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Moral rigidity in obsessive-compulsive disorder: Do abnormalities in inhibitory control, cognitive flexibility and disgust play a role?

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ABSTRACT

Background and objectives: Abnormalities in cognitive control and disgust responding are well-documented in obsessive-compulsive disorder (OCD), and also interfere with flexible, outcome-driven utilitarian moral reasoning. The current study examined whether individuals with OCD differ from healthy and anxious individuals in their use of utilitarian moral reasoning, and whether abnormalities in inhibitory control, cognitive flexibility and disgust contribute to moral rigidity.
Methods: Individuals with OCD ($n = 23$), non-OCD anxiety ($n = 21$) and healthy participants ($n = 24$) gave forced-choice responses to three types of moral dilemmas: benign, impersonal, personal. Scores on measures of cognitive flexibility, inhibitory control and trait disgust were also examined.
Results: Individuals with OCD gave fewer utilitarian responses to impersonal moral dilemmas compared to healthy, but not anxious, individuals. Poorer cognitive flexibility was associated with fewer utilitarian responses to impersonal dilemmas in the OCD group. Furthermore, greater trait disgust was associated with increased utilitarian responding to personal dilemmas in the OCD group, but decreased utilitarian responding to impersonal dilemmas in the anxious group.
Limitations: Although we did not find an association between inhibitory control and moral reasoning, smaller associations may be evident in a larger sample.
Conclusion: These data indicate that individuals with OCD use more rigid moral reasoning in response to impersonal moral dilemmas compared to healthy individuals, and that this may be associated with reduced cognitive flexibility. Furthermore, these data suggest that trait disgust may exert opposing effects on moral reasoning in individuals with OCD compared to those with other forms of anxiety.

1. Introduction

Many individuals with obsessive-compulsive disorder (OCD) appear to live by a strict moral code and show a concern for preventing harm that goes beyond that observed in the normal population. The modest body of research examining moral reasoning in OCD lends empirical support to this clinical observation, with evidence showing that individuals with OCD are more likely to draw negative moral inferences about themselves from their intrusions compared to those with other psychiatric disorders (Ferrier & Brewin, 2005), and that OCD-related cognitions and symptoms are associated with sensitivity to self-domains of morality (Doron, Kyrios, & Moulding, 2007).

Research examining moral reasoning in OCD has typically pointed to cognitive distortions as the mechanism underpinning the hypermoral behavior observed in those with the disorder. Cognitive distortions in OCD appear to bias the use of deontological moral reasoning processes (i.e., judging the morality of an action based on the degree to which it adheres to a set of rigid moral codes; Kant, 1983), over more utilitarian reasoning processes (i.e., the idea that what is morally right is what maximizes happiness and minimizes suffering for all affected; Mill, 2001). For example, when presented with a typical 'personal' moral dilemma designed to assess individual preferences for utilitarian and deontological moral reasoning strategies (e.g., a scenario in which it is necessary to personally cause harm to one person in order to save the lives of many), overinflated responsibility attitudes in individuals with OCD correlated with the tendency to favor the deontological option, even if this would produce the worst overall outcome (Franklin, McNally, & Riemann, 2009). This indicates that inflated

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perceptions of responsibility in individuals with OCD may increase their tendency to use more rigid deontological reasoning.

Although a cognitive distortions model of moral rigidity in OCD fits well with other cognitive models of the disorder (e.g., Rachman, 1997; Salkovskis, 1996), there is evidence that other factors may also play a role. Greene's dual process theory of moral reasoning suggests that two separate psychological processes affect our moral decisions – cognition and emotion (Greene, Nystrom, Engell, Darley, & Cohen, 2004). Greene proposes that utilitarian moral judgments are driven predominantly by cognitive processes, because initial negative emotional reactions must be overridden in order to choose the best overall outcome. Support for this prediction comes from research showing that reducing cognitive control via a cognitive load manipulation selectively interferes with utilitarian moral judgments (Greene, Morelli, Lowenberg, Nystrom, & Cohen, 2008). Similarly, increased activity in the anterior cingulate cortex (an area responsive to cognitive conflict; Botvinick, Braver, Barch, Carter, & Cohen, 2001), as well as the anterior dorsolateral prefrontal cortex (an area implicated in abstract reasoning and cognitive control; Koechlin, Ody, & Kouneiher, 2003) is observed when individuals use utilitarian moral reasoning in response to personal moral dilemmas (Greene et al., 2004). This indicates that use of utilitarian moral reasoning, particularly in response to moral dilemmas that elicit strong emotional responses, draws on processes involving cognitive control. In light of these findings it is likely that factors which impair cognitive control will also impair the use of utilitarian reasoning processes, particularly in contexts where emotion and cognition come into conflict.

In contrast, Greene argues that deontological judgments reflect a reasoning process that is dominated by emotion, because intense, negative affective reactions create a sense that an action is inherently wrong, no matter what the consequences. Support for this hypothesis comes from evidence showing that reductions in negative emotional responding lead to reduced use of deontological moral reasoning. For example, compared to healthy individuals and individuals with Alzheimer's Disease, individuals with frontotemporal dementia (who commonly experience emotional blunting) are less likely to use deontological moral reasoning processes in moral contexts which elicit aversive emotional responses (Mendez, Anderson, & Shapira, 2005). Similar findings are also observed when negative affective responses are counteracted using a positive mood induction (Valdesolo & DeSteno, 2006), suggesting that sensitivity to prepotent, negative affective responses is closely associated with the use of deontological moral reasoning.

A comparison of the literature on moral reasoning and research into executive and emotional functioning abnormalities in OCD reveals a number of cognitive and emotional processes that affect moral judgment, which also overlap with known deficits in OCD.

1.1. Impaired cognitive flexibility and inhibitory control

Firstly, evidence suggests that moral reasoning may be affected by impairments in cognitive control (Greene et al., 2008). In a moral dilemma, the utilitarian outcome often involves committing a personal moral violation against one person in order to reduce the suffering of others, and this requires the ability to inhibit a strong prepotent affective response to engage in more logical, abstract reasoning, while shifting attention away from the action to the outcome (Greene et al., 2004). Evidence supporting this relationship comes from research showing that reducing cognitive control via a cognitive load manipulation interferes with utilitarian moral judgments, particularly for dilemmas in which the utilitarian action requires one to effortfully overcome a prepotent aversion toward the action that will achieve the greatest outcome (Greene et al., 2008).

Deficits in specific aspects of cognitive control, particularly cognitive flexibility and inhibitory control, are well-documented in individuals with OCD (Andrés et al., 2008; Lawrence et al., 2006; Moritz et al., 2002; Van der Linden, Ceschi, Zermatten, Dunker, & Perroud, 2005). Indeed, some researchers have even suggested that inhibitory deficits may represent a candidate endophenotype of the disorder (Chamberlain, Blackwell, Fineberg, Robbins, & Sahakian, 2005). Given that making a utilitarian moral judgment involves using cognitive control to override an initial emotional response, it is likely that reduced cognitive control will bias individuals with OCD to use deontological moral reasoning, thus providing an insight into the moral rigidity observed in those with the disorder. However, no research to date has examined this in the context of clinical OCD.

1.2. Elevated disgust responding

Secondly, there is mounting evidence to suggest that elevated levels of trait disgust are associated with increased moral hypervigilance (Jones & Fitness, 2008). The link between disgust and moral judgment has been shown at both the trait and state level, where inducing disgust via exposure to a bad smell, a dirty testing environment (Schnall, Haidt, Clore, & Jordan, 2008) or via hypnotic suggestion (Wheatley & Haidt, 2005) have all been shown to increase the severity of moral judgments.

Individuals with OCD have been shown to exhibit trait levels of disgust that exceed that observed in healthy individuals (Berle et al., 2012) as well as individuals with other non-OCD anxiety disorders (Whitton, Henry, & Grisham, Unpublished results), and there is strong evidence that the symptoms of OCD correlate positively with scores on measures of disgust responding (Mancini, Gragnani, & D'Olimpio, 2001; Olatunji, Ebesutani, David, Fan, & McGrath, 2011; Schienle, Stark, Walter, & Vaitl, 2003). If trait disgust is associated with more severe moral judgment and is elevated in those with OCD, then heightened disgust may contribute to moral rigidity in OCD. There is preliminary evidence supporting a link between disgust and morality in OCD, with research showing that priming morality-related information heightens contamination-related behavioral tendencies (Doron, Sar-El, & Mikulincer, 2012), and is linked with contamination concerns in non-clinical samples (Doron, Moulding, Kyrios, & Nedeljkovic, 2008). These findings indicate that activating moral themes may prompt disgust-based OCD symptoms, however no research to date has examined whether elevated trait disgust is linked with moral rigidity in clinical OCD.

1.3. Current research

The first aim of the current research was to determine whether individuals with OCD differ from those without the disorder in their use of utilitarian moral reasoning. Prior research into moral reasoning in individuals with OCD has been limited due to the lack of a clinical comparison group (e.g., Franklin et al., 2009; Harrison et al., 2012). Given that cognitive distortions (Beck, Emery, & Greenberg, 2005), impairments in cognitive control (Airaksinen, Larsson, & Forsell, 2005) and increased disgust responding (Muris, Merckelbach, Schmidt, & Tierney, 1999) are associated with heightened anxiety more generally, it is critical to include a clinical comparison group when assessing for patterns of moral reasoning that may be unique to OCD, to control for the effects of heightened anxiety. Therefore, we sought to extend previous research by comparing the patterns of moral reasoning used by individuals with OCD to those used by healthy individuals as well as a group of individuals with other non-OCD anxiety disorders. Given that differences in the use of deontological and utilitarian moral reasoning