Does Perception of Own Physiological Response Affect Severity of Moral Judgments toward Utilitarian Transgressions?

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Abstract

The role of emotion in moral judgments is a topic of widespread debate within the moral psychology community. Many contemporary theories of morality, such as the social intuitionist model, posit that emotion and automatic processes drive moral judgments and reasoning functions only as post-hoc rationalization for these judgments. Further evidence of the role of automatic processes in moral judgment has been exemplified by the finding that experimentally induced stress reduces utilitarian decision making. Similarly, false physiological feedback has been found to promote moral behavior and inhibit immoral behavior, but only in those high in private body consciousness (PBC). People who pay attention to their physiological responses (people high in PBC) may evaluate this feedback as a signal of distress resulting from the moral dilemma. However, people who are aware of their internal states but are unreactive to them, or in other words, people who are high in trait mindfulness, should not be affected by false physiological feedback. The proposed study will experimentally manipulate false physiological feedback through the use of headphones that will play either a fast or normal heartbeat; the participants will be told that this heartbeat is their own. It is hypothesized that false physiological feedback will increase severity of moral judgments of utilitarian transgressions. It is further predicted that the effect of false physiological feedback will be moderated by PBC, and that moderation will be moderated by mindfulness such that only participants high in PBC and low in mindfulness will be affected by the false feedback.

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The study of human morality has largely been the domain of philosophy and, within the last hundred years, psychology. Moral philosophy has mainly focused on how people *should* make moral judgments, whereas moral psychology focuses on how people *do* make moral judgments. Because moral philosophy deals with the hypothetical of how people should make judgments, its analyses function almost exclusively by means of logic and reason. As such, moral philosophy has traditionally highlighted the distinction between the principles of deontology and utilitarianism. Deontology is the principle that the morality of an action depends on the intrinsic nature of the act itself, and does not consider consequences (Kant, 1785/1959; Conway & Gawronski, 2013). According to this perspective, an action is immoral if it violates a rule or right. In contrast, utilitarianism is the principle that the morality of an action depends only on the consequences of the action (Mill, 1861/1998).

Consider the traditional trolley dilemma: there is a trolley rushing toward five people, unaware that they are about to be killed. You are able to pull a lever that will divert the trolley onto a second set of tracks, on which only one person is standing. From a deontological perspective, it would be immoral to pull the lever because you would be indirectly killing somebody, which violates the rule that "people should not kill other people". However, a utilitarian perspective would consider it moral to pull the lever because it maximizes positive consequences (results in the greatest good for the greatest amount of people) by saving five lives while sacrificing only one.

Now consider the footbridge dilemma, a variant of the trolley dilemma: you are standing next to a large man on a footbridge that passes over a set of trolley tracks. On the tracks is a

trolley that rushes toward five people, unaware that they are about to be killed. The only way to save the five people is to push the large man onto the tracks, killing the man but stopping the trolley. Similar to the trolley problem, a deontological perspective dictates that pushing the man is immoral, because you violate the rule of "people should not kill other people", while the utilitarian perspective dictates that pushing the man is moral because it results in saving five lives while sacrificing one. Empirical data have shown that over 90% of people endorse pulling the lever to sacrifice one person to save five (Cushman, Young, & Hauser, 2006; Navarrete, McDonald, Mott, & Asher, 2012). However, most people *do not* endorse sacrificing one person to save five in the footbridge dilemma (Hauser, Cushman, Young, Kang-Xing Jin, & Mikhail, 2007).

The philosophical distinction between deontology and utilitarianism is unable to account for this discrepancy because, logically, these two principles should be applied in the same manner in both dilemmas. However, people do not always behave rationally in everyday situations; instead, they are subject to nuanced phenomena, such as emotion and other automatic processes. Like moral philosophy, early moral psychology also fell prey to the assumption that people function only as rational creatures. These early influential theories, such as Kohlberg's stages of moral development, describe moral judgment as the function of reasoning alone (Kohlberg, 1971; Kohlberg & Hersh, 1977). Contemporary theories of morality (specifically Haidt's social intuitionist model) not only incorporate the role of emotion, but even suggest that emotion and automatic processes are the sole cause of moral judgments, and that and reasoning functions only as post-hoc rationalization (Haidt, 2001; Haidt, Koller, & Dias, 1993). More comprehensive theories, particularly dual-process theories, allow for the role of both rational and

automatic, emotional processes by utilizing dual system frameworks (Cushman, 2013; Greene, 2009).

Recent research on the role of emotion in moral judgment has helped explain the discrepancies of the layperson's reactions to moral dilemmas like the trolley and footbridge problems. Cushman (2013) posits that the physical contact in the footbridge dilemma elicits a negative emotional reaction that prevents people from endorsing the utilitarian action (pushing the large man). In support of this idea, a recent study found that emotional arousal was linked to reduced choice of utilitarian action in a virtual reality paradigm (Navarrete et al., 2012). This study, however, was unable to establish a claim that emotion had a causal role in moral decision-making task. Another study found that people with damage to their ventromedial prefrontal cortex (VMPC), a brain region central to the processing of emotions, tend to make an unusually high proportion of utilitarian judgments, providing evidence for the causal role of emotion in moral judgment (Koenigs, Young, Adolphs, Tranel, Cushman, Hauser, & Damasio, 2007). Similarly, a study by Valdesolo and DeSteno (2006) found that the experimental manipulation of positive affect significantly increased the proportion of people who made a utilitarian moral decision in the classic footbridge dilemma, but not the trolley dilemma. This suggests that the footbridge dilemma is subject to emotional influences that the trolley dilemma is insensitive to. Additionally, Wheatley and Haidt (2005) found that people who were hypnotized to feel disgust made more severe moral judgments.

Although there is growing evidence for the causal role of emotion in moral judgment and decision making, there is still much that we do not know about the role of other automatic processes. One largely unexplored topic in moral psychology is the relationship between stress and moral judgment. Because the moral dilemmas used in morality research commonly involve

the hypothetical death of at least one person, and because these deaths result from the choice of the participant, the relationship between stress and these scenarios is of great importance. There is a greater risk of stress related disorders in medical personnel who commonly experience real-world manifestations of these moral dilemmas that pit the welfare of one group of people against another (Kälvemark, Höglund, Hansson, Westerholm, & Arnetz, 2004). One recent study showed that experimentally induced stress inhibits utilitarian decision making (Starcke, Ludwig, & Brand, 2012). Similarly, cognitive load has been found to interfere with utilitarian moral judgment (Greene, Morelli, Lowenberg, Nystrom, & Cohen, 2008). Another study found that manipulated false perceptions of physiological stress (increased heart rate) promote prosocial, moral behavior, while also inhibiting antisocial, immoral behavior (Gu, Zhong, & Page-Gould, 2013).

One question of interest is whether these effects of false physiological feedback pertain to all people, or only those who are sensitive to their internal states. One way to measure this is the Private Body Consciousness (PBC) scale, which was developed to measure awareness of internal sensations (Miller, Murphy, & Buss, 1981). One study by Schnall, Haidt, Clore, and Jordan (2008) found that false physiological feedback to promotes moral behavior and inhibits immoral behavior, but only in those high in PBC. From this, Schnall et al. reason that people high in PBC falsely attribute signals from incidental disgust to unrelated transgressions, whereas people low in PBC don't notice their internal states, and thus have nothing to attribute.

In this way, PBC is a useful tool to help understand the effects of emotion and stress. Aside from PBC, there is another way to measure awareness of oneself. Recent work on mindfulness meditation as a treatment for substance abuse has specifically implicated two key features of mindfulness meditation: (1) awareness of internal sensation and (2) non-reactivity to

said sensation (Brewer, Sinha, Chen, Michalsen, Babuscio, Nich, & Carroll, 2009; Tang, Tang, & Posner, 2016). Kabat-Zinn (2003) defines mindfulness as "the awareness that emerges through paying attention on purpose, in the present moment, and nonjudgmentally to the unfolding of experience moment by moment". Gu et al. (2013) found that the moral decision making of those who scored high on a non-reactivity mindfulness scale were not affected by false perceptions of own physiological response, while those who scored lower were affected.

While both PBC and trait mindfulness measure awareness of internal states, they crucially differ in that mindfulness also measures non-reactivity to these states. One aim of the proposed study is to replicate the moderating effect of PBC on false physiological feedback on moral processes. However, instead of testing moral decision making (endorsement of utilitarian vs. non-utilitarian actions), the proposed study will extend the Gu et al. (2013) findings by testing whether false physiological feedback increases severity of utilitarian moral judgments (judging the wrongness of hypothetical actions that have already occurred). A study by Uhlmann, Zhu, and Tannenbaum (2013) found that utilitarian acts, such as pushing somebody off of a lifeboat to save many more lives, can lead to negative evaluations of the character of the actor, even though many of these people would endorse that very same utilitarian act. Therefore, it is important to test if false physiological feedback operates similarly on moral judgments as it does on moral decision making.

In addition to replicating the moderating effect of PBC, the proposed study also aims to examine whether this moderating effect is moderated by trait mindfulness. The results of the previous studies were explained by reasoning that people high in PBC notice their internal state, and attribute their perceived stress to the moral dilemma. However, if people are both high in

PBC *and* high in mindfulness, they should notice their internal states but remain unreactive to them, and thus refrain from attributing any signals of stress to their current moral dilemma.

There are three hypotheses of the proposed study: (1) false physiological feedback will increase severity of moral judgment; (2) said effect will be moderated by PBC, such that only participants high in PBC should be affected by false perceptions of own physiological response (and thus judge more severely); (3) said moderation will be moderated by mindfulness, such that only participants high in PBC and low in mindfulness should be affected by false physiological feedback (and thus judge more severely). See *figure 1* in Appendix A for a visual model of the proposed moderated moderation. Because people high in trait mindfulness must have awareness of their internal states, there should not be people low in PBC and high in trait mindfulness. See *figure 2* in Appendix A for a basic visual representation of these hypotheses.

Proposed Method

200 participants will be recruited from Brooklyn College and the surrounding area using flyers and online postings, listed as "Making judgments about hypothetical scenarios". Participants will receive class credit if affiliated with the university or $5 if from the surrounding community. This study will utilize a mixed design, with between subjects factor of false physiological feedback (fast vs. slow heartbeat), and within subject measures of PBC, trait mindfulness, and severity of moral judgment.

Procedure

At least one week prior to the experiment session, each participant will fill out a questionnaire that contains the PBC scale and the trait mindfulness scale, counterbalanced between participants, as well as demographic questions. This questionnaire may contain other unrelated surveys or scales if part of a mass testing function of Brooklyn College. When

participants arrive at the lab, they will be greeted, given a consent form to sign, and specifically told that if at any point in time they feel too distressed to continue, they may terminate the experiment and leave with no penalty.

PBC will be measured on a 5-item Likert scale. The following is an example of one of the five items: "I am very aware of changes in my body temperature". See *Table 1* in Appendix B for all five items. Trait mindfulness will be measured on a 7-item Likert scale. The following is an example of one of the seven items: "Usually when I have distressing thoughts or images, I just notice them and let them go". See *Table 2* in Appendix B for all seven items.

Similar to the paradigm utilized by Gu et al. (2013), participants will be given a headset, and will be told that they are listening to their own heartbeat. This headset will play either a fast heartbeat (96 beats/min) or a normal heartbeat (60 beats/min). Participants will be instructed to read a series of scenarios and make a moral judgment after each one. Utilitarian transgressions (acts that violate a deontological rule such as "do not kill", but maximize positive consequences by saving more lives) will be adapted from Greene et al. (2008). 10 "high-conflict" (good outcome only by means of direct harm) moral dilemmas will be edited to say that the utilitarian transgression has already occurred. The following is an example of one of the 10 scenarios that will be used:

> Enemy soldiers have taken over the village where Kendra lives. They have orders to kill all remaining civilians. Kendra and some of the other townspeople have sought refuge in the cellar of a large house. Outside Kendra hears the voices of soldiers who have come to search the house for valuables. Kendra's baby begins to cry loudly. Kendra covers his mouth to block the sound. Kendra knows that if

she removes her hand from his mouth, his crying will summon the attention of the soldiers who would kill her, her child, and the others hiding out in the cellar. To save herself and the others with her, Kendra does not remove her hand, and smothers her child to death

Each scenario will be presented in a counterbalanced order between participants, and each moral judgment will be made directly after each scenario is read. Participants will rate the moral wrongness of each utilitarian transgression on a 7 point scale, 1 (not wrong at all) to 7 (extremely wrong).

Analysis Plan & Expected Results

An independent samples *t*-test will be conducted to determine whether there was an effect of false physiological feedback on severity of moral judgment. A moderated multiple linear regression analysis will be conducted, with X = false physiological feedback, dummy coded (0 = normal heartbeat, 1 = fast heartbeat); Y = severity of moral judgment; M = PBC; and W = trait mindfulness.

It is expected that there will be a significant main effect of false physiological feedback, such that the fast heartbeat condition should have significantly more severe moral judgments. It is also expected that there will be a three-way interaction effect of false physiological feedback, PBC, and trait mindfulness, but no significant main effect for either PBC or trait mindfulness.

Discussion

If these proposed results were found, it would be further evidence of the impact of stress on moral judgment. More research should be conducted to examine whether experimentally manipulated mindfulness (mindfulness based training) would have similar moderating effects as

trait mindfulness. Alternatively, future experiments could also examine different types of automatic processes. Heartbeat (as a signal of stress) is just a single method of inducing perceived physiological response. Other automatic, non-emotional functions such as sweating, shivering, and headaches can be explored as novel interventions.

In addition to manipulating interventions, research should also focus on the scenarios themselves. Because the commonly used utilitarian dilemmas are extremely rare and emotionally charged (due to their end result of death), further research should utilize experimental paradigms that lend to increased external validity. One way in which to do this would be to use reward games, in which one could assign the participants to be the judge in a case where five people would lose $5, but if a button is pushed, one other person loses $5. Another possible experiment could instruct the participants to pretend to be a boss who could fire one person making $150,000, when otherwise 5 people making $30,000 would be laid off. Such designs would better represent the dilemmas that people face in everyday situations.

Research on the role of emotion and other automatic processes in moral judgment is very important for the continued development of modern society. As the Internet brings the world closer together, cultures are now more than ever being exposed to new moral beliefs and traditions. Many people in western society find it immoral for certain African cultures to circumcise their daughters. Alternatively, many Middle-Eastern people find it immoral for western women to participate in education or to dress as they wish. Understanding more about what drives moral judgments will help the people of these cultures better understand each other, and drive the international world closer to time of peace, prosperity, and understanding.

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Appendix A

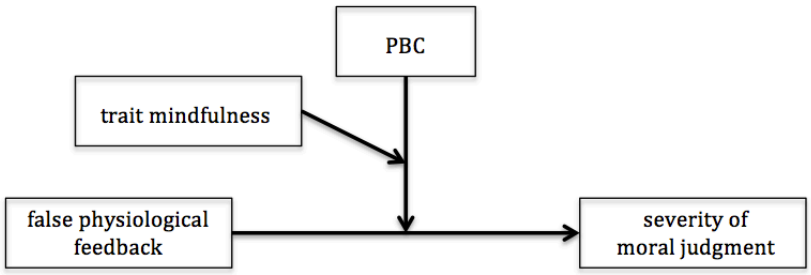

Figure 1: A visual display of the moderated moderation model.

	Low Mindfulness	High Mindfulness
Low PBC	**Unaffected** by false stress response	N/A
High PBC	**Affected** by false stress response	**Unaffected** by false stress response

Figure 2: A visual display of the interaction of the two moderating variables.

Appendix B

PBC: 5-item PBC likert scale, 1 (disagree strongly) to 7 (agree strongly)

Private Body Consciousness (PBC) Scale
I am sensitive to internal bodily tensions
I know immediately when my mouth or throat gets dry
I can often feel my heart beating
I am quick to sense the hunger contractions of my stomach
I am very aware of changes in my body temperature

Table 1: 5-item Private Body Consciousness (PBC) Likert Scale, 1 (disagree strongly) to 7 (agree strongly).

Trait Mindfulness (Non-Reactivity) Scale
I perceive my feelings and emotions without having to react to them
I watch my feelings without getting lost in them
In difficult situations, I can pause without immediately reacting
Usually when I have distressing thoughts or images, I am able just to notice them without reacting
Usually when I have distressing thoughts or images, I feel calm soon after
Usually when I have distressing thoughts or images, I "step back" and am aware of the thought or image without getting taken over by it
Usually when I have distressing thoughts or images, I just notice them and let them go

Table 2: 7-item Trait Mindfulness (Non-Reactivity) Scale Likert Scale, 1 (disagree strongly) to 7 (agree strongly).