

(ranging from standardized images [Case et al., 2012] to a medical poop chart [Royzman et al., 2014]) and all reporting successful manipulation checks. There are also companion results (e.g., Schnall, Haidt, Clore, & Jordan, 2008, Study 2): disgust inductions (e.g., being assigned to a filthy work environment) yielding MAE in the absence of any discernable increase in the disgust itself. Taken together, these findings indicate a double dissociation between disgust and amplification, making it almost certain that MAE will ultimately turn out to be far less about “the power of feeling” and far more about the power of subtle normative primes.

And there is one more ultimate worry that McGinn would be exceedingly likely to endorse: even assuming that votaries of MAE were triumphantly successful in tickling their subjects’ affective sensibilities in some moral load-free manner or went as far as to imbue them (say, via pharmacologically induced nausea¹) with visceral disgust directly, the final theoretical payoff would be very modest indeed, signifying nothing as dramatic as the triumph of feeling over reason, but only that (reasonably enough) people use affect as one of many inputs to a normative judgment process².

Notes

- 1 This proposal makes more sense for those willing to embrace, as their theoretical definition of disgust, the view that it is, fundamentally, *nausea with intentional content*, that is, nausea directed at something or someone beyond itself.

- 2 An intuitive case in point is jealousy: you may feel jealous when observing your paramour in a romantically tinged interaction with another; and perceiving yourself jealous may lead you to reason that you care for her romantically (more than previously supposed). Would such an inference be antirationalist? Hardly.

References

- Case, T. I., Oaten, M. J., & Stevenson, R. J. (2012). Disgust and moral judgment. In R. Langdon & C. Mackenzie (Eds.), *Emotions, imagination, and moral reasoning* (pp. 195–218). New York, NY: Psychology Press.
- Corbin, I. M. (2012, April). Bodily revulsions. A review of *The meaning of disgust. First things*. Retrieved from <http://www.firstthings.com/article/2012/03/bodily-revulsions>
- David, B., & Olatunji, B. (2011). The effect of disgust conditioning and disgust sensitivity on appraisals of moral transgressions. *Personality and Individual Differences, 50*, 1142–1146.
- Gray, K., Young, L., & Waytz, A. (2012). Mind perception is the essence of morality. *Psychological Inquiry, 23*, 101–124.
- McGinn, C. (2011). *The meaning of disgust*. New York, NY: Oxford University Press.
- Pizarro, D., Inbar, Y., & Helion, C. (2011). On disgust and moral judgment. *Emotion Review, 3*, 267–268.
- Royzman, E., Baron, J., & Goodwin, G. (2014). *Is disgust a moralizing emotion?* Unpublished manuscript, University of Pennsylvania.
- Schnall, S., Haidt, J., Clore, G. L., & Jordan, A. H. (2008). Disgust as embodied moral judgment. *Personality and Social Psychology Bulletin, 34*, 1096–1109.
- Strohming, N. (2014). *The meaning of disgust: A refutation. Emotion Review, 6*, 214–216.

Author Reply: Grasping the Nebula: Inelegant Theories for Messy Phenomena

Nina Strohming

Kenan Institute for Ethics, Duke University, USA

Abstract

Grand unified theories of messy topics like emotion tend to fail at capturing all the important dimensions of their subject. Why is this? I take on this question while responding to commentaries.

Keywords

disgust, philosophy of science, psychological nebulae

Often in science we are called upon to make grand pronouncements about our objects of study. What is the nature of this phenomenon to which we have become so attached, which we have labored over, and tended to in loving detail?

Standard practice is to put forth a grand unified theory, or GUT. A GUT hews to the scientific ideal of parsimony by describing a phenomenon in terms of necessary and sufficient conditions, often with a single rule. When a grand unified theory fails, it is assumed that we have simply articulated the wrong one. But what if our failure is not imperfect knowledge of our pet phenomenon, but a misapprehension that a good theory will be able to shoehorn everything into a fundamental law?

An impediment to would-be grand unified theories is that many natural phenomena—particularly those within the psychological sciences—do not have well-defined boundaries or a clear center of gravity. Call these psychological nebulae: rather than rigid, self-contained modules, they are an indistinct cluster

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Corresponding author: Nina Strohming, Kenan Institute for Ethics, Duke University, Box 90432, Durham, NC 27708, USA. Email: nina.strohming@duke.edu

of partially overlapping clouds, with foggy tendrils expanding into many domains.¹ Nebulae are ill-suited to apprehension by grand unified theories. Such one-dimensional models leave off so much explanatory desiderata that they are doomed to be completely, comedically inadequate.²

The fetishization of parsimony means that unwieldy theories are often dismissed on these grounds alone. But it is the theories which are unafraid of chaos that are best able to handle nebulae.³ Messy theories should not only be tolerant of penumbral fuzz around the edges, but receptive to the possibility that the nebula contains no central, essential core.⁴ No doubt there is something less satisfying about settling for inelegance, but the best theories won't always feel right. Elegance is not a suitable heuristic for veracity.⁵ Good theory-making retains all important details, no matter how awkwardly they cleave to the rest of the phenomenon.⁶ This process is still capable, though, of judiciously slicing away the flimsiest proposals.⁷ Good theories are just parsimonious enough.

Since nebulae crop up across multiple disciplines, they benefit from scholastic opportunism. Meaningful contributions can be made by conceptual analysis, informal observation, introspection, and phenomenological methods more generally. But it is crucial to separate what this sort of evidence can provide and what it cannot. The chief value of these perspectives is idea generation, and a check against the ever-narrowing focus encouraged by the grand unified theory tradition.⁸ Phenomenology can resonate with us, it can lend a patina of understanding, but it is not equivalent to an empirical claim.⁹ If our goal is to get at truth and not just truthiness, we must defer to data.¹⁰

Under ideal circumstances, a theory carves nature at its joints. But this is only possible when nature is jointed. In selecting what type of theory to build, we should consider the properties of the phenomenon we are trying to grasp. Complex phenomena require more convoluted, nuanced explanations than have traditionally been marshaled for this task. Given their heterogeneity and unboundedness, it is possible that some nebulae can never be fully captured by any theory, no matter how inclusive. The goal of nebular theories may be less about definitive truths than postulating relationships between entangled systems and creating novel testable hypotheses. Their virtue lies not in their finality, but their ability to slouch us towards an incrementally better understanding of a sprawling, deeply intricate spectacle.

Notes

- 1 The full list of psychological nebulae is likely quite extensive, but disgust is a very good candidate. Other nominees include humor (Strohming, 2011) and morality (Koleva & Haidt, 2012; Sinnott-Armstrong, 2012).
- 2 Variants on the death-in-life theory (Kolnai, 1929/2004; McGinn, 2011) and Douglas's (1966/2003) theory that disgust is simply "matter out of place" are examples of grand unified theories that leave most of the puzzle of their subject unaccounted for.
- 3 Given a paragraph, one can construct a tidy story about disgust (viz. Strohming, 2014), but most modern treatments make some concession to inelegance. Rozin, Haidt, and McCauley (2010) hypothesize that physical disgust emerged out of gustation-based toxin avoidance,

which set in motion an ever-fragmenting disgust typology. Tybur, Lieberman, Kurzban, and DeScioli (2013) suggest that disgust combines three originally independent mechanisms: pathogen avoidance (physical disgust), mate selection (sexual disgust), and social transgression aversion (moral disgust). Kelly (2011) proposes that even physical disgust does not bear a single provenance, but represents the entanglement of poison and microbe avoidance over time.

- 4 Even when they embrace complexity, many scholars attempt to pinpoint the nucleus around which disgust ultimately revolves. Disgust's essence has variously been formulated as oral rejection (Rozin et al., 2010), contamination (Angyal, 1941), disease avoidance (Curtis, De Barra, & Aunger, 2011), and death (Herz, 2014). But debating the true "worm at the core" of disgust is a fruitless exercise, as there is little to suggest that disgust has such a core. Compare this approach to theories that identify multiple functions for disgust without placing the primacy locus within any given domain (Kelly, 2011; Tybur et al., 2013).
- 5 In judging beauty and in assessing truth, humans exhibit an inherent preference for simplicity (Reber, Schwarz, & Winkielman, 2004). Perhaps the insistence within academic circles that our theories be plain, crisp, and intuitive is a function of this cognitive bias for fluency.
- 6 McGinn (2011) believes that disgust originated during a dubious stage of human evolution where eating and making love to corpses was ubiquitous, an epoch that Clark (2014) aptly dubs the Caligulocene. Yet it is plausible that disgust moonlights as a watchdog against surfeits of appetite and overindulgence. This observation appears repeatedly in the literature (Kolnai, 1929/2004; Korsmeyer, 2011; Miller, 1997) but has been left out of scientific accounts of disgust, and remains untested (cf. Strohming, in press). Likewise, the predominant view in psychology is that disgust can only engender aversion, rejection, and avoidance (e.g., Frijda, 1986; Horberg, Oveis, & Keltner, 2011; Lazarus, 1991). This has edged out discussions that disgust could have a more nuanced behavioral repertoire, including null responses (Royzman, 2014) as well as positive, approach-related responses (Korsmeyer, 2011; Strohming, 2013). Characterizing disgust's influence in terms of a single unqualified gist, while capturing much of the variance, has meant glossing over the many interesting exceptions.
- 7 How moral disgust relates to the broader story of disgust has been a topic of active and unresolved debate for many years (see, for instance, Kelly, 2011; Kolnai, 1929/2004; Miller, 1997; Nussbaum, 2006; Pizarro, Inbar, & Helion, 2011; Rozin, Haidt, & Fincher, 2009; Tybur et al., 2013). Most theories posit that physical disgust emerged first, with the sociomoral forms piggybacking off of it in some way. Rottman and Young (2014) make the novel proposal that moral disgust could be independent from, perhaps even antecedent to, physical disgust. Their argument relies on the putative human uniqueness of disgust, which obscures our ability to trace the emotion's phylogenetic trajectory. The problem with this view is disgust has many observable precursors in animals, and these precursors are more clearly aligned with toxin avoidance than the upholding of moral standards. Mammals and neonates respond to bitter and sour tastes—harbingers of poisonous and spoiled food—with the canonical disgust "gape face": eye squinting, nose wrinkling, tongue protrusion (Berridge, 2000), and spitting (Berridge, 2000). Omnivores come equipped with domain-specific learning mechanisms for establishing which foods are dangerous, including a sensitive period for food preference acquisition early in life (Cashdan, 1994; Rozin, 1976) and easily conditioned aversion towards the food consumed before experiencing nausea (Garcia, Kimeldorf, & Koelling, 1955). Animals avoid environments and conspecifics exhibiting infectiousness or high pathogen load (Hart, 1990; Kavaliers, Choleris, & Pfaff, 2005; Kiesecker, Skelly, Beard, & Preisser, 1999; Loehle, 1995). Even roundworms will swim away from the chemicals given off by parasites (Schulenburg & Muller, 2004). There is, furthermore, a direct bridge from physical

disgust to its interpersonal manifestations. Xenophobia and outgroup bias is higher in environments with historically high pathogen loads, presumably because outsiders are more likely to harbor new diseases (Schaller & Park, 2011). Mistrust of outsiders is higher in individuals who perceive themselves to be vulnerable to disease, and experimentally manipulating disgust increases bias towards outgroups (Duncan, Schaller, & Park, 2009; Navarrete & Fessler, 2006). The stigmatization of certain groups—the aged, the sick, the deformed—appears to be function of disgust at those who show signs of communicable disease (Park, Schaller, & Crandall, 2007). Social norms and good manners frequently revolve around personal hygiene, and violations of these norms rank high on lists of reported disgust elicitors (Curtis & Biran, 2001; Nabi, 2002). Sociomoral disgust is related to physical disgust at the metaphorical level as well, since unscrupulous behavior can spread via interpersonal contact (Gino, Ayal, & Ariely, 2009; Paternoster, McGloin, Nguyen, & Thomas, 2013; Plakias, 2012). Moral disgust bears the imprint of physical disgust, not the other way around.

- 8 Korsmeyer and Smith (2014) claim that scientific theories of disgust have carved too much from their subject, and suggest supplementation with a more phenomenological methodology. While descriptive approaches likely would bring new insights to the field, it is not the case that psychological testing is too blunt an instrument to make nuanced distinctions between disgust and related emotions, such as contempt and shame. Psychological research has provided us with remarkably fine-grained and systematic taxonomies of the emotional landscape (e.g., Fontaine, Scherer, Roesch, & Ellsworth, 2007). The problem with the scientific study of disgust isn't that the methods are weak (at least when compared to armchair pontification), it's the tendency to draw too cramped a box around its subject.
- 9 According to the phenomenological approach, the meaning of disgust lies partly in what *feels* true about it (Korsmeyer & Smith, 2014). This veneration of intuition is not all that dissimilar from science's bias towards elegant theories. But the impressionistic feeling of an emotion's "meaning" is only that, a feeling. It is ersatz knowledge. There will always be something dry and insipid about serving up a juicy emotion on an expository platter, but at some point we must give up on gut feelings in order to know emotions.
- 10 Pizarro (2014) points out that data is the foundation upon which science is built, and that McGinn ignores it at his own peril. Data do more than confirm the suspicions of careful conceptual analysis (cf. Korsmeyer & Smith, 2014), they allow us to distinguish among equally plausible hypotheses, and surprise us with answers no one saw coming. The long-popular idea that disgust represents a form of existential angst seemed self-evident to those examining its typical elicitors (maggots, decay, bodily excretions, and other trappings of the mortal coil). But this has been supplanted by studies showing that these elicitors more faithfully represent disease vectors (Curtis & Biran, 2001), and indeed terror management theory fails to predict disgust patterns (Fessler & Navarrete, 2005). Prescriptivism is also irrelevant in the formulation of empirically based theories. Herz (2014) suggests we reject the pathogen-based theory of disgust because of its potentially insidious political implications. But this has zero bearing on its truth value, and is a manifestly unscientific attitude, which risks falling into the same antisocialism Herz accuses McGinn of espousing.

References

- Angyal, A. (1941). Disgust and related aversions. *Journal of Abnormal and Social Psychology*, 36(3), 393–412.
- Berridge, K. (2000). Measuring hedonic impact in animals and infants: Microstructure of affective taste reactivity patterns. *Neuroscience & Biobehavioral Reviews*, 24(2), 173–198.
- Cashdan, E. (1994). A sensitive period for learning about food. *Human Nature*, 5(3), 279–291.
- Clark, J. (2014). Comment: From the armchair to the toilet: McGinn's evolutionary tale of disgust. *Emotion Review*, 6, 217–218.
- Curtis, V. A., & Biran, A. (2001). Dirt, disgust, and disease: Is hygiene in our genes? *Perspectives in Biology and Medicine*, 44(1), 17–31.
- Curtis, V. A., De Barra, M., & Aunger, R. (2011). Disgust as an adaptive system for disease avoidance behaviour. *Philosophical Transactions of the Royal Society B: Biological Sciences*, 366(1563), 389–401.
- Douglas, M. (2003). *Purity and danger: An analysis of concepts of pollution and taboo*. New York, NY: Routledge. (Original work published 1966)
- Duncan, L. A., Schaller, M., & Park, J. H. (2009). Perceived vulnerability to disease: Development and validation of a 15-item self-report instrument. *Personality and Individual Differences*, 47(6), 541–546.
- Fessler, D. M., & Navarrete, C. D. (2005). The effect of age on death disgust: Challenges to terror management perspectives. *Evolutionary Psychology*, 3, 279–296.
- Fontaine, J., Scherer, K., Roesch, E., & Ellsworth, P. (2007). The world of emotions is not two-dimensional. *Psychological Science*, 18(12), 1050–1057.
- Frijda, N. (1986). *The emotions*. New York, NY: Cambridge University Press.
- Garcia, J., Kimeldorf, D., & Koelling, R. (1955). Conditioned aversion to saccharin resulting from exposure to gamma radiation. *Science*, 122(3160), 157–158.
- Gino, F., Ayal, S., & Ariely, D. (2009). Contagion and differentiation in unethical behavior: The effect of one bad apple on the barrel. *Psychological Science*, 20(3), 393–398.
- Hart, B. (1990). Behavioral adaptations to pathogens and parasites: Five strategies. *Neuroscience & Biobehavioral Reviews*, 14(3), 273–294.
- Herz, R. (2014). Comment: Strohminger versus McGinn and *The meaning of disgust*. *Emotion Review*, 6, 218–219.
- Horberg, E., Oveis, C., & Keltner, D. (2011). Emotions as moral amplifiers: An appraisal tendency approach to the influences of distinct emotions upon moral judgment. *Emotion Review*, 3, 237–244.
- Kavaliers, M., Choleris, E., & Pfaff, D. W. (2005). Recognition and avoidance of the odors of parasitized conspecifics and predators: Differential genomic correlates. *Neuroscience & Biobehavioral Reviews*, 29(8), 1347–1359.
- Kelly, D. (2011). *Yuck!: The nature and moral significance of disgust*. Cambridge, MA: The MIT Press.
- Kiesecker, J. M., Skelly, D. K., Beard, K. H., & Preisser, E. (1999). Behavioral reduction of infection risk. *Proceedings of the National Academy of Sciences*, 96(16), 9165–9168.
- Koleva, S., & Haidt, J. (2012). Let's use Einstein's safety razor, not Occam's Swiss army knife or Occam's chainsaw. *Psychological Inquiry*, 23(2), 175–178.
- Kolnai, A. (2004). *On disgust* (B. Smith & C. Korsmeyer, Eds.). Peru, IL: Open Court. (Original work published 1929)
- Korsmeyer, C. (2011). *Savoring disgust: The foul and the fair in aesthetics*. New York, NY: Oxford University Press.
- Korsmeyer, C., & Smith, B. (2014). Comment: Kolnai's disgust. *Emotion Review*, 6, 219–220.
- Lazarus, R. (1991). *Emotion and adaptation*. New York, NY: Oxford University Press.
- Loehle, C. (1995). Social barriers to pathogen transmission in wild animal populations. *Ecology*, 326–335.
- McGinn, C. (2011). *The meaning of disgust*. Oxford, UK: Oxford University Press.
- Miller, W. (1997). *The anatomy of disgust*. Cambridge, MA: Harvard University Press.
- Nabi, R. L. (2002). The theoretical versus the lay meaning of disgust: Implications for emotion research. *Cognition & Emotion*, 16(5), 695–703.
- Navarrete, C. D., & Fessler, D. M. (2006). Disease avoidance and ethnocentrism: The effects of disease vulnerability and disgust sensitivity on intergroup attitudes. *Evolution and Human Behavior*, 27(4), 270–282.

- Nussbaum, M. C. (2006). *Hiding from humanity: Disgust, shame, and the law*. Princeton, NJ: Princeton University Press.
- Park, J. H., Schaller, M., & Crandall, C. S. (2007). Pathogen-avoidance mechanisms and the stigmatization of obese people. *Evolution and Human Behavior*, 28(6), 410–414.
- Paternoster, R., McGloin, J., Nguyen, H., & Thomas, K. (2013). The causal impact of exposure to deviant peers: An experimental investigation. *Journal of Research in Crime and Delinquency*, 50(4), 476–503.
- Pizarro, D. (2014). Comment: Interdiscipline. *Emotion Review*, 6, 221–222.
- Pizarro, D., Inbar, Y., & Helion, C. (2011). On disgust and moral judgment. *Emotion Review*, 3, 267–268.
- Plakias, A. (2012). The good and the gross. *Ethical Theory and Moral Practice*, 1–18. doi:10.1007/s10677-012-9334-y
- Reber, R., Schwarz, N., & Winkielman, P. (2004). Processing fluency and aesthetic pleasure: Is beauty in the perceiver's processing experience? *Personality and Social Psychology Review*, 8(4), 364–382.
- Rottman, J., & Young, L. (2014). Comment: Scholarly disgust and related mysteries. *Emotion Review*, 6, 222–223.
- Royzman, E. (2014). Comment: Strohminger-McGinn: Deconstructing the moral amplification effect. *Emotion Review*, 6, 224–225.
- Rozin, P. (1976). The selection of food by rats, humans and other animals. In S. Rosenblatt, R. Hinde, E. Shaw, & C. Beer (Eds.), *Advances in the study of behavior* (Vol. 6, pp. 21–76). New York, NY: Academic Press.
- Rozin, P., Haidt, J., & Fincher, K. (2009). From oral to moral. *Science*, 323(5918), 1179–1180.
- Rozin, P., Haidt, J., & McCauley, C. (2010). Disgust. In M. Lewis, J. M. Haviland & L. Barrett (Eds.), *Handbook of emotions* (3rd ed., pp. 757–776). New York, NY: Guilford Press.
- Schaller, M., & Park, J. (2011). The behavioral immune system (and why it matters). *Current Directions in Psychological Science*, 20(2), 99–103.
- Schulenburg, H., & Muller, S. (2004). Natural variation in the response of *Caenorhabditis elegans* towards *Bacillus thuringiensis*. *Parasitology*, 128(4), 433–443.
- Sinnott-Armstrong, W. (2012). Does morality have an essence? *Psychological Inquiry*, 23(2), 194–197.
- Strohminger, N. (2011, May 31). Why is humor so hard to figure out? The long, vain search for a Unified Theory. *Psychology Today*. Available from <http://www.psychologytoday.com/blog/thats-what-she-said/201105/why-is-humor-so-hard-figure-out>
- Strohminger, N. (2013). *The hedonics of disgust* (Unpublished doctoral dissertation). The University of Michigan.
- Strohminger, N. (2014). *The meaning of disgust: A refutation*. *Emotion Review*, 6, 214–216.
- Strohminger, N. (in press). Disgust talked about. *Philosophy Compass*.
- Tybur, J. M., Lieberman, D., Kurzban, R., & DeScioli, P. (2013). Disgust: Evolved function and structure. *Psychological Review*, 120(1), 65–84.