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BRAIN, EMOTION, AND MORAL JUDGEMENT

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Abstract

The dual process theory posits that people relies on their emotion (especially negative emotions) when they are faced with personal moral dilemmas, such as pushing a person off a footbridge in order to stop a trolley that would otherwise kill five people. In an fMRI investigation, the medial frontal gyrus, posterior cingulate gyrus, and bilateral angular gyrus are more activated in considering a personal moral dilemma, leading them to make a characteristically deontological judgment. On the other hand, people are less emotionally engaged in non-personal moral dilemmas, leading them to be more consequentialist in their judgment. Empathy is argued to be a salient moral emotion that could alter one's moral judgment in moral dilemmas. Specifically, when judging about the permissibility of a person's proposed action, the subjects will judge those they empathize with less harshly, and when they themselves have to make the decision, they will tend to save the party they empathize with across dilemmas.

Keywords: brain, emotion, moral judgment

Consider a scenario where you are standing next to a railway switch and you see that a trolley is coming at a high speed toward five people. These people have their back against the trolley and therefore they are not aware that there's a trolley coming towards them. If you exempt yourself from doing anything, it is inevitable that they will be run over and killed by the trolley. However, you can pull the switch and change the trolley track, steering it toward another path on which stand another person. If you pull the switch, you are going to save five people but kill the one person. Most people faced with this dilemma decide that it is morally acceptable to kill one in order to save five (Petrinovich & O'Neill, 1996; Petrinovich et al., 1993). In another dilemma, you are standing on a footbridge above the railway with a large stranger and you see below you that a trolley is heading towards five people who are standing on the railway. Assuming that the stranger standing beside you is large enough to stop the trolley, unless you push the stranger down the footbridge to stop the trolley (and consequently causing his death), five people are going to be killed. In this scenario, the majority of people judged that it is morally unacceptable to push the stranger to save five people (Petrinovich & O'Neill, 1996; Petrinovich et al., 1993).

The inconsistency in which people perceive pulling the switch in the trolley dilemma acceptable, but not to push the stranger to stop the trolley in the footbridge dilemma, despite the same consequences (that one has to be sacrificed in order to save five) is confounding to moral philosophers. From the Kantian school of thought, it is argued that in the footbridge dilemma, the stranger was treated as a means to an end and it is morally unacceptable to treat a person as a means, whereas in the trolley dilemma, the death of the one person is a

side effect to an effort to save the five people. However, a variation to the trolley dilemma presents an objection to this theory.

In this case, the track leading toward the five was looped to connect to the track leading toward the one person. Therefore, without a body standing on the alternate track, the train would run to kill the five. If the switch was pulled and tracks were connected, however, the train would stop once it hit the one person, and therefore saving the five. In this case, most judge that it is still morally acceptable to kill the one person even though in this scenario the one person is also treated as a means to save the five (Thomson, in Greene, 2008; Foot in Greene, 2008).

Joshua Greene used these scenarios to illustrate the lack of consistent rational moral principles that a person adheres to when making their judgment regarding morally relevant behaviors (Greene, 2001).

The initial studies of morality in the field of psychology were imbued with an inclination to ascend reason as the basis for valid moral judgment, in accordance with many philosophical theories (Kant, 2007; Mill, in Greene, 2008). Very little attention was given to the role of emotion. Kohlberg, who based his cognitive developmental theory on Piaget's formulation of a child's moral development (Piaget, 1965), believed that what makes a moral judgment superior to another is the reasoning behind that judgment. He conducted interviews with children, asking them for their judgment and reasons for their judgment on moral dilemmas. One of the dilemmas, known as the Heinz dilemma, features Heinz as a man whose wife is dying of cancer, and he has to steal the drug from a pharmacy in order to save her. As a child matures, according to Kohlberg, he is cognitively enabled to take on multiple perspectives. The child will then begin to draw his reasoning for why Heinz should or should not steal the drugs away from egocentric consequences (e.g. Heinz should not steal because he could go to jail) toward conventional and post-conventional standards (Kohlberg, 1969; Kohlberg & Hersh, 1977). However, this rationalistic Cognitive Developmental approach lacks the power to explain the discrepancy of judgments despite the similar outcome in the aforementioned tragic moral dilemmas.

Negative Affect in Moral Judgment

This inconsistency in making a judgment about tragic moral dilemmas is better explained by the *Dual Process Theory* that was proposed by Joshua Greene. In an initial fMRI investigation that he conducted with his colleagues back in 2001, he found that in thinking about a personal moral dilemma, brain regions that are linked to emotion are more active than when they are thinking about an impersonal moral dilemma. More specifically, he found that the medial frontal gyrus (Brodmann's Areas 9 & 10), posterior cingulate cortex (BA 31), angular gyrus, bilateral (BA39) were significantly more active in personal moral conditions compared to the impersonal moral condition or the non-moral conditions (Greene et al., 2001). Moreover, areas associated with working memories are significantly less active in personal moral conditions (middle frontal gyrus, right, BA 46; parietal lobe, bilateral, BA 7/40).

To encapsulate the dual process theory, people make a *characteristically deontological judgment* because of a prepotent negative emotional reaction that arise from considering personal moral dilemmas. In impersonal moral dilemma, this negative emotional reaction is absent, rendering people

into making a more *characteristically utilitarian moral judgment* (Greene et al., 2001; Greene, 2007).

Indeed, another research shows that when people are induced to feel happiness (a positive emotion) through watching funny clips, their likelihood of making a characteristically utilitarian judgment in personal moral dilemma increases in comparison to the control group (Valdesolo & DeSteno, 2006). The idea behind this finding is that when positive emotions override the instinctive negative emotions, people treat personal moral dilemmas as if they were impersonal, and thus engaging their cognitive processes more in coming to their judgment.

The line of research that was done by Jonathan Haidt and his colleagues also support the idea that negative emotional reactions strongly affects one's moral judgment. Haidt argues that disgust is an emotion that evolved to serve as a marker for people to judge whether an action is morally acceptable or unacceptable. When people are induced to feel disgust, either through an external condition (for an example, sitting in a dirty workdesk, watching a disgusting video, or exposed to pungent odors) or through hypnosis, they appraised their disgust as a gut reaction that marks a scenario as morally unacceptable, therefore judging a scenario more severely (Haidt, 2001; Schnall et al., 2008; Haidt, 2002; Wheatley & Haidt, 2005).

This phenomenon extends as far as to when a person is judging a neutral, non-moral scenario. When people are hypnotized to feel disgust upon reading a certain word, when they encounter that word in a vignette, they will deem the person in that vignette as morally culpable despite their actual innocence (Wheatley & Haidt, 2005). Even though they cannot find a reason why they judge the person in the vignette as morally despicable, they seem reluctant to desert their initial judgment.

Interpreted from the dual process theory, disgust is one of the negative emotions salient in making a moral judgment. Even though Haidt's research was not done using tragic dilemmas, the method and finding mirror that of Valdesolo & DeSteno (2006). Thus we can justifiably predict that when a person feels disgust upon thinking about tragic dilemmas, either naturally or manipulated to feel so, he or she would be more likely to judge that the proposed actions to be morally contemptible. With disgust serving as a moral marker that is strong enough even to condemn an innocent person culpable, people experiencing this emotion will have higher likelihood of making characteristically deontological judgments in both personal and moral dilemmas compared to the control group. Some cautions need to be made in regards to the possibility that disgust may be manipulated to arise at the thought of letting a greater number of people die because of the reluctance to sacrifice one. However in this case, the prominent role that disgust plays in moral judgment is still intact.

Another research that support the role of negative emotion in forming characteristically deontological judgments in tragic moral dilemmas is done with patients who have adult onset focal bilateral lesions to their ventro-medial prefrontal cortex (VMPC) shows that they are also more likely to make a characteristically utilitarian judgment in personal moral scenarios (Koenigs et al., 2007). The VMPC area has been related to social emotions, and people with lesions to this area shows a significantly reduced responsivity to social emotions that are closely linked to moral values (Koenigs et al., 2007; Damasio, 1994; Anderson et al., 1999; Eslinger et al., 1992).

The six subjects who participated in this particular study were severely impaired in their ability to show appropriate response to seeing emotionally charged pictures, and in experiencing empathy, embarrassment and guilt. Their normal pattern of judgments in non-emotionally engaging dilemmas suggests that judgment in personal moral dilemmas is strongly affected by the social emotions regulated by the VMPC.

Defining Empathy

The lack of ability for patients with lesions to the VMPC to feel social emotions, in particular empathy, is very interesting. Empathy is perhaps one of the most widely studied moral emotion in the literature. Though its definition differs from one study to another, and sometimes the term is even used interchangeably with sympathy, empathy involves two distinct components (Jackson et al., 2005). The first component is the ability to respond emotionally to other people's feeling, sometimes to the point of sharing that particular emotion, and the second one is the cognitive perspective taking ability (Jackson, et al., 2005). The latter often has an overlapping definition with what is often known as the Theory of Mind (TOM), if not fully equated to it (Frith & Singer, 2008; Shamay-Tsoory et al., 2008). Empathy has been found to be a motivator for a person to perform prosocial behavior, and I would argue that *people who are manipulated to feel empathy in moral dilemmas would be more likely to either judge the party they can empathize with less severely, or in cases where they are required to make a moral decision, they will be more likely to save the party they are empathizing more with.*

Empathy and Morality

In the literature, empathy is a strong predictor in whether a person would perform a helping or prosocial behavior. In a study relating empathy to the likelihood to perform a prosocial behavior, such as the likelihood to initiate reparative behavior or to help another person, when adults are induced to feel empathy, they are more likely to perform moral behavior (Batson, in Eisenberg, 2010). However, the correlation has not been found in children, whom upon being induced to feel empathy they might also feel self-distress and therefore tend to pull themselves away from the distressing situation and seek their own comfort (Eisenberg et al., in Eisenberg, 2010; Eisenberg et al., in Eisenberg, 2010).

Because empathy-related responding is related to other-oriented prosocial behavior, such as the likelihood to initiate a reparative behavior or to help another person, it is probable that empathy-related responding would also be affecting a person's judgment regarding a moral situation.

According to Pizzaro, empathy serves as an effective moral marker. When a person is aroused to feel empathy, the affect serves as a cue that a morally relevant event is taking place, and this "first alert" will subsequently inform a judgment regarding that event (Pizzaro, 2000). Empathy, he argued, occurs "reliably, frequently and predictably" in situations that are morally relevant (Pizzaro, 2000). Even though empathy is not morality, but moral judgments that are motivated by empathy are very much similar to those prescribed by moral principles. Pizzaro acknowledged, citing several other sources, that empathy could be manipulated and that sometimes an empathic feeling could lead a person to commit a morally wrong behavior.

Empathy and Moral Judgment

Most of the study done in relation to empathy has been on how empathy acts as a moral motivator that increases the likeli-

hood of a person to help the person he feels empathic toward, and not so much in relation to moral judgment. However, to behave in a prosocial manner upon feeling emphatic toward the other person requires the actor to come to the moral judgment that the person he is going to help deserves to be helped.

If a person could be primed to feel empathy toward the one person in the trolley dilemma, or toward the five person in the footbridge dilemma in an attempt to override their initial moral judgment, it could be predicted that more characteristically deontological judgment and more characteristically utilitarian judgment will be made in regards to the trolley and footbridge dilemma respectively. However, if the empathy invoked is not strong enough to override the initial negative emotional reaction (such as when they are induced to empathize for the five people that were about to be hit by the trolley in the footbridge dilemma), then it is predicted that there won't be a shift in the decision made, but rather there will be in increase in the reaction time. The reason for this increase in reaction time is because the subject now has to take into consideration another emotional process in addition to their instinctive emotional reaction in making their decision.

Discussion and Conclusion

Joshua Greene posits that characteristically deontological moral judgments in personal moral dilemma, such as that which is made in the footbridge dilemma where people judge it unacceptable to push the one person in order to stop the trolley and save five people, as having an emotional basis. On the other hand, characteristically utilitarian moral judgment in impersonal moral dilemmas is argued to be stemming from a cognitive process, where a cost-benefit analysis is made therefore rendering it acceptable to sacrifice the one person in order to bring greater good to the greater number of people. His dual process theory is supported by various studies, such as the fMRI study, which shows that the brain areas associated with emotions are more activated when people are deliberating on personal moral dilemmas (Greene et al., 2001).

On a similar line of research, Jonathan Haidt, Valdesolo, and DeSteno, found that upon manipulating morally salient emotion, such as disgust in Haidt's research and happiness in Valdesolo and DeSteno's research, moral judgment could be modified. Haidt explained that the externally induced disgust is appraised by the subjects as a moral marker, therefore they judge the vignettes that they were presented with more harshly in comparison to the control. Valdesolo and DeSteno, on the other hand, explained that happiness overrides the initial aversive emotion that was aroused from reading the moral dilemmas, and therefore they tend to make a utilitarian moral judgment in personal moral dilemmas.

With the knowledge of empathy as a moral motivator and a salient predictor of moral judgment, and impinging on these recent findings from moral psychology, I am putting forth a hypothesis that first, in judging about the permissibility of another person's proposed action in a moral dilemma, they will judge people they can empathize with less harshly. Secondly, when empathy is manipulated in subjects to be directed toward the one person in the trolley dilemma, or toward the five people in the footbridge dilemma, people will be more likely to help those that they feel more empathic toward. Depending on how strongly we could prime the subjects to feel

empathy toward the targets, the modification in their judgment could range from an increase in reaction time without a change in their actual judgment, to an actual change in the judgment. In explanation, they will be more likely to make characteristically deontological judgment in the trolley dilemma, and a characteristically utilitarian judgment in the footbridge dilemma when compared to the control group.

It is important to note that there may be another psychological process that may take place when people are induced to feel empathy toward a certain target, such as the Identifiable Victim Effect (IVE) (Greene & Haidt, 2002; Greene et al., 2001; Schelling, 1968; Small & Lowenstein, 2003). The IVE posits that people are more likely to help those that they could identify with rather than a statistical number. However, it could be argued that the IVE is also employing the process of empathy in yielding its result, and therefore even though it may act as a further explanation, it does not necessarily falsify the premises leading to the hypothesis.

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