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COMMENTARY

What makes moral dilemma judgments "utilitarian" or "deontological"?

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ABSTRACT
The distinction between utilitarianism and deontology has become a prevailing framework for conceptualizing moral judgment. According to the principle of utilitarianism, the morality of an action depends on its outcomes. In contrast, the principle of deontology states that the morality of an action depends on its consistency with moral norms. To identify the processes underlying utilitarian and deontological judgments, research in psychology and neuroscience has investigated responses to moral dilemmas that pit one principle against the other (e.g., trolley dilemma). However, the interpretation of responses in this paradigm is ambiguous, because the defining aspects of utilitarianism and deontology, outcomes and norms, are not manipulated. We illustrate how this shortcoming distorts interpretations of empirical findings and describe an alternative approach that overcomes the limitations of the traditional paradigm.

Over the past 15 years, there has been a radical shift in the way psychologists and neuroscientists think about the mental underpinnings of moral judgments. For decades, moral psychology has been dominated by rationalist theories assuming that moral judgments are the product of deliberate thought processes involving the reasoned application of abstract moral principles (Kohlberg, 1969). This rationalist approach has recently given way to theories that attribute a fundamental role to affective and intuitive processes in moral judgment (Greene & Haidt, 2002). Consistent with the latter idea, several recent theories argue that moral judgments often stem from psychological processes that do not involve a reasoned application of abstract moral principles (e.g., Haidt, 2001).

A prominent research program that integrates both reasoned and non-reasoned processes is the work on utilitarian and deontological responses to moral dilemmas. According to the principle of utilitarianism, the moral status of an action depends on its outcomes, more specifically its consequences for overall well-being (*outcome-based morality*). To the extent that a particular action increases overall well-being in a given situation, it is deemed morally acceptable from a utilitarian view. Yet, if the same action decreases overall well-being in a different situation, it is deemed morally unacceptable in that situation. In contrast to the situation-dependent nature of utilitarian judgments, the principle of deontology emphasizes the situation-independent status of moral norms (*rule-based morality*). According to the principle of deontology, a given action is morally acceptable if it is consistent with relevant moral norms, but it is morally unacceptable if it is inconsistent with relevant moral norms.

A widespread assumption in psychology and neuroscience is that utilitarian judgments result from a deliberate cognitive analysis of costs and benefits, whereas deontological judgments are the product of automatic emotional processes that do not necessarily involve a reasoned application of moral norms (Greene, Nystrom, Engell, Darley, & Cohen, 2004; Greene, Sommerville, Nystrom, Darley, & Cohen, 2001). To test these hypotheses, psychologists have conducted numerous studies that involved two central components: (A) the measurement of responses to moral dilemmas that pit one moral principle against the other and (B) a comparison of responses across experimental conditions that involve different levels of cognitive processing and emotional engagement (e.g., Bartels, 2008; Greene, Morelli, Lowenberg, Nystrom, & Cohen, 2008; Suter & Hertwig, 2011; Valdesolo & DeSteno, 2006). Neuroscientists have expanded on this approach by arguing that (C) neural activity in brain regions associated with different kinds of moral judgments can be clearly delineated as regions involved in either emotional processing or abstract reasoning. Such claims about the neural underpinnings of moral judgments have been based on studies using functional neuroimaging and lesions in various areas of the brain (e.g., Ciaramelli, Muccioli, Ladavas, & di

Pellegrino, 2007; Greene et al., 2004, 2001; Koenigs et al., 2007; Mendez, Anderson, & Shapira, 2005).

In the current article, we argue that the data obtained in (B) and (C) are theoretically ambiguous, because the measurement approach of (A) does not allow for an unambiguous identification of utilitarian and deontological responses. Our main argument is that outcomes and norms, the central determinants of utilitarian and deontological responses, are not manipulated in the traditional paradigm. Therefore, any interpretations of the observed judgments in terms of utilitarian and deontological responses are premature and prone to inaccurate conclusions about the psychological underpinnings of moral judgments and their neural correlates.

The moral dilemma paradigm

The traditional moral dilemma paradigm is based on the idea that utilitarian and deontological responses can be measured with scenarios that pit one principle against the other. The most well-known example is the so-called trolley problem in which a runaway trolley would kill a group of five workers unless participants engage in actions to redirect or stop the trolley. In the original switch dilemma, participants could pull a lever to redirect the trolley to another track, where it would kill only one person instead of five (Foot, 1967). Other variants of the trolley problem include the footbridge dilemma, in which the five workers could be saved by pushing a man of a bridge to stop the trolley (Thomson, 1976). According to the principle of utilitarianism, pulling the lever or pushing the man would be morally acceptable, because either action maximizes overall well-being (i.e., it is acceptable to kill one person, if it helps to save the lives of five). According to the principle of deontology, both actions are morally unacceptable, because they are in conflict with the moral norm that one should not kill other people (i.e., it is unacceptable to kill another person, regardless of the outcome). Thus, participants who view these actions as acceptable are usually claimed to have made a utilitarian judgment, whereas participants who view them as unacceptable are claimed to have made a deontological judgment. Although such interpretations are widely accepted in psychology and neuroscience, we argue that they are theoretically problematic, because they are not based on systematic manipulations of outcomes and norms as the defining aspects of utilitarianism and deontology.

Identifying utilitarian and deontological responses

From a utilitarian view, a given action should be judged as acceptable if it leads to an increase in overall well-being, and it should be judged as unacceptable if it leads to a decrease overall well-being. Thus, utilitarian responses can be identified as those that are sensitive to the outcomes of morally relevant actions. Yet, somewhat surprisingly, the specific outcomes of a given action have hardly ever been manipulated in moral dilemma research (for some notable exceptions, see Conway & Gawronski, 2013; Nichols & Mallon, 2006; Piazza, Sousa, & Holbrook, 2013; Trémolière & Bonnefon, 2014). The failure to manipulate outcomes makes the interpretation of traditional dilemma responses ambiguous. On the one hand, it is possible that participants accept the described action because it serves as a means to achieve the described outcome (e.g., they are willing to sacrifice the life of one to save the lives of five). On the other hand, it is possible that participants accept the described action regardless of the outcome (e.g., they are willing to sacrifice the life of one even if no lives are saved). In the latter case, it would be ill-founded to call the observed responses "utilitarian" in the moral sense.

To illustrate this concern, consider evidence from research using trolley dilemmas showing that participants with subclinical levels of psychopathy are more likely to accept the killing of one person to save the lives of five than nonpsychopathic participants (Bartels & Pizarro, 2011; Kahane, Everett, Earp, Farias, & Savulescu, 2015; Patil, 2015). These findings have been described as showing increased utilitarian responses among psychopaths. Yet, psychopaths might be willing to sacrifice the life of one person even if it does not save the lives of many more people (cf. Patil, 2015). In this case, their judgments would not qualify as utilitarian, because their response is not sensitive to morally relevant outcomes. Thus, acceptance of harmful action in trolley dilemmas (and structurally similar dilemmas) may reflect either (A) a genuine sensitivity to outcomes or (B) a general willingness to accept harmful actions independent of their outcomes. A clear distinction between the two possibilities requires experimental manipulations of outcomes, which tend to be absent in traditional moral dilemma research.

A similar ambiguity is inherent in interpretations of deontological judgments. From a deontological view, a given action should be judged as acceptable if it is consistent with moral norms, and it should be judged as unacceptable if it is inconsistent with moral norms. Thus, deontological responses can be identified as those that are sensitive to moral norms. Again, somewhat surprisingly, the judgmental implications of moral norms have hardly ever been manipulated in moral dilemma research. The most significant limitation in this regard is the exclusive focus on proscriptive

norms (i.e., norms that specify what people should not do) without any consideration of prescriptive norms (i.e., norms that specify what people should do) (Janoff-Bulman, Sheikh, & Hepp, 2009). Experimental manipulations of dilemmas involving proscriptive versus prescriptive norms are essential for unambiguous interpretations of moral dilemma responses, because the exclusive use of dilemmas involving proscriptive norms conflates deontological responses with a general preference for inaction. On the one hand, it is possible that participants reject the described action to uphold a proscriptive norm. On the other hand, it is possible that participants reject a given action because they have a general preference for inaction regardless of moral norms. In the latter case, it would be ill-founded to call the observed responses "deontological" in the moral sense.

Although previous research has conflated deontological judgments with a preference for inaction, this confound does not reflect the way deontology has to play out in moral dilemma judgments. To illustrate this point, consider the recent case of Dr. Kent Brantly, who was one of the first American citizens who got diagnosed with Ebola in Africa. Before he was returned to the United States for treatment of the disease, there was a heated debate about his return. Whereas some people claimed a moral duty to return Dr. Brantly to the United States to save his life, others pointed out that his return potentially risked many lives if it caused an Ebola outbreak in the United States. Different from the structure of the trolley problem, a deontological judgment in the Ebola debate supports action (i.e., a moral duty to return Dr. Brantly to the United States to save his life), whereas a utilitarian judgment supports inaction (i.e., not returning Dr. Brantly to prevent potential harm to a larger number of people).

As the Ebola example illustrates, a general preference for inaction cannot be described as deontological. In moral psychology, the role of action aversion has been studied extensively under the label *omission bias*, which refers to the finding that harm caused by action is perceived as worse than equivalent harm caused by inaction (Cushman, Young, & Hauser, 2006; Spranca, Minsk, & Baron, 1991). Applied to research using trolley dilemmas (and structurally similar dilemmas), these considerations suggest that rejection of harmful action reflects either (A) a genuine sensitivity to moral norms or (B) general action aversion. A clear distinction between the two possibilities requires experimental manipulations of dilemmas involving proscriptive versus prescriptive norms, which tend to be absent in traditional moral dilemma research.

Resolving interpretational ambiguities

Our analysis suggests that moral dilemma responses cannot be described as "utilitarian" or "deontological" without experimental manipulations of their critical determinants. Unambiguous interpretations of utilitarian responses require experimental manipulations of outcomes; unambiguous interpretations of deontological responses require experimental manipulations of moral norms. From this perspective, utilitarian responses cannot be inferred from the mere acceptance of harmful action when such action would increase overall well-being. Instead, utilitarian responses are reflected in a pattern of judgments that is sensitive to the outcomes of the relevant actions. Similarly, deontological responses cannot be inferred from the mere rejection of harmful action when such action would increase overall well-being. Instead, deontological responses are reflected in a pattern of judgments that is sensitive to proscriptive and prescriptive norms.

Together, these conclusions imply that unambiguous interpretations of moral dilemma responses in terms of utilitarian and deontological judgments require a comparison of responses to four types of dilemmas in a 2 (Outcome: action increases overall well-being vs. action decreases overall well-being) × 2 (Norm: proscriptive norm vs. prescriptive norm) factorial design. An example of a basic dilemma with four different variants is presented in Table 1. The dilemma was inspired by Dr. Kent Brantly's Ebola infection, using the severity of action consequences to manipulate outcomes (i.e., minor vs. severe consequences) and potential response options to manipulate moral norms (i.e., norm to not harm vs. norm to help).

Such a design resolves the described ambiguities by treating the experimental effect of outcomes as an indicator of utilitarian responding, and the experimental effect of moral norms as an indicator of deontological responding. A pattern of utilitarian responding is reflected in a stronger preference for action when it increases overall well-being than when it decreases overall well-being (i.e., main effect of the outcome manipulation). Similarly, a pattern of deontological responding is reflected in a stronger preference for action when the dilemma involves a prescriptive norm than when the dilemma involves a proscriptive norm (i.e., main effect of the norm manipulation). This idea can also be extended to experimental research aimed at understanding the psychological underpinnings of

Table 1. Example of a moral dilemma involving either a proscriptive or a prescriptive norm where action either increases or decreases overall well-being. The experimental effect of the outcome manipulation (action increases overall well-being vs. action decreases overall well-being) on participants' preference for action is treated as an indicator of utilitarian responding; the experimental effect of the norm manipulation (proscriptive norm vs. prescriptive norm) on participants' preference for action is treated as an indicator deontological responding.

	Action increases overall well-being	Action decreases overall well-being
Moral dilemma with proscriptive norm	You are the director of a hospital in a developing country. A foreign student who is volunteering in the country got infected with a rare virus. The virus is highly contagious and deadly to seniors and children. The only medication that can effectively stop the virus from spreading has severe side effects. Although the virus will not kill her, the student suffers from a chronic immune deficiency that will make her die from these side effects. Is it acceptable in this case to give the student the medication?	You are the director of a hospital in a developing country. A foreign student who is volunteering in the country got infected with a rare virus. The virus is highly contagious and can cause severe stomach cramps. The only medication that can effectively stop the virus from spreading has severe side effects. Although the virus will not kill her, the student suffers from a chronic immune deficiency that will make her die from these side effects. Is it acceptable in this case to give the student the medication?
Moral dilemma with prescriptive norm	You are the director of a hospital in a developing country. A foreign student who is volunteering in the country got infected with a rare virus. The virus is highly contagious and can cause severe stomach cramps. The student suffers from a chronic immune deficiency that will make her die from the virus if she is not returned to her home country for special treatment. However, taking her out of quarantine involves a considerable risk that the virus will spread. Is it acceptable in this case to take the student out of quarantine to return her to her home country for treatment?	You are the director of a hospital in a developing country. A foreign student who is volunteering in the country got infected with a rare virus. The virus is highly contagious and deadly to seniors and children. The student suffers from a chronic immune deficiency that will make her die from the virus if she is not returned to her home country for special treatment. However, taking her out of quarantine involves a considerable risk that the virus will spread. Is it acceptable in this case to take the student out of quarantine to return her to her home country for treatment?

utilitarian and deontological judgments (e.g., controlled cognitive processes, automatic emotional processes). For example, if utilitarian responses are the result of controlled cognitive processes, cognitive load should reduce the effect of the outcome manipulation on participants' preference for action versus inaction (i.e., participants under cognitive load should hold equal preferences for action versus inaction regardless of its effect on overall well-being). Similarly, if deontological responses are the result of emotional processes, reduced emotional engagement should reduce the effect of the norm manipulation on participants' preference for action versus inaction (i.e., participants with reduced emotional engagement should hold equal preferences for action versus inaction regardless of whether a moral dilemma involves a prescriptive or proscriptive norm). Similar considerations apply to studies that aim to identify the neural underpinnings of moral dilemma judgments.

The theoretical implications of this approach can be illustrated with a recent study by Trémolière and Bonnefon (2014), which is one of the few published studies that included a manipulation of outcomes (see also Conway & Gawronski, 2013; Nichols & Mallon, 2006; Piazza et al., 2013). Expanding on earlier work showing that cognitive load reduced acceptance of harmful actions in trolley dilemmas (Greene et al., 2008; Suter & Hertwig, 2011), the authors investigated the effects of cognitive load and time pressure in dilemmas with different "kill–save" ratios (i.e., killing 1 saves 5 vs. killing 1 saves 500). The main findings of their research are shown in Figure 1. Following the traditional interpretation of moral dilemma responses, the authors concluded from their data that cognitive load and time pressure reduced utilitarian judgments (i.e., reduced acceptance of harmful action) only when the killing of one person saved a small number of people (comparing white bars within each experiment), but not when the killing of one person saved a large number of people (comparing gray bars within each experiment).

Yet, the data suggest the opposite conclusion if utilitarian responding is inferred from the experimental effect of the outcome manipulation (i.e., killing 1 saves 5 vs. killing 1 saves 500), as suggested by our approach. The patterns depicted in Figure 1 show that outcomes did influence moral judgments, but only when participants were under cognitive load or time pressure (i.e., the white bars do not significantly differ from the gray bars within the low load and no time pressure conditions, but they do significantly differ within the high load and time pressure conditions). Thus, a more appropriate interpretation of these data is that cognitive load and time pressure *increased* utilitarian responding, which stands in stark contrast to the widespread assumption that utilitarian judgments are the result of effortful cognitive processes (Greene et al., 2008; Suter & Hertwig, 2011). Given the scarcity of moral dilemma research that has systematically manipulated outcomes and norms (Conway & Gawronski, 2013; Nichols & Mallon, 2006; Piazza et al., 2013; Trémolière & Bonnefon, 2014), current claims about the psychological underpinnings of utilitarian and deontological responding, as well as their neural correlates, should be treated with great caution.
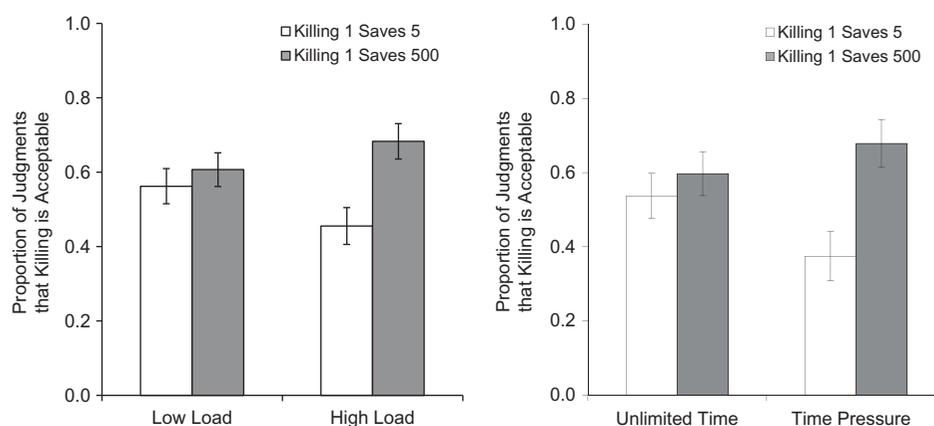
Figure 1. Effects of cognitive load (left graph) and time pressure (right graph) on judgments that killing of one person is acceptable as a function of outcome (killing 1 saves 5 vs. killing 1 saves 500). The results suggest that participants' judgments are sensitive to outcomes under cognitive load and time pressure, but not under control conditions with no load and no time pressure. Copyright 2014 by SAGE Publications. Figures adapted with permission from Trémolière and Bonnefon (2014). Efficient kill–save rations ease up the cognitive demands on counterintuitive moral utilitarianism. *Personality and Social Psychology Bulletin, 40*, 923–930

New directions

The main conclusion of our analysis is that utilitarian responses are reflected in a main effect of experimentally manipulated outcomes (i.e., stronger preference for action when it increases overall well-being than when it decreases overall well-being), whereas deontological responses are reflected in a main effect of experimentally manipulated norms (i.e., stronger preference for action when the dilemma involves a prescriptive norm than when the dilemma involves a proscriptive norm). Because the two experimental manipulations are independent, an interesting implication of our analysis is that they could influence moral judgments in an interactive manner. For example, moral norms may have a stronger impact on judgments and decisions when the benefits of a given action are similar to its costs, but the impact of moral norms may be reduced when the benefits of a given action outweigh its costs. Conversely, the effect of outcomes may be stronger in moral dilemmas involving a prescriptive norm compared with moral dilemmas involving a proscriptive norm. In theoretical terms, such interactive patterns would suggest that the strength of utilitarian response tendencies may influence on the strength of deontological response tendencies, or vice versa. Although the possibility of such interactive effects is speculative at this point, the current approach opens the door for a more nuanced analysis of moral dilemma judgments by allowing for mutual influences between utilitarian and deontological response tendencies.

Another important question in this context concerns the psychological relation between proscriptive and prescriptive norms. Although there is evidence suggesting that greater endorsement of one type of norm is associated with greater endorsement of the other (Simpson, Piazza, & Rios, 2016), it is possible that the two kinds of norms are perceived differently, thereby leading to asymmetric effects on moral judgments and decisions. For example, a person may strongly endorse the proscriptive norm that one should not cause harm to others while giving less weight to the prescriptive norm that one should help others by preventing harm to them (cf. Crone & Laham, in press). Such asymmetries may even occur for linguistically equivalent norms such as the proscriptive norm *do not lie* and the prescriptive norm *tell the truth*. Although the two norms may be regarded as semantically identical, their effects on judgments and decisions may differ as a result of regulatory foci (i.e., prevention vs. promotion; see Gamez-Djokic & Molden, in press) and cognitive constraints in the processing of negations (see Deutsch, Gawronski, & Strack, 2006). Thus, in addition to highlighting the possibility of interactive effects of outcomes and norms, the current approach raises important questions about the psychological relation between proscriptive and prescriptive norms and their relative impact on moral dilemma judgments.

Conclusion

To investigate the processes underlying utilitarian and deontological judgments, previous research has measured responses to moral dilemmas that pit one principle against the other. We argued that the theoretical

meaning of responses in this paradigm is ambiguous, because the paradigm does not include systematic manipulations of outcomes and norms which are the defining aspects of utilitarianism and deontology. This shortcoming distorts theoretical interpretations of empirical findings, leading to premature and potentially inaccurate conclusions about the processes underlying moral judgments and their neural correlates. To overcome this problem, we proposed an alternative approach in which experimental effects of outcomes are treated as an indicator of utilitarian responding and experimental effects of moral norms are treated as an indicator of deontological responding. Given the widespread interest in moral judgment, we hope that our approach will stimulate future research to gain deeper insights into the psychological underpinnings of moral judgment and their neural correlates.

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