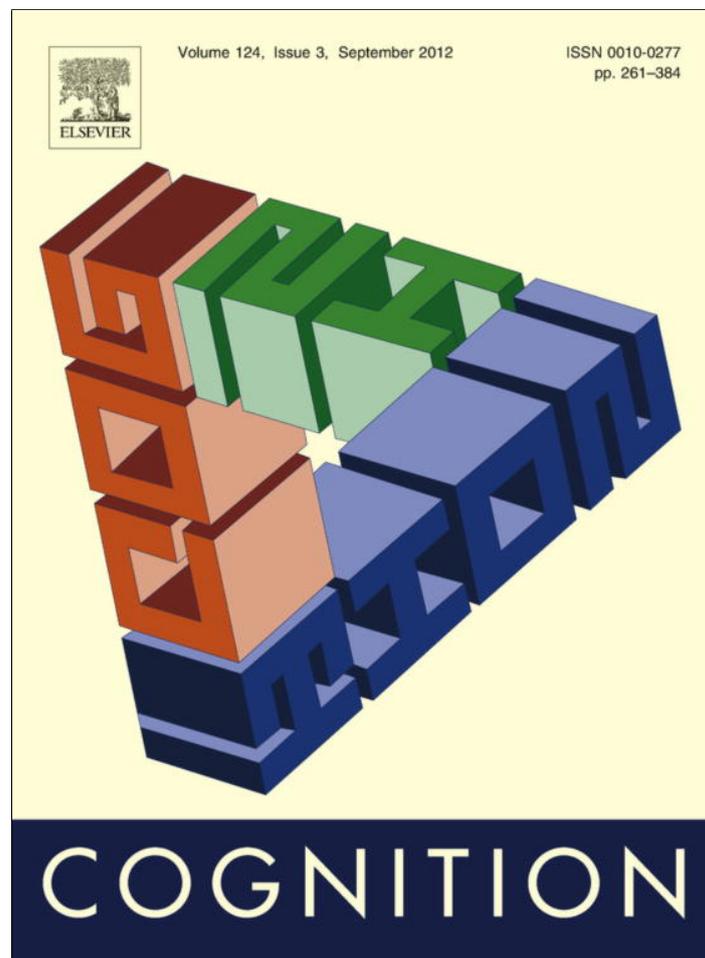


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Brief article

Aliens behaving badly: Children's acquisition of novel purity-based morals

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ABSTRACT

The traditional cognitive developmental perspective on moral acquisition posits that children actively construct moral beliefs by assessing the negative impacts of antisocial behaviors. This account is not easily applied to actions that are considered immoral despite lacking consequences for others' welfare. We studied the moralization of behaviors without tangible impacts, specifically examining the independent and joint roles of feelings and norms in children's acquisition of purity-based morals. Seven-year-olds were shown pictures of anthropomorphic aliens engaged in unfamiliar activities and were asked to judge whether these actions were wrong or OK. Relative to a control condition matched for valence and informational complexity, children made elevated wrongness judgments when they were either disgusted or led to believe that the behaviors were unnatural. However, it was only in a condition that included both disgust induction *and* information about unnaturalness that children exhibited robust tendencies to judge the actions as wrong. This research therefore demonstrates that feelings and norms work in concert such that purity morals are most readily acquired when both factors are involved. The implications for accounts of moral development are discussed.

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1. Introduction

The year is 3012, and space travel has become commonplace. While vacationing on a remote planet, you encounter extraterrestrials putting sticks on their heads and filling a forest with balls of cotton-like fluff. What would it take to convince you that these seemingly innocuous behaviors are in fact immoral? Although this thought experiment might literally seem outlandish, it hints at the difficult problem children face when forming a normative understanding of the world. How do these naïve observers determine which actions are acceptable or impermissible within their cultural milieu? In particular, what inputs do children attend to and rely upon during the process of forming new moral beliefs?

Traditionally, cognitive developmental approaches to morality have presumed that children construct moral beliefs by making consequentialist assessments of

repeated social experiences (e.g., Kohlberg, 1969; Piaget, 1932; Smetana, 2006; Turiel, 1983). This account is at least plausible in the case of antisocial behaviors that cause reduced flourishing either in the form of unfair outcomes or suffering victims. For example, children will form the belief that a novel action is morally problematic if they learn that it makes other children cry (Smetana, 1985). However, this traditional cognitive developmental model is not well suited for transgressions that lack tangible consequences, when no amount of induction or counterfactual reasoning can readily support the conclusion that a particular behavior is normatively wrong.

Although research on moral development has tended to focus on moral violations with measurable repercussions for others (Blair, 1995; Hamlin, Wynn, Bloom, & Mahajan, 2011; Killen & Smetana, 2006; Kohlberg, 1969; Turiel, 1983; Wainryb, 1991), such violations comprise only a subset of the moral domain (Graham, Haidt, & Nosek, 2009; Graham et al., 2011; Haidt, 2012; Haidt, Koller, & Dias, 1993; Shweder, Mahapatra, & Miller, 1987; Snarey, 1985; Tetlock, 2003). For example, behaviors like eating taboo

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foods, engaging in atypical consensual sexual acts, and performing sacrilegious practices are often morally prohibited despite lacking obvious ramifications for others' liberty and welfare (Graham et al., 2009; Haidt, 2012; Shweder, Much, Mahapatra, & Park, 1997). These behaviors represent a subset of issues comprising a major realm of normative concern, known as "purity" morals (Graham et al., 2009; Haidt & Joseph, 2004, 2007).

Purity-based transgressions, such as modifying the body (for some, sex reassignment surgery) or tampering with nature (for some, genetically modifying crops), are said to be wrong because they constitute a supposed violation of a natural order (Graham et al., 2011; Guerra & Giner-Sorolla, 2010; Jensen, 1998; Rozin, Lowery, Imada, & Haidt, 1999; Shweder et al., 1997) or are viscerally repulsive (Haidt, Rozin, McCauley, & Imada, 1997; Horberg, Oveis, Keltner, & Cohen, 2009; Inbar, Pizarro, Knobe, & Bloom, 2009; Kelly, 2011; Rozin, Haidt, & Fincher, 2009; Rozin et al., 1999). Based on this characterization, there are two psychological pathways that seem to be reasonable candidates for the moralization of purity-based issues: (1) regarding a behavior as unnatural and (2) regarding a behavior as disgusting. While the first of these pathways involves "cold" cognition about a norm¹, the second pathway is characterized by the experience of a specific feeling. Research into children's acquisition of purity-based morals therefore lends itself to being framed in terms of Nichols' (2002, 2004) influential "norms with feelings" model (see also Kagan, 1984). This proposal posits that the two dissociable pathways of "norms" and "feelings" work in concert to produce moralization, such that robust moral acquisition should only occur when both components are present.

The present research investigates whether children's acquisition of new purity morals can be produced by either norms (i.e., information about naturalness) or feelings (i.e., disgust) in isolation, and whether the combination of these factors yields any additional influence on the moralization of entirely novel behaviors. In order to explore the independent and joint roles of norms and feelings, child participants were assigned to one of four conditions that were matched for informational complexity. In each condition, children were presented with a set of 12 scenarios describing various anthropomorphic aliens engaging in novel behaviors (e.g., covering their heads with sticks). However, in one condition ("disgust only"), participants were induced to feel disgust toward the actions; in a second ("unnatural only"), they were led to think that the actions were violating the natural order; and in a third critical condition ("disgust + unnatural"), disgust was induced in conjunction with information about unnaturalness. Our fourth condition served as a control; children heard about the same scenarios, but none of the negatively valenced infor-

mation they received was morally relevant. Specifically, participants in this "control" condition were told that the behaviors were very boring and thus were expected to judge the actions as morally permissible. We recruited 7-year-old children for two reasons. First, young children are still in the midst of actively constructing their moral stances on the world (e.g., Kagan & Lamb, 1987). Thus, their reactions to the novel scenarios created for this study were likely to be uncontaminated by deeply entrenched moral preconceptions. Second, prior research suggests that it is only around seven years of age that a sense of moral disgust reliably emerges (Stevenson, Oaten, Case, Repacholi, & Wagland, 2010).

2. Method

2.1. Participants

Sixty-four 7-year-old children (32 females; mean age = 7 years, 4 months, SD = 3.4 months) were recruited from a large participant database. These participants were primarily European-American (78%) children from the Boston area. Eight boys and eight girls were randomly assigned to each of four conditions.

2.2. Materials and procedure

Participants were introduced to the faraway planet "Glinhondo" and were then shown a series of color drawings. Each drawing depicted a different group of aliens engaged in a novel behavior which was either body-focused (e.g., walking around with fake legs) or environmentally-directed (e.g., sprinkling blue water into a big puddle), and which did not affect the welfare of others. Each child was exposed to 12 scenarios (6 body-focused, 6 environmentally-directed) in random order (see Table 1).

Each drawing was accompanied by a short description, which was read aloud by the experimenter. Although the content of these descriptions varied across conditions, the prosody and tone with which they were read was kept constant. Additionally, all descriptions introduced the behavior and then provided two statements about it. After listening to these brief descriptions, participants were asked to choose whether they thought it was "wrong" or "OK" for the aliens to engage in the behavior in question.

In the "disgust only" condition, visceral feelings of disgust were induced by testing children in a room that contained a wastebasket with spray from a harmless but potent gag product ("Liquid ASS"TM), as inspired by Schnall, Haidt, Clore, and Jordan (2008). In addition to the strong ambient gastrointestinal smell, this product was also sprayed into a small box that participants sniffed at the beginning of the study, being told "this is what Glinhondo smells like" in order to conceal the unusual nature of the request. Participants were then shown each picture in turn, and listened to the following description before judging the behavior as either "wrong" or "OK" (words in brackets are specific to one trial): "Look at this! All [Kulvavs] [paint their faces white]. But it is *really disgusting* for [Kulvavs] to [paint their faces white]. Acting like this is *really gross*."

¹ Rather than using an explicit proscription in our norm manipulation, we elected to employ the concept of "unnaturalness". Although norms sometimes take the form of explicit rules or laws (Kalish & Cornelius, 2007; Nichols & Mallon, 2006), they are also instantiated in many other ways (e.g., Rossano, 2012; Schmidt, Rakoczy, & Tomasello, 2010). We chose not to use a codified prohibition because these are not typically in place for purity-based norms (despite a few notable exceptions), and because deviating from a perceived natural order is plausibly a highly relevant input to deontic cognition within this moral domain.

Table 1

Complete listing of alien behaviors presented across the 12 trials.

<i>Body-directed behaviors</i>
Covering their heads with sticks
Putting crunchy bits in their food
Drinking out of straws instead of using their spoon hands
Painting their faces white
Keeping berries on their protective spines
Walking around with fake legs
<i>Environment-directed behaviors</i>
Filling the forest with cotton balls
Pouring river water on flowers to make them big and square
Sprinkling blue water into the big puddle
Blocking the river to make it flow in a different direction
Taking trees from other planets and planting them here
Building machines to make the air more misty

Because the purpose of this condition was to lead children to feel disgusted at the behavior in question, the olfactory cue and the verbal information were confounded in order to ensure that this affective response occurred.

In the “unnatural only” condition, participants were tested in a room that did not contain the disgusting smell. The pictures were altered so that exactly half of the aliens depicted were performing the behavior, while the other half were shown doing nothing. This was done so that the behaviors did not appear to be normative conventions. Instead of hearing that each behavior was disgusting and gross, participants were told the following: “Look at this! Some [Kulvaws] [paint their faces white]. But [Kulvaws] were *never meant* to [paint their faces white]. Acting like this is *really unnatural*.” Thus, visual information was confounded with verbal information in order to most strongly drive the inference that the behaviors were counter-normative.

In the critical “disgust + unnatural” condition, elements of both the “disgust only” condition and the “unnatural only” condition were combined, and nothing additional was added. In order to both induce visceral disgust and provide information about unnaturalness, the disgusting smell was used in combination with the pictures from the “unnatural only” condition. Participants listened to the following statement, which contained only one of the two crucial sentences from each of the previous conditions such that overall length was matched: “Look at this! Some [Kulvaws] [paint their faces white]. But [Kulvaws] were *never meant* to [paint their faces white]. Acting like this is *really gross*.”

The “control” condition provided a baseline measure of responding. In this condition, children merely heard information that, while negative in valence, was not morally relevant. The gag product was not used, and the pictures depicted all aliens engaged in each behavior, as in the “disgust only” condition. Participants listened to the following: “Look at this! All [Kulvaws] [paint their faces white]. But [Kulvaws] *sometimes get tired* of [painting their faces white] and do something else instead. Acting like this is *really boring*.”

3. Results

Participants received 1 point for a “wrong” response and 0 points for an “OK” response. Points were then

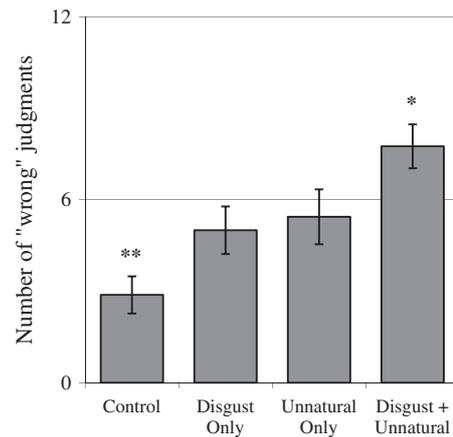


Fig. 1. Mean number of “wrong” judgments in each condition. Asterisks indicate means that are significantly different from chance (6) at the $p < .05$ level (*) or the $p < .001$ level (**), two-tailed. Error bars represent standard errors.

summed across the twelve trials, yielding a score ranging from 0 (all behaviors were thought to be OK) to 12 (all behaviors were thought to be wrong). The mean number of “wrong” responses given in each of the four conditions is provided in Fig. 1. A 2 (Disgust: present vs. absent) \times 2 (Unnaturalness: present vs. absent) \times 2 (Trial Type: body vs. environment) ANOVA was conducted on children’s “wrong” responses. This analysis yielded a main effect of Disgust, $F(1, 60) = 8.58$, $p < .01$, partial $\eta^2 = .13$, a main effect of Unnaturalness, $F(1, 60) = 12.30$, $p = .001$, partial $\eta^2 = .17$, and no interaction between these factors, $F(1, 60) = 0.02$, $p = .90$, partial $\eta^2 = .00$. The ANOVA also revealed a significant effect of Trial Type, $F(1, 60) = 31.68$, $p < .001$, partial $\eta^2 = .35$, with ratings of wrongness being more frequent for environment-related items ($M = 54\%$) than body-related items ($M = 34\%$). There were no two- or three-way interactions with Disgust or Unnaturalness ($ps > .70$), demonstrating that this effect remained constant regardless of the between-subjects manipulations.

In order to more directly compare each of the four conditions that resulted from the 2 (Disgust) \times 2 (Unnaturalness) design, a one-way ANOVA was conducted to examine the effect of Condition on participants’ “wrong” responses. This was significant, $F(3, 60) = 6.97$, $p < .001$, partial $\eta^2 = .26$. Planned post hoc analyses demonstrated that children judged the aliens’ actions to be more wrong in the “disgust + unnatural” condition than in any of the other three conditions ($ps \leq .05$), and less wrong in the “control” condition than in any of the other conditions ($ps < .05$). The only non-significant comparison was between the “disgust only” and “unnatural only” conditions ($p = .68$).

Additionally, one-sample t -tests showed that, while children’s “wrong” judgments were at chance (i.e., “wrong” and “OK” responses were given in approximately the same proportion) in both the “disgust only” condition, $t(15) = -1.29$, $p = .22$, and the “unnatural only” condition, $t(15) = -0.63$, $p = .54$, children in the “disgust + unnatural” condition chose “wrong” significantly above chance, $t(15) = 2.45$, $p < .05$. Conversely, children showed a below-chance

tendency to judge the aliens' actions as "wrong" in the "control" condition, $t(15) = -5.11$, $p < .001$, confirming that these behaviors were viewed as permissible in the absence of morally-relevant information.

4. Discussion

To our knowledge, this is the first experimental investigation of a clear-cut case of moral acquisition—one involving morally naïve subjects (i.e., children) and entirely novel and superficially amoral situations. This study has yielded the striking finding that children are able to acquire new moral beliefs after very brief exposure to sparse information about seemingly blameless behaviors. Children in the "disgust + unnatural" condition judged behaviors to be wrong 65% of the time compared to only 19% of the time in the "control" condition. This demonstrates that moral acquisition can occur rapidly and in the absence of direct experience with the moralized behavior. This also speaks against the idea that the primary mechanism guiding moral acquisition is children's active reasoning about harmful or unjust consequences (Kohlberg, 1969; Piaget, 1932; Smetana, 2006; Turiel, 1983). At least in the case of acquiring purity-based morals, reflecting on outcomes is unnecessary.

Our findings lend positive support to a two-factor model of moral acquisition in which two dissociable components (norms and feelings) can both substantially contribute to moralization. Importantly, these factors are strongest when in combination, such that morals are most readily acquired when both norms and feelings are involved. It was only in the joint presentation ("disgust + unnatural") condition that children formed moral beliefs at above-chance levels, reliably judging actions to be immoral rather than permissible. In the context of acquiring purity-based morals, norms and feelings work in concert rather than being redundant pathways. Their combination is more powerful than either factor alone.

The current results also refine an understanding of how norms and feelings can produce moral judgment in isolation and the manner in which these factors interface when together. The induction of disgust and information about unnaturalness each independently produced a significant increase in judgments of moral wrongness relative to a baseline control condition. Additionally, statistical exploration of joint effects revealed that it was the combination and not the interaction of these factors that produced an additional elevation in moralization; the effects of norms and feelings were additive, not multiplicative. In short, while morals were most robustly acquired by children in a context involving "norms with feeling," these results run contrary to a strong proposal that moral acquisition should only occur when both affective and cognitive processing are engaged (Nichols, 2002, 2004). Further research is needed to investigate whether this finding will hold true across all moral domains.

In sum, the present research suggests that children form new moral beliefs with alacrity, provided they are given the right triggers. This readiness to moralize novel actions is noteworthy, especially because the behaviors used

in this study did not immediately lend themselves to moral condemnation. The constraints on moral acquisition are therefore rather loose with respect to the specific actions that can potentially enter into the moral realm. However, the present findings also demonstrate that the process of moral acquisition is not content-neutral, as environment-directed actions were moralized more readily than self-directed actions. Ultimately, the degree of plasticity inherent within a young child's moral repertoire is a crucial area of future exploration, and one that is currently underexplored. The implications of such research will be substantial, promising to answer fundamental questions about the horizons of our moral nature.

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