest son permissible because the ultimate result is life for the rest of the family. A utilitarian actor must take a neutral view of the situation, and therefore should not be affected by the concept of killing a son. Conversely, a deontological actor may find the sacrifice impermissible. There may be an initial emotional repulsion to the outcome. Also, there may be a protected value that does not allow for any killing. In either instance, the deontological decision maker may prefer the death of all family members, including the oldest son, to the act of killing the oldest son.

The social rules of "save lives" and "do not kill" seem to be very evident in the sacrifice dilemma. A decision maker is forced to choose between the permissibility of a situation that

draws into conflict these two mutually exclusive rules (Broeders et al., 2011; Greene et al., 2004; Monin, 2007). If decision makers deem the act permissible, then they would be condoning the act of killing to "save lives." However, if decision makers do not believe it is permissible, then they would be following the "do not kill" value, but allowing the death of people. The inability to satisfy both rules leads to psychological conflict for the decision makers (Greene et al., 2004; Greene et al., 2008; Hauser, 2006; Koenigs, 2007).

The sacrifice dilemma has been classified as a high conflict moral personal dilemma that has a large variance in responses (Greene et al., 2004; Greene et al., 2008; Koenigs et al., 2007). Whereas there is agreement in responses to the trolley dilemma (it is permissible to pull the lever), data on the sacrifice dilemma indicates an even split between considering the act permissible or not permissible. Half deem sacrificing the oldest child permissible, while the other half consider it impermissible (Greene et al., 2008). Various explanations have been given to explain the difference in responses to dilemmas. Research has considered moral intuition and moral reasoning as potential explanations. Also, a dual-process model has been proposed that suggests people use cognitive processes to overcome initial emotions (Greene et al., 2004). Recently, research has suggested that unconscious processing may modify responses to moral dilemmas.

Morality and the Unconscious

Examination of the relation between the unconscious and modifying moral judgment is a relatively new area of research. Early research was based off of unconscious thought theory (UTT), which involves using a distraction between the presentation of information (i.e. a dilemma) and the response to the information (Bargh, 2011). UTT suggests that when given complex problems people make choices with more positive and less negative features after a

period of distraction (Dijksterhuis, Bos, Nordgren, and Van Baaren, 2006; Dijksterhuis & Nordgren, 2006). For example, research has indicated that unconscious thought affects decisions related to social justice (Ham, Van den Bos & Van Doom, 2009). After reading various job applications, participants were asked to respond immediately, think about the applications, or do a separate distraction task before ordering applications from most just to least just. The data suggest participants in the distraction condition made the most just decisions. Ham and Van den Bos (2010) predicted that a moral dilemma was a complex issue and answers may differ if UTT were to be used. They created a permissibility scale to measure small differences in permissibility beliefs. Answers were on a Likert-type scale (1=strongly disagree, 4=undecided, 7=strongly agree). The data indicate individuals that were distracted after reading a high conflict, personal moral dilemma tended to make more utilitarian judgments than those that answered immediately after reading the dilemma or after consciously deliberating about the dilemma (Ham & Van den Bos, 2010). This suggests that moral intuition and moral reasoning may not be sufficient classifications of human behavior in moral choices. An aspect of subconscious thought seems to be evident in decision making processes regarding moral dilemmas.

Broeders et al. (2011) predicts that the unconscious may be modified through a process different from UTT. Based on the concept of personal values, research examined the ability to present a frame that stressed one of two ideas, "save lives" and "do not kill." Rather than distracting the decision maker between the dilemma and responding, the decision maker was distracted between the frame and the dilemma. The Positive and Negative Affect Schedule (PANAS) was used in hopes of distracting the participant from the initial frame. The data suggest that people given the "save lives" frame were more likely to give utilitarian responses than those in the "do not kill" frame. For example, people given the "save lives" frame and the

sacrifice dilemma would be predicted to find the sacrifice of a child more permissible than those in the "do not kill" frame. Sacrificing a child is a utilitarian response because it would result in more lives saved than allowing the entire family to be killed. Broeders et al. (2011) believed that the use of an initial frame may be an alternative to UTT in the modification of moral judgment. The use of a stimulus prior to the presentation of the information of interest (i.e. a dilemma) is described in priming research.

Priming

Priming involves implicit memory and describes changes in performance or behavior due to prior experiences (Schacter, 1992). Importantly, priming exists independent of explicitly recollecting a previous encounter, or consciously being aware of a similar stimulus (Schacter, 1992). In other words, priming is an unconscious aspect of memory that indicates that a prior experience has an effect on later performance without the individual being consciously aware of the previous experience. Using the "save lives" and "do not kill" rules, researchers hypothesize that priming would be able to modify utilitarian judgment in participants (Broeders et al., 2011).

The use of priming in moral judgment research seems appropriate due to the effectiveness of priming effects in clinical populations. Research indicates that amnesic patients may not remember completing a task, but will respond in a test similarly to non-amnesic participants (Tulving & Schacter, 1990). Also, priming effects have not been found to differ based on age and seem to be unaffected by drugs that reduce explicit recall (Tulving & Schacter, 1990). Priming is a good tool to use in the expansive moral dilemma research. Its effectiveness in a variety of populations allows priming research to be duplicated among a large variety of populations.

Conceptual priming has been utilized in moral judgment research. A cue associated with a later test is presented, and semantic processing is required to form a connection between the cue and the later test (Tulving & Schacter, 1990). Broeders et al. (2011) used conceptual priming in a study of moral judgment by priming individuals with the rule "save lives" or "do not kill." Participants were primed in several ways during the study. The first experiment used a written prime in which individuals read about a military situation that highlighted "save lives" or "do not kill." The next experiment replaced a written prime with a symbol associated with "save lives" or "do not kill" like the Red Cross or a peace sign, respectively. The last experiment used flashed symbols while participants were doing a separate task in order to make sure they did not remember the prime. Half the participants were given the trolley dilemma and half were given a high conflict personal version of the trolley dilemma known as the footbridge dilemma (Thomson, 1986). Participants were significantly more likely to make a utilitarian decision to sacrifice one man to save others when primed with "save lives," rather than "do not kill" for the footbridge dilemma. The trolley dilemma was also examined, but there were no significant results. Broeders et al. (2011) suggest that individuals are less able to be influenced in the trolley dilemma due to a lack of uncertainty, which is predicted by the classification as a low conflict, impersonal dilemma.

Two major issues arise in the Broeders et al. (2011) design. First, the use of a newly created six-item Likert-type permissibility scale (Ham & Van den Bos., 2010) limits the ability to compare the data to most moral research. Commonly, a forced choice question is used, which asks participants if an act is permissible or impermissible. The research findings suggest that people regarded the outcome of the high conflict dilemma as not permissible in the "save lives" and "do not kill" conditions (Broeders et al., 2011). This brings to question the assumption that

participants were making a more utilitarian choice. Does being less sure about the permissibility of an action actually mean people were making a utilitarian choice? Research including the forced choice question regarding permissibility (yes/no) may provide more detail into the effects of priming. Secondly, there is no control group used, which means there is no baseline. The lack of a control group does not allow researchers to suggest that either condition ("save lives" or "do not kill") is effective at modifying normal choice because there are no data to be compared. Instead, one may only state that the "save lives" group is different than the "do not kill" group. To combat this issue, the present study will include a control prime group.

Present Study

The present study aims to improve on the priming experiment used in Broeders et al. (2011). Fundamental to research is the ability to replicate and compare studies. The recent research on the unconscious has created a new scale to measure permissibility for moral dilemmas (Ham & Van den Bos, 2010). Although potentially helpful, the new scale has not been compared to the commonly used question, "Is this act permissible?" (yes/no). The dichotomous variable will be included in this study to allow results to be compared to previous dilemma research, and to examine if there is any relation to the Ham & Van den Bos (2010) moral permissibility scale.

Research on unconscious thought is quite new in the moral dilemma field. Of the multitude of moral dilemmas created over the years, only the footbridge and trolley dilemmas have been examined (Broeders et al., 2011; Foot, 1967; Ham & Van den Bos, 2010; Thompson, 1986). Research indicates that only the footbridge dilemma, and not the trolley dilemma, is considered a high conflict personal dilemma. High conflict dilemmas are known to cause a large amount of uncertainty, so comparison with a low conflict dilemma would not seem reasonable

for comparing unconscious effects. Although the footbridge dilemma is considered a high conflict personal dilemma, prior research indicates an overall agreement on the impermissibility of the footbridge dilemma with less than 23% finding the dilemma permissible (Broeders et al., 2011; Greene et al., 2004; Ham & Van den Bos, 2010; Hauser, 2006). However, research suggests people tend to disagree on the permissibility of the sacrifice dilemma, with 49% finding the dilemma permissible (Greene et al., 2007). Ultimately, the use of the high conflict sacrifice dilemma is predicted to match the results found by Broeders et al. (2011). The "save lives" prime is predicted to result in higher scores on the permissibility scale than the "do not kill" or control primes. The variability in permissibility responses in the sacrifice dilemma may result in larger differences between the "save lives" condition and the "do not kill" condition than found previously. The higher variability may also lead to a difference in responses to the dichotomous permissibility question. The "save lives" prime is predicted to be associated with more "yes" responses than the "do not kill" or control primes.

The study will use a between-subjects research design, where the prime received (control, "save lives" or "do not kill") will be manipulated. This design will be used in order to determine if the prime received will modify the perceived permissibility of a moral dilemma and if there will be any difference between prime conditions and the control condition. It was expected that priming will affect the responses to the six question permissibility scale, as well as the forced choice on moral permissibility.

Method

Participants

The research study was administered on the Seton Hall University campus to 92 undergraduate students (28 male; 64 female) above the age of 18 enrolled in an introductory-level psychology course. The number of participants was determined using G*Power (v3.1.3) with an effect size of .411 using data from Broeders et al. (2011).

Materials

Demographic sheet. A demographic sheet was filled out by each participant in order to acquire general information about the participant. This sheet included the following information: age, biological sex (male or female), year in school (freshman, sophomore, junior, senior, or other), and ethnicity (Asian/Pacific Islander, Black Non-Hispanic, Hispanic, White Non-Hispanic, other).

Environmental primes. Each participant was asked to read and react to one of two written primes created by Broeders et al. (2011) or a newly created control prime. The written primes were administered similarly to the procedure used by Broeders et al. (2011). The control prime was presented as follows:

> During fieldtrips abroad teachers have to apply certain rules. This is called a mandate. During an outing in 1994 in Congo, Africa, the mandate of the school board present in the country was to use supervision to prevent binge drinking. As a result of several warnings beforehand and during the outing by the head of the school board, Professor Roméo Dallaire, teachers were allowed to conduct preventative actions. Teachers were allowed to set curfew and conduct room checks if loud noise was detected. The mandate was based on the principle "Prevention."

The "save lives" prime (Broeders et al., 2011) was presented as follows:

> During missions abroad soldiers have to apply to certain rules. This is called a mandate. During a conflict in 1994 in Congo, Africa, the mandate of the UN peace keeping force present in the country was to use armed violence to end the conflict. As a result of several warnings beforehand and during the conflict by the UN-commander in chief on the spot, the Canadian lieutenant-general Roméo Dallaire, UN-soldiers were allowed to conduct offensive actions. They were both allowed to use their weapons to protect the civilian population, as well as when they themselves were attacked. The mandate was based on the principle "Save lives."

The "do not kill" prime (Broeders et al., 2011) was presented as follows:

> During missions abroad soldiers have to apply to certain rules. This is called a mandate. During a conflict in 1994 in Congo, Africa, the mandate of the UN peace keeping force present in the country was not to use any armed violence to end the conflict. Despite several warnings beforehand and during the conflict by the UN-commander in chief on the spot, the Canadian lieutenant-general Roméo Dallaire, UN-soldiers were not allowed to conduct any offensive actions. They were only allowed to use their weapons when they themselves were attacked. The mandate was based on the principle "Do not kill."

After each prime, participants were asked to "put themselves in the position of the lieutenant-general (professor)" and respond to the following two open ended questions: How would you act in line with the given mandate? What does the specific rule mean in your daily life?

Positive and negative affect schedule (PANAS). For the distraction task participants filled out the 20-question PANAS, which is used to measure affect (Watson, Clark, & Tellegen 1988).

The PANAS consists of two subsets of items measuring positive (e.g. proud, inspired, attentive) and negative (e.g. distress, anger, fear) affect. Six time frames were developed ranging from "in general" (i.e. how inspired to you feel in general) to "at the moment" (i.e. how inspired do you feel right now). The present study asked participants to respond to the PANAS using the "at the moment" time frame. PANAS has high reliability with a Cronbach's coefficient α ranging from .86 to .90 for positive affect (PA) and from .84 to .87 for negative affect (NA) (Watson, Clark, & Tellegen 1988). Crawford and Henry (2004) reexamined the PANAS and found similar reliability with a Cronbach's coefficient α of .89 for PA and .85 for NA. PANAS is considered a reliable and valid measure of positive and negative affect (Watson et al., 1988; Crawford & Henry, 2004).

Dilemma. The sacrifice dilemma (Greene et al., 2001) was used for the experiment. The dilemma was presented as follows:

> You, your spouse, and your four children are crossing a mountain range on your return journey to your homeland. You have inadvertently set up camp on a local clan's sacred burial ground. The leader of the clan says that according to the local laws, you and your family must be put to death. However, he will let yourself, your spouse, and your three other children live if you, yourself will kill your oldest son.

Procedure

Participants were randomly assigned to one of following three groups: control; "do not kill"; "save lives." A packet was handed to each participant containing all study materials. Participants first saw two informed consent sheets, which contained a brief description of what was to be expected while completing the study. One informed consent sheet was kept by the participant, and the other was signed and collected by the experimenter. After signing the

informed consent the participants filled out the demographic sheet. The participant was next asked to read and respond to his or her specific prime (control, "save lives," or "do not kill"). Participants were given time to respond to the two questions (Broeders et al., 2011). Next, participants were asked to rate how they feel "at the moment" on the PANAS.

Following the completion of the PANAS, each participant was asked to read and respond to the sacrifice dilemma. Participants were asked the following six questions (Broeders et al., 2011): To what extent do you have the urge to sacrifice the one person in order to save the five others? Do you think it is acceptable to sacrifice the one person in order to save the five others? Do you think it is reasonable to sacrifice the one person in order to save the five persons? To what extent do you feel inhibited to sacrifice the one person to save the five others? Do you feel restrained to save the five persons? Do you feel inhibited to save the five persons at the cost of one? (1= *strongly disagree*, 7 = *strongly agree*). Broeders et al. (2011) calculated a Cronbach's coefficient α of .76 for the aforementioned questions. After answering these questions, the participant was asked, "Is the act morally permissible (yes/no)?"

Lastly, participants were asked for awareness or suspicion concerning the priming manipulation. The experimenter asked participants what they thought was the purpose of the experiment, what they thought it was attempting to study, whether the military story was related to answering the dilemma, and if they noticed anything special regarding the research. A debriefing form was given to the participants and they were thanked for their participation.

Results

The dependent variables for the study were belief in permissibility (yes/no) and average score on the permissibility scale. Only twelve of the 92 participants responded affirmatively to the dichotomous permissibility question. A value greater than four on the permissibility scale signified a belief that the act was permissible, while a value lower than four indicated a belief that the act was not permissible. Significance levels were set at 0.05 for all analyses.

PANAS scores were analyzed using two separate univariate ANOVA (condition: control, "save lives," "do not kill" x PANAS: Positive Affect, Negative Affect). There was no main effect of condition for the positive affect schedule, $F(2, 91) = .365, p = .695$. There was no main effect of condition for the negative affect schedule, $F(2, 91) = .211, p = .810$. The number of participants, means, and standard deviations for each condition are found in Table 1.

Table 1

Means and Standard Deviations for PANAS.

	Positive Affect Score		Negative Affect Score		
Condition	*M*	*SD*	*M*	*SD*	*N*
Control	27.23	7.98	15.20	6.87	30
Save Lives	28.32	6.80	14.32	4.43	31
Do Not Kill	28.81	7.25	14.45	5.54	31
Total	28.13	7.30	14.65	5.64	92

Permissibility scores were analyzed using a univariate ANOVA (condition: control, "save lives," "do not kill" x mean permissibility score). Due to the limited amount of "yes" responses, only the participants that responded "no" to the dichotomous permissibility question were analyzed. There was no main effect of condition $F(2, 79) = 2.127, p = .126$. The number of

participants, mean permissibility scores, and standard deviations for each condition are found in Table 2.

Table 2

Means and Standard Deviations for the Permissibility Scale

Condition	*M*	*SD*	*N*
Control	3.25	.78	25
Save Lives	3.48	.95	27
Do Not Kill	2.98	.91	28
Total	3.23	.90	80

Note. Only participants that responded "no" to the dichotomous permissibility question are included

Discussion

The results of the experiment do not indicate a significant connection between priming and moral judgment. Priming does not correlate with more utilitarian judgment as measured by the Ham and Van den Bos (2010) moral permissibility scale or the dichotomous moral permissibility question. First, the lack of "yes" responses to the sacrifice dilemma was quite unexpected. Greene et al. (2008) provided data that suggest 49% of participants find the sacrifice dilemma permissible compared to the 13% of participants in the current study. The large discrepancy in responses to the sacrifice dilemma between prior research and the current research first draws to question differences in the populations examined. The current study was completed at a Catholic university while the Greene et al. (2008) study was completed at Harvard. The Catholic setting may contribute to the overall lack of willingness to consider any form of killing permissible. Also, the competitiveness found in the Harvard landscape could make sacrifice a more readily accepted response. Testing of moral dilemmas in a variety of universities and locations would produce a better estimate of response rates. Aside from the difference in populations, key differences in study designs between Greene et al. (2008) and the current study could shed light on the lack of "yes" responses.

Greene et al. (2008) provided participants with a variety of dilemmas at one sitting, while the current study examined only the sacrifice dilemma. Examination of a group of dilemmas leaves the possibility for participants to be influenced by prior dilemmas. Viewing dilemmas independently limits this influence and may provide a better measure of response rates. Also, the current study included the newly created Ham and Van den Bos (2010) moral permissibility scale, which potentially influenced responses to the dichotomous permissibility question. The questions have not been counterbalanced, so there is no indication that the current ordering does

not influence responses. However, the Ham and Van den Bos (2010) moral permissibility scale should continue to be examined. It may be found to offer a better measure of permissibility beliefs, than the current dichotomous question.

Next, the method of measuring unconscious influence borrowed from Broeders et al. (2011) differed from prior research on unconscious thought and morality. Much of research involves unconscious thought theory (UTT), which involves a distraction between the information (i.e. the dilemma) and the response (i.e. is it permissible) (Bargh, 2011). The UTT has been used in judgment and decision making research, and is supported in moral judgment research (Ham & Van den Bos, 2009; 2010). Other research examining time effects supports the UTT model. Allowing a participant to respond immediately after reading the dilemma generally results in less utilitarian responses (Cummins & Cummins, 2012; Suter & Hertwig, 2011). During the current study, simple observation of participants seemed to suggest a trend towards responding quickly to the sacrifice dilemma. Often participants would immediately decide the dilemma was not permissible and would respond without further contemplation.

Several issues arise in the use of priming during this study. First, the use of a prime that invokes thoughts of life and death may be problematic. Tremoliere, Neys, and Bonnefon (2012) found that thinking about mortality led to less utilitarian responses for moral dilemmas. This could help to explain the overall lack of utilitarian responses in the current study. Instead of attempting to prime moral rules, an alternate method could have been used. Paxton, Ungar, and Greene (2011) found that making people think more critically before reading a high conflict moral dilemma resulted in more utilitarian judgment. Using a critical thinking task that uses mathematical problems would be sufficient in priming critical thinking. This could counteract

the issue with producing thoughts on mortality in participants before asking them to respond to a moral dilemma.

The distractor task used in the current study points to a potential confound. Only the PANAS had been used as a distractor task in prior research at the creation of the current study. Two issues arise with the use of the PANAS as the distraction. First, a non-standard attentional load task may lead to other processing goals (Bargh, 2011). The PANAS may have caused the participants to begin thinking about how they currently feel, which could have effects on the initial rule being primed. Next, the distractor task may not have been difficult enough for the participants to stop thinking about the written prime. Instead of using the PANAS, a more standard distractor task (i.e. *n*-back task) could have been used. Using a more difficult distractor task could limit the conscious thinking about mortality, which might allow the current primes to be used.

Further studies examining unconscious processing should incorporate brain imaging studies. Prior studies on moral judgment have found activation of a variety of brain regions associated with emotion and uncertainty including the VMPC, ACC, and the DLPFC (Greene et al., 2004; Koenigs et al., 2007). Brain research could help to illustrate whether priming and UTT lead to more utilitarian judgment by increasing or decreasing activation in a prior studied brain region. Also, new brain regions associated with moral judgment could be identified. Research examining the role of the unconscious in moral judgment is relatively new and more studies should be completed to have a better grasp on the intricacies of unconscious thinking.

Future studies should attempt to follow the current trend of moral judgment research. First, research should continue to examine dilemmas independently, rather than as a set (Broeders et al., 2011; Gong & Medin, 2012; Ham & Van den Bos, 2010). Next, the areas of

time effects and priming should continue to be examined and possibly explored in tandem (Bargh, 2011; Cummins & Cummins, 2012; Paxton et al., 2011; Suter & Hertwig, 2011). Time effects are similar to those used in UTT, where individuals are distracted before responding to dilemmas. Priming introduces a stimulus before a decision maker is presented with a dilemma. The current study represents one example of the combination of priming and time effects by using a distraction task after the prime and allowing the participant to respond immediately after reading the dilemma. However, the study did not attempt to vary or control for response times. The use of priming and controlling time effects would add to the existing dual process model of morality (Greene et al., 2004). Modification of time could force a person to make immediate decisions invoking the use of moral intuition, or delayed responses to prompt moral reasoning.

Moral judgment research represents a unique sector of judgment and decision making research. It is important to continue exploring moral judgment in order to better understand the pathways used to arrive at a decision. Moral judgment research seems to be quite segmented even though some topics can be tested together. Exploring how the different aspects of moral judgment work together through the use of brain imaging, priming, and time effects presents a large and potentially bountiful area of research.

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Appendix

UN Mandate S.L.

During missions abroad soldiers have to apply to certain rules. This is called a mandate. During a conflict in 1994 in Congo, Africa, the mandate of the UN peace keeping force present in the country was to use armed violence to end the conflict. As a result of several warnings beforehand and during the conflict by the UN-commander in chief on the spot, the Canadian lieutenant-general Roméo Dallaire, UN-soldiers were allowed to conduct offensive actions. They were both allowed to use their weapons to protect the civilian population, as well as when they themselves were attacked. The mandate was based on the principle "Save lives."

1) Put yourself in the position of the lieutenant-general. How would you act in line with the given mandate?
2) What does the specific rule mean in your daily life?

UN Mandate D.N.K

During missions abroad soldiers have to apply to certain rules. This is called a mandate. During a conflict in 1994 in Congo, Africa, the mandate of the UN peace keeping force present in the country was not to use any armed violence to end the conflict. Despite several warnings beforehand and during the conflict by the UN-commander in chief on the spot, the Canadian lieutenant-general Roméo Dallaire, UN-soldiers were not allowed to conduct any offensive actions. They were only allowed to use their weapons when they themselves were attacked. The mandate was based on the principle "Do not kill."

1) Put yourself in the position of the lieutenant-general. How would you act in line with the given mandate?
2) What does the specific rule mean in your daily life?

School Board Mandate

During fieldtrips abroad teachers have to apply certain rules. This is called a mandate. During an outing in 1994 in Congo, Africa, the mandate of the school board present in the country was to use supervision to prevent binge drinking. As a results of several warnings beforehand and during the outing by the head of the school board, Professor Roméo Dallaire, teachers were allowed to conduct preventative actions. Teachers were allowed to set curfew and conduct room checks if loud noise was detected. The mandate was based on the principle "Prevention."

1) Put yourself in the position of a professor. How would you act in line with the given mandate?
2) What does the specific rule mean in your daily life?

PANAS Questionnaire

This scale consists of a number of words that describe different feelings and emotions. Read each item and then list the number from the scale below next to each word. **Indicate to what extent you feel this way right now, that is, at the present moment.**

1	2	3	4	5
Very Slightly or Not at All	A Little	Moderately	Quite a Bit	Extremely

_____ 1. Interested	_____ 11. Irritable
_____ 2. Distressed	_____ 12. Alert
_____ 3. Excited	_____ 13. Ashamed
_____ 4. Upset	_____ 14. Inspired
_____ 5. Strong	_____ 15. Nervous
_____ 6. Guilty	_____ 16. Determined
_____ 7. Scared	_____ 17. Attentive
_____ 8. Hostile	_____ 18. Jittery
_____ 9. Enthusiastic	_____ 19. Active
_____ 10. Proud	_____ 20. Afraid

General Instructions

Next, you will read through a moral dilemma. At the end of the paragraph, you will be asked whether or not it is morally permissible to perform the described action.

Moral judgments can be difficult to make, and we understand that people sometimes change their minds about moral questions or feel conflicted about the answers they're given. Don't think of your answers as "written in stone." All we want from you is a thoughtful first response.

While we want your answers to be thoughtful, you may find that in some cases the right answer seems immediately obvious. If that happens, it's okay to answer quickly. There are no trick questions, and in every case we have done our best to make the relevant information as clear as possible.

When you are done reading this page you may proceed to the dilemma section. Please read the dilemma carefully and then answer the questions. Thank you.

Sacrifice Dilemma

You, your spouse, and your four children are crossing a mountain range on your return journey to your homeland. You have inadvertently set up camp on a local clan's sacred burial ground. The leader of the clan says that according to the local laws, you and your family must be put to death. However, he will let yourself, your spouse, and your three other children live if you, yourself will kill your oldest son.

Please answer the following questions using the scale below.

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Disagree Somewhat	Undecided	Agree Somewhat	Agree	Strongly Agree

1) To what extent do you have the urge to sacrifice the one person in order to save the others? ____

2) Do you think it is acceptable to sacrifice the one person in order to save the others? ____

3) Do you think it is reasonable to sacrifice the one person to save the others? ____

4) To what extent do you feel inhibited to sacrifice the one person to save the others? ____

5) Do you feel restrained to save the others? ____

6) Do you feel inhibited to save the others at the cost of one? ____

7) Is it appropriate for you to kill your oldest son in order to save your husband and your other three children (**answer with Yes or No**)? _____