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# Landy and Goodwin (2015) Confirmed Most of Our Findings Then Drew the Wrong Conclusions

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With failed replications on various topics getting published these days, we were pleased that Landy and Goodwin's (2015, this issue) meta-analysis supported most of the findings we reported in Schnall, Haidt, Clore, and Jordan (2008). They focused on what Pizarro, Inbar and Helion (2011) had termed the *amplification hypothesis* of Haidt's (2001) social intuitionist model of moral judgment, namely that "disgust amplifies moral evaluations—it makes wrong things seem *even more* wrong (Pizarro et al., 2011, p. 267, emphasis in original)." Like us, Landy and Goodwin (2015) found that the overall effect of incidental disgust on moral judgment is usually small or zero when ignoring relevant moderator variables. Like us, they found that there appears to be something special about olfactory inductions—they often work even without requiring moderators. And like us, they found that the effects of incidental disgust are as strong for nonpurity violations (such as falsifying a resume) as for purity violations (such as eating a dead dog).

So you can imagine our puzzlement when Landy and Goodwin (2015) interpreted their findings as evidence against our experimental findings (Schnall et al., 2008) and, more generally, against social intuitionism (Haidt, 2001). The puzzle resolves itself when we examine three factors that we believe they did not properly consider.

First, the meta-analyses failed to include personality variables that have been shown to be crucial for the effect. In our three experiments that did not involve smell, the amplification effect of incidental physical disgust on moral judgments occurred only for participants who were generally sensitive to bodily sensations, as measured by the Private Body Consciousness scale (Miller, Murphy, & Buss, 1981). Landy and Goodwin did not include this established moderator variable in their analyses, nor any of the additional individual difference moderators that have been documented since then, such as attentional control (Van Dillen, van der Waal, & van den Bos, 2012), emotional differentiation (Cameron, Payne, & Doris, 2013), mindfulness (Sato & Sugiura, 2014), and disgust sensitivity (Ong, Mullette-Gillman, Kwok, & Lim, 2014). Their failure to find an overall effect in nonolfactory studies replicates the pattern we reported. Their reasoning that the relevant analyses were "not feasible" because only some experiments had included these moderators raises the fundamental question of why a meta-analysis was conducted on data for which essential variables had not even been assessed.

Second, Landy and Goodwin (2015) minimized the importance of one of their own major findings—that for studies using taste or smell to induce disgust, there was a clear and robust effect even without considering moderator variables. The special potency of taste and smell may be due to their direct activation of the anterior insula, which is one of the major brain regions consistently implicated in research on visceral effects on cognition (Damasio, 2003). Given that this whole line of research is about incidental disgust, not disgust that is directly elicited by a moral infraction, their confirmation that bad tastes and smells can amplify moral condemnation of unrelated actions is very clear evidence of the mechanism we previously described. After all, our goal was to demonstrate the existence of these links, which are inconsistent with a rationalist account of moral judgment but are predicted by the social intuitionist model (Haidt, 2001) and by the affect-as-information framework (Schwarz, 2012; Schwarz & Clore, 1983).

Third, experiments investigating the influence of emotional states on judgment require that participants do not correctly attribute the induced feeling to its true source (e.g., Lapate, Rokers, Li, & Davidson, 2014; Schnall, Abrahamson, & Laird, 2002; Schwarz & Clore, 1983; for a review, see Schwarz, 2012). If one experiences disgust while considering a morally questionable action, the

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action is likely to seem disgusting and immoral (at least for people who are more attentive to bodily states). But if disgust becomes an object of focus before the morally questionable act is considered, then interpreting the affect as a response to the act becomes unlikely. Instead, induced disgust will either have no effect or the opposite effect. The disgust can reduce the severity of the moral judgment when participants' correct attributions to an extraneous source make not only the induced disgust irrelevant, but also any negative affect one experiences while considering morally ambiguous behavior.

Unfortunately, in misguided attempts to increase rigor, investigators sometimes include premeasures of mood or otherwise call attention to participants' feelings before collecting the dependent measures. For example, one recently published failure of mood effects included mood assessments before both the mood induction and the dependent measure (Van Damme & Seynaeve, 2013). Another included seven mood assessments spread throughout the procedure (Bruyneel et al., 2013). Because Landy and Goodwin (2015) did not consider the quality of the selected studies in this regard—and for unpublished work, relevant methodological details are not reported—the resulting effect size estimates are highly unreliable.

In closing, we thank Landy and Goodwin (2015) for pulling together the rapidly growing literature on incidental disgust and moral judgment. Their findings increase our confidence that olfactory disgust has a robust effect on moral judgments, that the effect of incidental disgust induced through other sensory modalities hinges largely on established moderator variables, and that incidental disgust exaggerates the severity of judgments of purity and non-purity violations alike (Schnall et al., 2008). Their findings also support the conclusion drawn by Chapman and Anderson (2013), who provided a comprehensive review of research on the role of disgust and morality using a wide range of methods—far beyond the incidental disgust technique. We concur with their summary of the state of the art: "Taken together, these studies converge to support the notion that disgust does play an important role in morality. We suggest that the time is now right to address more specific questions regarding the nature and role of disgust in moral cognition" (p. 322).

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