

# Repugnance as Performance Error: The Role of Disgust in Bioethical Intuitions

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**Abstract:** An influential argument in bioethics involves appeal to disgust, calling on us to take it seriously as a moral guide (e.g. Kass, Miller, Kahan). Some argue, for example, that genetic enhancement, especially via human reproductive cloning, is repellant or grotesque. While objectors have argued that repugnance is morally irrelevant (e.g. Nussbaum, Kelly), I argue that the problem is more fundamental: it is psychologically irrelevant. Examining recent empirical data suggests that disgust's influence on moral judgment may be like fatigue: an exogenous influence, yielding a "performance error" that does not reflect our understanding of moral matters. This conclusion also challenges appeals to repugnance on other topics (such as homosexuality) and generally downplays the importance of disgust in moral discourse.

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## 1. Arguments from Repugnance

Disgust inevitably crops up in bioethics since it is connected with our attitudes toward the purity of the body and mind (Nussbaum 2004; Haidt 2012). Such concerns are relevant to human enhancement, which can involve manipulating the building blocks of human life and chemically altering the brain. Leon Kass (1997; 2001), for example, has urged that altering human nature, especially by human reproductive cloning, is repellant, grotesque, Frankensteinian, revolting, and repugnant. He even compares this to disgust toward incest and cannibalism. Kass does offer other arguments that do not directly appeal to repugnance, but these seem secondary, proffered only so that this reaction is "at least partially articulated" (Kass 2001, §3).

Others also endorse appealing to disgust in moral arguments (e.g. Miller 1997; Kekes 1998; Kahan 1999), but concerning other topics, such as sexual conduct and vicious cruelty. Given their usual conclusions, such positions are sometimes considered conservative. This is not true of all (e.g. Kahan 1999; Midgley 2000), but appealing to disgust might also be considered conservative given that empirical evidence suggests that political conservatives are more sensitive to disgust than liberals (Inbar, Pizarro, & Bloom 2009).

Arguments from repugnance rely on assumptions about the psychology of moral judgment. One is that such reactions toward bioethical issues are widespread. Kass (1997, 21), for example, refers to “the widespread repugnances of humankind” (cf. also Kekes 1998, 100ff). After all, the argument would lack force if the reactions occurred only in the person making the argument or a small group of disgust-sensitive theorists. Data I report elsewhere challenge this initial assumption (May forthcoming), but here I want to focus on the second assumption, which is that emotions like disgust play a significant role in generating such bioethical judgments. This is an important claim because, even if disgust is a common reaction to certain uses of biotechnologies, it may merely be a byproduct of moral judgment. Opposition to cloning, for example, could primarily be determined by factors other than repugnance, such as fear or thoughts about harm and fairness. If disgust is a mere consequence of an existing negative moral belief, however, then it cannot be cited as evidence for the truth of the moral belief. Arguments from disgust are meant to provide evidence of immorality, not evidence of a moral belief one already possesses (compare Giubilini forthcoming). Thus, disgust-advocates must assume that the emotion drives the bioethical judgment, not vice versa, and that this influence isn’t negligible.

I shall argue that recent work in cognitive science challenges this second assumption. Moral cognition is at best only slightly influenced by feelings of repugnance, and this minor effect is best treated as yielding a “performance error”—akin to judgments influenced by fatigue, divided attention, agitation, and so forth. Disgust is thus not a factor involved in the normal production of moral judgment (it’s “exogenous”), failing to even play a role in our ordinary moral understanding, let alone moral wisdom. On this account, repugnance is certainly not “above all... a moral and social sentiment” (Miller 1997, 2).

This yields a new kind of challenge to arguments from repugnance. Some commentators quickly dismiss appeals to emotion generally, arguing that such appeals are guilty until proven innocent by the tribunal of reason (e.g. Pence 1998; compare Roache & Clarke 2009). Others have argued positively that disgust is morally irrelevant or unreliable in such contexts (e.g. Nussbaum 2004; Kelly 2011). My argument ultimately turns on the more basic premise that, for moral judgment, disgust is *psychologically* irrelevant. Such an account is insulated from replies from disgust-advocates who argue that the emotion is morally relevant in some circumstances (e.g. Plakias 2013).

In the end, even if it is sometimes wrong to violate the purity of the body, this is not supported by appeals to repugnance. Our focus throughout will be on disgust and human enhancement, but the approach can obviously be applied to arguments from disgust on any topic, such as homosexuality. Moreover, we will briefly conclude that there are some broader implications of treating disgust as generating mere performance errors.

## **2. Disgust Experiments**

Many say we can safely conclude that disgust substantially influences certain moral beliefs (e.g. Miller 1997; Prinz 2006; Kelly 2011; Haidt 2012; Plakias 2013; Chapman & Anderson 2013). Recent empirical research apparently suggests that moral judgment is largely driven by emotions, and many studies involve disgust in

particular. Daniel Kelly, for example, recently proclaims that disgust “can have dramatic effects” on moral judgment (2011, 130). Similarly, Chapman and Anderson write that numerous studies “converge to support the notion that disgust does play an important role in morality” (2013, 322). I will argue that such treatments of the evidence are overblown. It is imperative to begin with an examination of some of the key studies.

Mere correlations between disgust and moral judgment are perhaps commonplace and uncontroversial, at least for some moral judgments. So let’s grant that there is sufficient evidence for the correlations, whether based on experiments or common experience (cf. Prinz 2006). Still, it could be that disgust is merely a result of the moral judgment or otherwise does not play a causal role in its production. Often it seems we are disgusted by something because we judge it to be immoral (not vice versa), and there is some neuroscientific evidence for this ordering (Yang et al 2013). Emotions are commonly triggered by judgments of wrongdoing presumably because morality matters a great deal to us. So let us turn to evaluating studies that attempt to isolate disgust as a causal factor in moral judgment.

Consider first the popular “moral dumbfounding” studies (e.g. Haidt et al. 1993). After subjects recorded their moral judgments about various “harmless taboo violations,” such as eating an already dead dog, the experimenter probed for justifications using an interview format. But participants who condemned the acts were at a loss. They tended to look for harms in the scenarios only to be reminded that there apparently weren’t any in the cases under consideration (but see Jacobson 2012). Participants were often in a state of moral dumbfounding—confident in their beliefs but uncertain as to why. Haidt and his colleagues argue that this phenomenon further reveals that emotion is a key determinant of the initial moral judgment, and “moral reasoning is usually post hoc rationalization” (Haidt & Bjorklund 2008, 216). What’s most important for us is that many of the hypothetical scenarios involved violations of the purity of the body and the researchers found a correlation between how negative participants’ moral judgments were and reports of being “bothered” by the scenarios. It would thus seem that disgust is the relevant emotion providing the causal influence, at least in these types of scenarios.

Such studies might actually seem damaging to arguments from repugnance. They may suggest that disgust influences moral judgment in an irrational way—hardly providing wisdom. But that’s too quick. Haidt (2012) himself maintains that disgust plays a powerful role in moral judgment, and one that we should take seriously. The culprit is not emotion but rather conscious reasoning, which engages in post-hoc rationalization. On Haidt’s theory, roughly, disgust is tied to one of his hypothesized innate moral foundations—namely, Sanctity/Degradation—that he believes evolved in humans partly to shape moral cognition on topics concerning the purity of body and soul. At one point, Haidt goes so far as to say: “If we had no sense of disgust, I believe we would also have no sense of the sacred” (349). This is fodder for Kass and other disgust-advocates. At one point, Kass himself seems to welcome the idea that “repugnance is the emotional expression of deep wisdom, beyond reason’s power completely to articulate it” (2001, §2). Similarly, Kekes writes: “If challenged to justify their reaction, [those feeling moral disgust] may not be able to do so. But that does not mean that their reaction is not justifiable” (1998, 106).

Support for this picture may come from a general idea in cognitive science that a judgment is not suspect just because one cannot articulate one's reasons for it. For example, Noam Chomsky's famous sentence "Colorless green ideas sleep furiously" strikes ordinary speakers as grammatical (or acceptable), but they cannot explain why; we have to be taught why in grammar school or linguistics class. One can point to non-linguistic examples as well, such as our general inability to explain why we love someone (Saltzstein & Kasachkoff 2004). This phenomenon is unsurprisingly well-documented for various moral judgments, even those that do not involve tricky "harmless taboo violations" (e.g. Cushman et al 2006). Proponents of the so-called "linguistic analogy" argue that, much like linguistic judgment, moral judgment is generated by factors that are not easily accessible via introspection (e.g. Dwyer 2009; Mikhail 2011). So a range of theoretical frameworks can explain moral dumbfounding without treating disgust as unreliable.

However, the dumbfounding studies do not provide much evidence about whether repugnance does influence moral judgment. The main issue is that disgust wasn't manipulated experimentally or directly measured; participants were only asked how much the acts depicted "bothered" them. Disgust *might* be the relevant emotion in many of the scenarios, but it's best to examine the various experiments that have induced disgust in participants and apparently observed a change in moral judgment due to an incidental experience of this emotion alone.<sup>1</sup>

There are indeed a number of such experiments purportedly isolating disgust as a causal factor in moral judgment. For example, Thalia Wheatley and Haidt (2005) manipulated disgust by hypnotizing subjects to feel disgust upon hearing a morally-neutral trigger word. Similarly, Simone Schnall and her colleagues induced disgust in their participants in a variety of ways, such as having them smell a foul odor, watch a film clip involving human feces, and completing the experiment in a gross environment (Schnall, Haidt, Clore, & Jordan 2008). In these and a number of other experiments, researchers have allegedly found evidence that incidental disgust substantially influences moral judgments—making them, in particular, more negative compared to control groups. A related set of studies involved manipulating feelings of cleanliness, but its effect on moral judgment is more complicated. Some results suggest that cleanliness reduces the severity of moral judgments while others suggest an increase in harshness (for discussion, see Tobia 2015).<sup>2</sup>

Various commentators, often including the experimenters themselves, have claimed the data suggest that those who experienced disgust were more likely to judge hypothetical actions as wrong or immoral, compared to a control group who were not

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<sup>1</sup> There are further problems with drawing firm conclusions about moral judgment from the dumbfounding studies, but we'll set them aside here. See e.g. Saltzstein & Kasachkoff (2004), Kennett (2012), and Jacobson (2012).

<sup>2</sup> I discuss other similar experiments, and their limitations, elsewhere (May 2014a). Haidt and colleagues do present additional evidence that emotions generally influence moral judgment (see esp. Haidt & Bjorklund 2008). Much of the evidence, however, is speculative and does not directly concern disgust or moral judgment, such as evidence for dual-process theory (see Saltzstein & Kasachkoff 2004). The most important studies to evaluate involve experiments that manipulate disgust and measure moral judgment specifically.

induced to feel disgust. For example, regarding the experiments conducted by Schnall et al. (2008), Joshua Greene writes: “the disgust manipulation made people more likely to condemn these actions” (2008, 58). Based on such results, some philosophers have gone so far as to make claims like the following: “we can form the belief that something is morally wrong by simply having a negative emotion directed towards it” (Prinz 2006, 31).

### 3. Disgust’s Influence Tempered

In previous work, I have argued that such experiments do not provide strong evidence for the claim that disgust substantially influences a surprising class of moral judgments (May 2014a). Here I want to briefly rehearse some key components of that argument, extend them to bioethics, and draw a bolder conclusion. This will set us up for addressing the arguments from repugnance with which we began.

The most important point about the disgust experiments is that they consistently show only that disgust *slightly* influences moral judgment. In these studies, moral judgments are importantly recorded on a scale, anchored at different end points with moral categories, such as: “Not at all morally wrong” vs. “Extremely morally wrong.” Participants are randomly assigned into groups—at least two, consisting of one disgusted group and one control group—and they all read a number of hypothetical scenarios, typically involving moral transgressions. The experimenters subsequently calculate the average response on the scale in each group and then use statistical analyses to determine whether the difference between the two groups is likely due to chance. That is, they engage in the common method of null hypothesis significance testing, assessing statistically whether we can confidently reject the null hypothesis that there is no real difference between such groups (any observed difference is just due to chance). Across the relevant experiments, the researchers tend to find that the mean response from the disgusted group is higher than the mean of the control group and, importantly, that this difference is statistically significant. We can then reasonably reject the null hypothesis, concluding with some confidence that the manipulated variable (disgust) had a causal impact on moral judgment.

We must further ask, however, whether the difference is *substantial*, since statistical significance does not alone entail that the effect is significant in a more ordinary sense. The mean differences between the groups’ responses may, after all, be ever so slight; and in fact they are, across the board. In Wheatley and Haidt’s (2005) hypnotism study, for example, one of the differences in mean morality ratings was 2.7 and 14 on a 100-point scale. This, if anything, appears to be a rather insignificant difference. It is statistically significant to be sure, but it is not a substantial shift, at least as far as our topic of moral judgment is concerned. This does not appear to provide any evidence for the claim that participants’ moral judgments changed in terms of their *polarity* or *valence* (e.g. from right to wrong). The means are both on the same side of the scale, suggesting that participants in both groups tended to register the same moral judgment (namely, *not wrong*) regarding the case (cf. Mallon & Nichols 2010, 317–18). So we do not have evidence that moral judgments, even a specific class, can be driven merely by feelings of repugnance (contra Prinz 2006 and others). Rather, the evidence suggests that disgust can slightly amplify moral

judgments or make them harsher.<sup>3</sup> This is a limitation that continually arises for the many disgust experiments that have been conducted by various labs around the globe. Moreover, a recent meta-analysis of published and unpublished attempts to produce the effect suggests its magnitude is small at best (Landy & Goodwin forthcoming).<sup>4</sup>

The experimental results provide *some* evidence for a rather modest claim: that disgust *slightly* influences the *severity*, not the valence, of moral judgments in a certain domain. Such minor influence is akin to factors, such as fatigue or inattention, that slightly impact the severity of judgments generally. In fact, there is evidence that disgust's influence works quite like fatigue. Experiments by Simon Laham and his colleagues (2009) suggest that moral judgments can be made less severe by, in effect, reducing incidental fatigue, by varying the legibility of the font their moral vignettes were presented in. For one group of subjects, the first few vignettes were difficult to read while the latter few were refreshingly easy, and the reverse was true for the other group. As with disgust, reduction in the fatigue that presumably accompanies illegible writing slightly affected the severity of people's moral judgments on average, but not their valence. The mean difference in morality ratings between the groups was statistically significant of course, but the means themselves differed only slightly and on the same side of the scale.

Such findings are not particular to morality either. For example, there is some evidence that claims about geography, of the form "Town A is in county B" (e.g. "Lima is in Peru"), are slightly more likely to be judged true when more legible (Reber & Schwarz 1999). More precisely, the group of participants who read the highly visible statements judged slightly more statements as true (8.36 statements) than the group who read the same statements presented in a less visible colour (8.09 statements). The difference between these means is statistically significant, but one can readily see that the difference between the groups is ever so slight. Such subtle effects have been documented on many topics; there is nothing peculiar about geography or morality.

This might seem like a wholesale attempt to water down the results of all psychological experiments. But it is important to note that the limitations we've noted are not criticisms of the studies themselves and they do not apply to all of them. Certain projects are geared toward finding any shifts whatsoever on the relevant instrument of measurement. To take a simple example, one might be concerned to measure helping behaviour in different conditions (cf. Batson 2011). If we measure this behaviour by documenting the percentage of people who help when, say, feeling or not feeling especially high levels of empathy, then any statistically significant shift can yield results with clear importance. One key difference between studying helping behaviour and moral judgment is that the units of measurement for helping behaviour are each rather substantial: each percentage point represents a portion of people helping. With standard scales for moral judgment, however, each unit of measurement

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<sup>3</sup> In addition to May (2014a), this issue is raised briefly by Huebner, Dwyer, & Hauser (2009); Pizarro, Inbar, & Helion (2011); and Rozyman (2014).

<sup>4</sup> In order to focus on what is most important for the argument in this paper, I am setting aside further limitations of the various disgust experiments (see May 2014a; Huebner forthcoming).

represents at best something like a tendency to shift one's belief about *how* moral an act is, or perhaps a shift in average confidence in the categorical judgment. So, as we've seen, even if there is a statistically significant difference in the average responses between groups, this may still represent the very same judgment (e.g. that the action is morally acceptable). So both the goal of one's project and the phenomena measured can affect whether statistical significance alone yields something of immediate importance for the research program.

A primary goal in research on moral judgment is to isolate which factors determine the valence of moral beliefs. In the arguments from disgust at least, the idea is supposed to be that disgust is in some sense a major determinant of the judgment. In appealing to repugnance, bioethicists like Kass are in effect claiming that they believe some action or policy is wrong because they have a reaction of repulsion upon contemplating it. Such appeals are impotent if disgust only slightly effects the harshness or severity of the judgment, not its valence or polarity. Compare: one's mood may slightly affect the severity of one's judgment that Jones is a jerk; but one could hardly appeal to one's mood as indicating that Jones is a jerk if one would believe this regardless of one's mood. Alternatively, consider not a judgment but a mere cause and effect relationship: adding insult to injury. Suppose Leslie falls into a bout of depression because she is recalled from her beloved job as a City Council member. The knowledge that she lost her job is the main cause of her being depressed (rather than happy), even if literally insulting her would make her depression *worse*.

#### **4. Performance Errors & Exogenous Factors**

So far we have considered in rather ordinary terms the limits of disgust's influence on moral judgment. But we can appreciate these limits more fully with the so-called "competence-performance" distinction used in many areas of cognitive science.<sup>5</sup>

The distinction was made most prominent by Chomsky's approach to language, which distinguished between one's understanding (*competence*) from how one puts it to use (*performance*). *Performance errors* arise, not whenever one makes a mistake about the subject matter, but rather when one's performance fails to reflect one's understanding. To take a simple example of a linguistic performance error, consider a case in which someone says "You did good," after seeing someone successfully complete a difficult task. Some adult speakers of English may not know that one should say "well" instead of "good" in such cases, but we can sometimes make this "error" even when we do have the relevant knowledge. For example, this may occur when one is especially tired, in a hurry, distracted, or simply in the mood to be colloquial. So this error in performance—a slip of the tongue, we might say in some cases—need not reflect one's knowledge, or minimally beliefs, about the appropriate use of "well."

Upon a bit of reflection, one might readily notice performance errors, but others are not easily shaken. Consider the phenomenon of centre-embedding, in which part of a phrase is embedded in the middle of another. Single-embedding often seems

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<sup>5</sup> My thinking on this topic has been greatly influenced by the insightful work of John Mikhail (2011). Mikhail very briefly connects emotions and performance errors in his commentary on Greene's work (Mikhail 2008, n. 5).

grammatical (e.g. “The salmon that the dog chased fell”); yet double-embedding is often unacceptable (e.g. “The salmon that the man that the dog chased smoked fell”). Despite the second example sounding odd to ordinary English speakers, many linguists chalk this odd ring up to performance error, perhaps due to a strain on memory (Lewis 1996; Alexander et al 2010). The judgment that the second example is unacceptable, then, needn’t be indicative of our linguistic understanding (or “competence”).

Not all errors in judgment are performance errors. Some cognitive biases may be good examples of errors in judgment that arguably do reflect our intuitive understanding of the subject matter. For example, our tendency toward error when thinking about probabilities—such as the Gambler’s Fallacy or the Monty Hall Problem—might best be treated as reflecting our basic, albeit erroneous, understanding of likelihood and chance. In such cases, the errors may well reflect our ordinary competence (in the technical sense), although “competence” in the ordinary sense might not be the most appropriate term here since, in one sense, we are displaying *incompetence*. Similarly, talk of “knowledge” in the ordinary sense is inapt insofar as knowledge entails accurate belief. But these are merely differences in terminology.

Indeed, the terminology here can court confusion, so let me be clear, especially since theorists sometimes use the competence/performance distinction in various ways. Some conceive of all actual psychological phenomena as a matter of performance, while competence is an abstract idealization that is not meant to describe actual psychological mechanisms (cf. Mikhail 2011). Moreover, some employ the notion of error in a more normative way to designate which judgments are incorrect or biased (cf. Nichols & Knobe 2007). A common role for the distinction in cognitive science, however, is merely descriptive—marking out the normal mechanisms in a domain of cognition (cf. Alexander et al 2010). Here the goal is to distinguish in a causal mechanism the normal, internal factors (*endogenous*) from abnormal, external factors (*exogenous*). In moral judgment, examples of endogenous factors might be information about intent, act types, and harmful consequences (May 2014b), while an example of an exogenous factor might be fatigue. It may be better, then, to simply employ the distinction between endogenous and exogenous factors or variables.

One way to focus on this appropriation of the distinction is to consider the notion of a causal process via intervention (compare Woodward 2003). A typical intervention into a causal system is a good example of an exogenous causal process. For example, suppose we normally acquire the belief that others are sad by processing information about their facial expressions, utterances, and body language—the endogenous factors in this causal mechanism. One might of course form the belief that Sam is sad due to, say, being struck on the head by a falling brick. But this is typically an exogenous causal process that may reveal little about the endogenous causal mechanism that normally leads to reading the minds of others. Intervening on the brain may reveal much about how endogenous mechanisms work, by showing how they break down, but such interventions themselves are typically exogenous factors. Simply because such intervening factors can alter a subject’s judgment, one would not conclude that such factors are part of the normal mechanism for producing such judgments. More evidence is required to make that inference.



Of course, some factors that we would intuitively categorize as interventions are endogenous factors or reveal such factors. But further evidence can help identify which interventions are endogenous or indicative of “competence.” For example, in general, a causal factor is especially likely to be exogenous (possibly yielding “performance errors”) if it consistently fails to substantially affect the target variable. This may provide a sufficient, even if not necessary, condition for a factor being exogenous.

## 5. Disgust’s Performance

What does the preceding discussion imply about disgust? If repugnance is best treated as an exogenous variable that yields “performance errors,” then its influence on moral judgment is even more limited than some other theorists have emphasized (e.g. Huebner et al 2009; Pizarro et al 2011; May 2014a). Not only does disgust only appear to slightly amplify moral judgments, rather than shift their valence; it’s not even part of the normal mechanism for moral judgment. If this is right, then the influence disgust has on our moral judgments is like fatigue: its effects do not reveal our understanding of morality, which means it cannot constitute wisdom.

Of course, in the case of disgust, we do not even have evidence of a shift in the categorical judgment of the rightness or wrongness of an action, which contrasts with the usual examples of performance errors. Instead, we have evidence that the harshness of one’s judgment can be slightly elevated. This is due to the scales used to measure moral judgment in these experiments. A slight shift along such scales is a change in response that does not necessarily reflect the ordinary mechanism. The valence of *some* people’s moral judgments might be determined solely or in large part by feelings of repugnance. Kass is an example if we take his claims about his own psychology at face value. Perhaps some such people are especially sensitive to disgust or confuse their negative feelings of repugnance with, say, fear or anxiety. But, again, to have any dialectical force, arguments from disgust must appeal to the “widespread repugnances of humankind.”

Now I do not have an *a priori* method for determining which factors are exogenous, but nor do I think one should. As some have pointed out, we should expect the competence-performance distinction to vary across domains (e.g. judgments about morality, language, etc.) and, partly because of that, we should expect the distinction to be informed by the theory constructed in light of research on the particular domain. In this way, the distinction seems to be theory-dependent to some extent (Mikhail 2011, esp. ch. 8). For example, for a non-linguistic case of performance error, some point to an experiment in which participants were asked “How many animals of each kind did Moses take on the Ark?” The most prominent answer is “two,” despite the common knowledge that it was Noah, not Moses, who is supposed to have operated the Biblical ark (Erickson & Mattson 1981). But notice that, prior to a well-developed theory, we already have some *prima facie* reason to count this as a performance error, given our knowledge about the topic and of people’s occasional inattentiveness (“shallow processing”). At any rate, we can treat such responses as failing to reflect people’s ordinarily understanding of this story.

The disgust experiments are similar in certain respects. The data gathered thus far suggest that disgust’s influence is limited: when researchers do detect an effect, it

amounts to a slight shift on a fine-grained scale. These do not, on the face of it, appear to be the kind of results one would expect from an endogenous variable. Consider factors that plausibly do play a prominent role in ordinary moral cognition, such as beliefs about harm, fairness, rights, and so forth. These beliefs, and perhaps their attendant emotions, seem to have a substantial impact on moral judgment.

Consider, for example, an experiment conducted by Fiery Cushman (2008), which examined the effect of negative beliefs, desires, and consequences on moral judgment. Participants were randomly assigned to read variants of vignettes in which a negative outcome either did or did not occur and the agent either intended it to occur or not. In one scenario, Jenny is welding two pieces of metal together with a partner, intends for it to burn her partner's hand (she wants to and believes the welding will), and she succeeds. Subjects then responded to questions about the wrongness of the relevant acts and the blameworthiness of the agents. Naturally, each factor had a statistically significant impact on judgments of each type. What's more interesting is that for judgments of wrongness (and permissibility) the agent's *belief* about the negative consequences of her action accounted for most of the variance in responses. In other words, Jenny's act was judged wrong largely because she knew what she was doing. Moreover, the mean response to this question shifted dramatically depending on whether or not the agent both believed and desired that the negative outcome would occur (roughly: if she intended it). When the agent intended the negative outcome in this way, participants on average appeared to condemn the act as wrong (even if it was unsuccessful and no harm occurred); yet the opposite was true when intentionality was absent. On a scale of moral wrongness, these two key factors (belief and desire) appeared to drive mean morality ratings from floor to ceiling, apparently altering the valence of judgments, on average. Given these data, and what we know about intention and moral judgment, we can readily count these factors as shedding light on the endogenous mechanisms of moral judgment, at least concerning harm. In fact, there are plenty of such data confirming the common sense idea that *mens rea* is an important part of moral cognition (for review, see Young & Tsoi 2013; May 2014b).

Of course, the competence-performance distinction is not without its problems or detractors. For example, one might think a proper account of the distinction depends on having a correct theory of concepts in hand, which surely most of us lack (cf. Machery 2008). Others might insist that one possess a well-developed theory of the idealized cognitive system so that "performance errors can be explained away in terms of the system falling short of that idealization in some way" (Alexander et al 2010, 305). However, we can make progress toward building a theory of moral judgment with more relaxed standards. Using a more bottom-up strategy, disgust can be provisionally treated as outside the normal mechanism of moral judgment, by considering the data we have so far on its limited effects on moral judgment and compare it to other kinds of influences.

Finally, notice that I have not hitched my project to the controversial "linguistic analogy" and its Chomskyan framework. Proponents of the linguistic analogy (e.g. Dwyer 2009; Mikhail 2011) tend to believe that some amount of moral competence, even moral knowledge, is innate and universal, and they tend to conceive of moral cognition as arising from a module in the brain that is greatly insulated from other parts of the mind. One needn't make such claims in order to rely on something

like the competence-performance distinction in a particular area of cognition (compare Nichols & Knobe 2007 on judgments of responsibility). In studying the mind using responses from subjects, we are faced with the task of separating the wheat from the chaff when attempting to isolate the mechanisms that produce such responses from other factors and from the responses themselves.

## 6. Conclusion

Our focus has been on those theorists who base their bioethical conclusions in whole or in part on appeals to disgust. The argument from repugnance, however, relies on the increasingly popular empirical claim that disgust plays an important role in some areas of moral and legal thought. But this key empirical assumption is implausible. We do have some experimental evidence that disgust tends to *slightly* influence the *severity*, but not valence, of some moral judgments concerning topics like sanctity, purity, and degradation. The pro-disgust arguments, however, rely on a stronger claim: that repugnance substantially influences the relevant moral beliefs. The tempered picture of disgust's influence is importantly compatible with the idea, sometimes expressed by Kass and others, that we can sometimes be justified in our intuitively formed moral beliefs even if "reason can't fully articulate" why. However, when such moral intuitions are influenced by disgust, we have reason to believe they are not reflecting the ordinary mechanisms producing moral judgment. Repugnance cannot serve as deep wisdom if it fails to reflect our moral competence or our intuitive understanding of morality.

Our conclusion might seem to conflict with common experience, given that disgust so commonly occurs with certain moral judgments. A quick search of the Internet provides a recent example in which author Philip Pullman called "disgusting" a policy that bans sending prisoners books (quoted in Flood 2014). But such uses of "disgust" are often metaphorical, or just another way of saying that certain acts are not just wrong but especially heinous (cf. Gutierrez et al 2012). (So it would be useless for disgust-advocates like Kass to switch to such senses.) Literal disgust is often just a consequence of moral judgment, not a cause. And, in those rare cases when it may seem to play a causal role, it is likely insubstantial.

This challenge to disgust-advocates is rather distinct from others that focus on the moral irrelevance of disgust, such as those levelled by Nussbaum and Kelly. If I am right, then the problem is even more basic. Still, my conclusion is in principle compatible with those of other "disgust-sceptics." In fact, I tend to believe that they are best combined, posing a powerful challenge to those who appeal to disgust in making moral and legal arguments.

Let me close by noting a few broader implications of treating disgust as an exogenous factor in moral judgment. First, this challenge clearly applies to other moral arguments that appeal to disgust. Most notable are those against homosexuality and same-sex marriage, as discussed and critiqued at length by Nussbaum (2004), for example. I believe my account and hers make such appeals to disgust in the law and morality look rather dubious indeed. Like fatigue, disgust is both psychologically and morally irrelevant.

Second, there is a problem for those who give disgust an important role in morality or the law. For example, Kahan, following Miller (1997), believes that

“disgust is an indispensable member of our moral vocabulary” (1999, 64). Similarly, as already noted, Haidt (2012) proposes that one innate foundation of moral judgment involves intuitions about sanctity and degradation, and he importantly believes that disgust is the key emotion behind this. Such theories seem committed to the idea that disgust plays a role in moral competence, not merely generating performance errors. However, if I am right, then this is a mistake. It may even be a mistake to treat Sanctity/Degradation as a foundation at all, which casts doubt on a category hypothesized as especially important for conservative moral and political thought. At any rate, it at least seems that one cannot wed disgust to such a foundation; something else must be involved if it is to be part of moral competence.

A final implication: for all I have said here, this account is restricted to the emotion of disgust, but the treatment *might* be extended to other emotions. However, there have not been as many studies of the effect of incidental experiences of other emotions on moral judgment. So drawing any similar conclusions would be difficult at present.<sup>6</sup>

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