Individual Differences in Reliance on Intuition Predict Harsher Moral Judgments

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The notion that intuition guides moral judgment is widely accepted. Yet, there is a dearth of research examining whether individual differences in reliance on intuition influence moral judgment. Five studies provided evidence that faith in intuition (FI) predicts higher condemnation of moral transgressions. Studies 1 and 2 (combined $N = 543$) demonstrated that FI predicted higher moral condemnation of strange actions characterized by ambiguous harm. This association maintained controlling for a host of relevant ideological and emotional "third" variables. Three experiments demonstrated this relationship to be robust in the face of manipulations. In Study 3 ($N = 320$), participants rated whether moral scenarios involved harm or victims prior to (vs. after) moral judgments. Although considering harm and victims prior to judgments lowered condemnation toward these actions, the manipulation did not moderate the association between FI and condemnation. FI related to moral condemnation of unconventional actions even after consideration of harm and victims. In Study 4 ($N = 236$), a manipulation designed to enhance deliberation lowered overall moral condemnation (vs. control group), but did not attenuate the relationship between FI and moral condemnation. In Study 5 ($N = 204$), participants quickly categorized actions according to whether or not they were immoral, harmful, or involved victims. FI predicted higher condemnation of ambiguously harmful actions even when these judgments were made rapidly. Implications for examining individual differences in intuition in the context of dominant theories in moral psychology (dyadic morality, Moral Foundations Theory) are addressed.

Keywords: individual differences in intuition, intuition, moral judgment

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It is now widely acknowledged that intuitive processing influences moral judgment (e.g., Gray, Schein, & Ward, 2014; Haidt, 2001; Koenigs et al., 2007; Pizarro, 2000), moral values (Haidt & Graham, 2007), and moral behavior (e.g., Rand, Greene, & Nowak, 2012; Zaki & Mitchell, 2013). Intuitive processing is considered to be especially relevant to condemnation of shocking but objectively harmless actions (e.g., Haidt, 2001; Monin, Pizarro, & Beer, 2007). Such actions have been portrayed as widely condemned because people find it challenging to alter their initial intuitive reaction that these actions are morally wrong (Haidt, 2001). If the judgment of these types of actions is largely a product of intuitive processing, then it is possible that people more prone to rely on intuition should be most inclined to condemn these actions. To date, however, little research has examined how individual differences in reliance on intuition may influence moral judgment.

We propose that individual differences in reliance on intuition will predict moral condemnation of ambiguously harmful actions. People who rely heavily on intuition may be more likely to use intuitive reactions generated in the moral domain to produce harsher moral judgment, whereas people who are less reliant on intuition should be more apt to discount (or never experience) these reactions when making moral judgments. We designed five studies to examine the role of individual differences in intuition in moral judgment. Correlational studies examined the factors that might explain why those who strongly rely on intuition exhibit higher condemnation. Experiments tested whether the association between reliance on intuition and moral condemnation would persist in the context of typical manipulations of processing styles (i.e., deliberative or rapid) and the information brought to bear on judgment (i.e., considerations of harm and victims) or be moderated by these manipulations. Before presenting the studies, we review the evidence for the role of intuitive processing in moral condemnation of actions in which no explicit harm occurs. We then conceptually define individual differences in reliance on intuition. Next, we review two theoretical approaches to moral judgments and describe how these perspectives can help to illuminate why individual differences in intuition are relevant to moral judgment.

Weird Dilemmas and Intuitive Processing

The influential role of intuitive processing in moral judgment was demonstrated in research by Haidt, Koller, and Dias (1993)

using brief scenarios that describe strange, often emotionally evocative, actions that pose no explicit harm but are perceived as morally wrong (e.g., incest between two consenting adults, having sex with a dead chicken). These unusual scenarios were crafted carefully to assure the reader that no harm could result from the actions described. Yet, people quickly judged these actions as morally wrong and held steadfastly to these initial judgments.

Moral condemnation of these unusual actions is widely considered a product of intuitive processing (e.g., Haidt, 2001; Haidt et al., 1993; Haidt & Hersh, 2001; Monin et al., 2007). Indeed, affective reactions to these scenarios were more predictive of moral judgments than deliberative considerations about the consequences or harmfulness of the actions (Haidt et al., 1993). Descriptions of these findings fit with more general descriptions of intuitive information processing. Intuitive processing involves rapid, often preconscious, internally generated cues that are subjectively experienced as vague but compelling gut feelings (Epstein, 1994). Intuitive judgments feel self-evidently valid and inevitable (e.g., Volz & von Cramon, 2006). In the case of these moral dilemmas, the prepotent intuition that these actions are wrong (and harmful) appears to persist even when people are provided with logical arguments suggesting otherwise (Haidt & Hersh, 2001). Essentially, people "just know" these acts are morally wrong.

The conclusion that condemnation of these actions is a result of intuitive processing is also supported by research showing that manipulations of processing time and styles influence judgments. When people are given less time for judgment, they are more prone to decisions guided by emotions rather than by considerations of the features or consequences of actions (e.g., Suter & Hertwig, 2011). Similarly, when judgments are made under time pressure, people are more likely to see harm and victims in ambiguously harmful actions (Gray et al., 2014). In contrast, reflection is likely to temper condemnation (e.g., Paxton et al., 2012; Suter & Hertwig, 2011) and lower the perception of victims (Gray et al., 2014).

Moral judgment may be affected not only by manipulations of processing styles and time, but also by individual differences in the manner people process information. Indeed, in the absence of manipulations, there is substantial variability in responses to these scenarios, and many people do not consider these actions severely morally wrong (Gray & Keeney, 2015). Interestingly, in the original study using such scenarios, collapsing over SES, less than half (44–45%) of those surveyed actually condemned the offensive but ostensibly harmless acts (Haidt, Koller, & Dias, 1993). Finding that people are generally evenly split on whether these acts are morally wrong presses for a study of individual differences in these judgments. Why do some people view these actions as morally wrong and others see them as possibly peculiar or gross yet not immoral? Incorporating individual differences in reliance on intuition can help answer this question.

Individual Differences in Faith in Intuition

Cognitive-Experiential Self-Theory (Epstein, 1994) proposes that there are reliable individual differences in the extent to which people typically prefer or rely on intuitive/experiential or analytical/rational information processing styles. Within Cognitive-Experiential Self-Theory, the intuitive system operates precon-

sciously and rapidly, and is characterized by associationistic and holistic thinking. This system is thought to originate in a long history of associative learning (Epstein, 1994). The rational system is intentional and derived from socially prescribed rules of inference and evidence drawn from a conscious appraisal of events. People who are strongly intuitive are more inclined to trust the affectively driven gut feelings they experience and to use these to guide decisions (Epstein, Pacini, Denes-Raj, & Heier, 1996; Epstein et al., 1996). Faith in intuition (FI), measured using a self-report scale (Pacini & Epstein, 1999), predicts a suite of beliefs and biases (Burton, Heintzelman, & King, 2013). FI is associated with errors in probabilistic judgments tasks (e.g., Alonso & Fernandez-Berrocal, 2003) and biases in behavior (Alós-Ferrer & Hügelschäfer, 2012). It also relates to magical beliefs, susceptibility to sympathetic magic (King, Burton, Hicks, & Drigotas, 2007), a tendency toward rich and unusual associations, and attention to potentially irrelevant information for various tasks (Kaufman, 2009). Although intuitive and analytical processing styles may seem to be negatively related, these measures are conceptually orthogonal (Epstein et al., 1996).

Some research has linked FI with moral judgments. For instance, FI has been found to relate (inconsistently) to deontological moral reasoning (e.g., Bartels, 2008; Conway & Gawronski, 2013), a rule or obligation-focused mode of judgment that is often considered to be driven by emotional and intuitive processes (Bartels, 2008; Conway & Gawronski, 2013; Greene et al., 2004; Paxton, Ungar, & Greene, 2012). FI may, at times, predict this type of reasoning style as it reflects emotion-driven reasoning. In addition, research shows that a stronger ability to engage in reflection on the Cognitive Reflection Task (CRT; Frederick, 2005) predicts lower condemnation of ambiguously harmful actions (Pennycook, Cheyne, Barr, Koehler, & Fugelsang, 2014; Royzman, Landy, & Goodwin, 2014). FI is negatively related to performance on the CRT, but the association is not so high as to suggest redundancy (for CRT performance and FI, rs range = .003 to −.18, Alós-Ferrer & Hügelschäfer, 2016; $r = -.21$; Pennycook, Cheyne, Koehler, & Fugelsang, 2016; $r = -.26$, Heintzelman & King, 2016).[1] FI is unrelated to cognitive ability measures (Epstein et al., 1996) and assesses a *preference* for intuition in judgment and a belief that gut feelings lead to a right answer, rather than an inability to reflect.

It is important to bear in mind that FI encompasses more than simply rapid (or less deliberative) processing. From its broad associations as reviewed above, FI can be inferred to influence the type of information brought to bear on judgments. Research suggests that FI is likely to foster rich associations, not only to affective cues, but also to information that may be considered objectively irrelevant to a particular judgment (Kaufman, 2009). Those who report themselves as following their hunches are likely to do more than simply render quick decisions: Those decisions are likely colored by the broader array of available information brought to bear by the experiential system.

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[1] The construct or constructs measured by the CRT are varied and potentially complex—including cognitive abilities (e.g., Thompson et al., 2013) as well as potent capacities (and motivation) to avoid heuristics (Toplak, West, & Stanovich, 2011) and engage analytically (Pennycook & Ross, 2016). Indeed, Pennycook and colleagues (2016) argued that the CRT is a measure of reflection but not of intuition.

If condemnation of unconventional actions is the product of intuitive processing, it is reasonable to assume that individual differences in reliance on intuitive processing ought to play a role in these judgments. What might that role be? Conceptually addressing this question requires consideration of theorizing from moral psychology regarding condemnation of these unusual but not explicitly harmful actions.

Two Perspectives From Moral Psychology

Moral Foundations Theory (Haidt & Joseph, 2007; Haidt & Graham, 2007) and dyadic morality (Gray, Waytz, & Young, 2012; Gray, Young, & Waytz, 2012) provide accounts of how people arrive at moral judgments. Both of these perspectives acknowledge that the condemnation of unconventional actions is intuitive, but each provides a different context for predictions about the potential contribution of individual differences in FI to these judgments. A consideration of these theories provides a rationale for our predictions and the studies we present.

Moral Foundations Theory (Haidt & Joseph, 2007; Haidt & Graham, 2007; Graham et al., 2011; Graham et al., 2009) proposes a number of moral values or "moral intuitions" that provide a basis for moral judgments (e.g., purity, loyalty, harm). According to Moral Foundations Theory, each of these moral intuitions comprises a deep cognitive module that directs moral judgment (Haidt, 2013; Haidt & Joseph, 2007). Importantly, harm is but one of a number of possible bases on which moral judgments are rendered. From this perspective, condemnation of actions that are not explicitly harmful (and that do not involve an explicit victim) nevertheless make sense through the lens of deeply held moral values. For example, valuing loyalty or respect for authority may lead to the condemnation of actions such as disowning one's group or cleaning with a flag (e.g., Graham et al., 2009). Similarly, people who value purity—avoiding disgusting situations and upholding traditional sexual mores—are more likely to condemn same-sex relationships, casual sex, and abortion (e.g., Koleva et al., 2012). Thus, condemnation of aberrant behaviors that lack explicit harm or obvious victims may arise from prioritizing moral values other than harm. Within Moral Foundations Theory, harm is important and rooted in the human concern over the suffering of another, but it is viewed as only one of the many considerations or foundations for moral judgment.

In contrast, dyadic morality (e.g., Gray, Waytz, & Young, 2012; Gray, Young, & Waytz, 2012) views harm as the central, overarching issue—the "active ingredient" (Schein, Ritter, & Gray, 2016) for moral judgments. Within this theory, moral judgments involve an attempt to match a particular behavior to a template of moral action (e.g., Gray et al., 2012; Schein & Gray, 2015). That template includes an agent intentionally engaging in a behavior that harms another (termed a patient). According to dyadic morality, when moral judgments are triggered, this template is automatically brought to bear. The rapid nature of this process is attributed to the power of harm as a phenomenon in human life (Gray et al., 2014). Given its importance in human social life, perceptions of harm dominate evaluations of the morality of actions. If an action is judged to be morally wrong, harm is assumed to have occurred.

Within dyadic morality, harm is defined broadly across persons, situations, societies, and cultures, such that it must be understood pluralistically and subjectively (Schein et al., 2016; Schein &

Gray, 2015). From the perspective of dyadic morality (e.g., Gray et al., 2012; Gray et al., 2014), norm violations such as those that occur in the scenarios employed by Haidt, Koller, and Dias (1993) automatically evoke concerns within a dyadic framework. Drawing links to basic perceptual processes, the theory asserts that this moral framework of agent, patient, and harmful action is automatically completed and brought to bear on the judgments of ambiguous actions. Most importantly for our purposes, from the perspective of dyadic morality, the absence of explicit harm is not a notable aspect of these scenarios: Harm is self-evident in these actions (e.g., Gray et al., 2014; Schein et al., 2016). Perceived harm leads to moral condemnation even in the absence of explicit harm and mediates the effects of other responses (e.g., disgust) to these ambiguously harmful scenarios in the prediction of moral condemnation (Schein et al., 2016).

Moral Foundations Theory and dyadic morality offer differing predictions with regard to the role of individual differences in intuition in moral judgments, as we now consider.

Faith in Intuition in the Context of Moral Psychology

These perspectives on moral psychology suggest different pathways by which FI might be implicated in moral judgments. First, Moral Foundations Theory would seem to capture very well the content of the gut feelings that lead to moral condemnation. If an action triggers concerns for these moral foundations, moral condemnation should arise accordingly. The deep cognitive modules proposed by Moral Foundations Theory, though not hardwired, are considered to be "psychologically prepared" (Haidt, 2013) and easily learned. These would seem very likely to be part and parcel of the collection of overlearned associations contained in the experiential processing system described by Cognitive-Experiential Self-Theory. Drawing on Moral Foundations Theory, we would predict that FI should relate to condemnation of ambiguously harmful actions that are evocative and unconventional because they violate deeply held intuitions about maintaining social order.

Moral Foundations Theory often distinguishes between "individuating" and "binding" moral values. The individuating foundations of harm and fairness emphasize individual rights and are less relevant to strange or disgusting actions. These individuating foundations are considered to be more universal and less culturally bounded than the binding foundations (e.g., Graham et al., 2011); thus, we may expect that individual differences (in FI or any other variable) would be less likely to matter to violations of these moral foundations which are likely to be condemned more broadly. In contrast, the binding foundations of authority, loyalty, and purity emphasize maintaining social order, stability, and duties (Graham et al., 2011). These foundations are thought to arise from an emphasis on traditional morality, social norms, and customs (e.g., Graham et al., 2011; Malka et al., 2016). People with a stronger propensity toward reliance on intuition may be more apt to rely on these social norms to guide their sense of morality. We may expect, then, that FI may predict moral condemnation of ambiguously harmful actions to the extent that it is tied to the "binding" values of upholding social convention and order.

Dyadic morality also helps to inform predictions about why FI may be linked to condemnation. Because this perspective suggests an immediate intuitive application of a dyadic framework (and the

concomitant perception of harm and victims), we would expect that FI should predict moral condemnation of ambiguously harmful scenarios. Dyadic morality would also predict that because harm is an essential ingredient in moral condemnation, perceptions of harmfulness should help explain why FI is linked to higher moral condemnation. Finally, this theory might also predict that this association ought to persist in the face of manipulations that heighten awareness of harm. That is, although it may be relatively easy to override rote learning in the moral domain, violations that implicate deep-seated and potentially adaptive revulsion ought to persist regardless of assurances about the lack of objective harm (Schein & Gray, 2015).

Placing FI within the context of moral judgment can help to reconcile Moral Foundations Theory and dyadic morality and better illuminate the process of moral judgment. Whereas Moral Foundations Theory posits a strong role of moral values in predicting condemnation, dyadic morality proposes that perceived harm will predominate. Of course, the moral values people have may inform their perceptions of harmfulness, and these perceptions of harm may, in turn, predict condemnation. We predict that both moral foundations and harm will provide critical links between FI and moral condemnation. Figure 1 displays the potential pathways linking FI to moral condemnation through moral foundations and harm perceptions. As shown in Figure 1, we propose that individual differences in intuition will instigate the process of moral judgment, predicting the moral values people hold, which will inform perceptions of harm and subsequent moral condemnation.

Overview and Predictions

Five studies examined the relationship of FI to moral judgments, addressing three main goals. The first goal was to test, in correlational cross-sectional data, the prediction that FI would correlate positively with condemning ambiguously harmful actions. Whenever research establishes a novel association between two variables, it is incumbent upon investigators to place that association in a larger nomological network and, especially, to probe whether a correlation is explained by other established constructs (i.e., "third variables"). Studies 1, 2, and 3 tested a range of potential explanatory variables for the association between FI and condemnation. We predicted that the association between FI and moral condemnation would remain even controlling for these variables. We also tested the possibility that moral foundations relevant to the scenarios would mediate the association between FI and moral condemnation.

The second goal of this work was to examine predictions bearing on the distinctions drawn between Moral Foundations Theory and dyadic morality. Placing individual differences in reliance on intuitive processing in the context of these theories, we tested whether FI predicts both moral foundations and perceptions of harm, which subsequently predict moral judgment. In Studies 2

and 3, moral foundations and harmfulness were examined in separate mediation models to evaluate which accounted for the association between FI and moral wrongness. We also examined the underlying associations linking FI, moral foundations, harm perceptions, and moral wrongness: Does FI relate to higher endorsement of moral foundations, which leads to higher perception of harm and then subsequent moral condemnation? We examined several mediation models, seeking to reconcile predictions from Moral Foundations Theory and dyadic morality, and in so doing, best capture the role of individual differences in reliance on intuition in moral condemnation. We expected that FI would relate to higher endorsement of the moral foundations related to ambiguously harmful actions (purity, loyalty), which would help explain condemnation of ambiguously harmful scenarios. Consistent with dyadic morality, we expected that FI would predict higher perceptions of harm, which would promote condemnation. Note that it is likely that endorsement of moral foundations is associated with perceiving violations of domain-relevant actions as harmful (e.g., Schein & Gray, 2015). Thus, it is quite possible that both Moral Foundations Theory and dyadic morality would work in tandem to explain the association between FI and moral condemnation, as predicted by the model shown in Figure 1.

The final goal of these studies was to test the effects of experimental manipulations on the association between FI and moral condemnation. Studies 3, 4, and 5 employed manipulations of the information (Study 3), level of reflection (Study 4), and speed (Study 5) used for moral judgments. We predicted that, consistent with past research, manipulations that encourage people to reflect in various ways prior to moral judgment would reduce condemnation and that a manipulation encouraging rapid responding would heighten condemnation. However, and importantly, we also tested whether such manipulations would alter the association between FI and condemnation. If FI is related to moral condemnation of ambiguously harmful actions because intuitive individuals are simply less likely to reflect on these judgments, we would expect that manipulations encouraging reflection would reduce the association between FI and moral condemnation. However, if individuals' immediate reactions to such scenarios include an automatic detection of harm, as proposed by dyadic morality, we would expect that FI would remain positively associated with condemnation, despite such manipulations: Reflection may lead intuitive individuals to further consider the (to them self-evident) harmfulness of these actions. We also examined the extent to which FI was linked to rapid judgments of immorality. If people with low FI override an initial perception of moral wrongness to arrive at their less condemning judgments, then we would expect FI to be less predictive of these rapid moral judgments. However, it is also possible that those low in FI would not be more condemning in the context of rapid judgments. Features of FI that predict harsher condemnation (e.g., moral values, affective cues,

Figure 1. Predicted association between Faith in Intuition and Moral Wrongness through Moral Foundations and Perceptions of Harm (examined in serial mediation models in Table 7).

holistic processing) may still be influential, even in quick judgments.

It is important to consider that FI may continue to relate to condemnation within the context of the manipulations previously described because these manipulations do not exhaust the individual differences implied in FI. As noted above, simply rendering judgments rapidly or thoughtfully may not affect the information brought to bear on a judgment. Indeed, it may be that individual differences in reliance on intuition affect the content and style of judgments, despite attempts to manipulate these. Intuitive conclusions are experienced as "just knowing" and it may be that such conclusions are difficult to alter if they are experienced as self-evidently valid (Epstein, 1994). Also, if the association between FI and condemnation is explained by specific moral values (e.g., valuing purity or loyalty) then it is possible that manipulations encouraging reflection or rapid judgment would not alter this association, as moral values may still predict judgments regardless of processing style or time.[2]

Considering individual differences in intuition in the context of moral judgments can help to illuminate the process by which people with low FI arrive at lower condemnation of ambiguously harmful actions. Do such individuals override an initial condemning impulse, or are they simply less likely to experience that impulse? Combining an individual difference measure of reliance on intuition with these manipulations allowed to us probe the process of moral judgment along the entire continuum of FI.

Studies 1 and 2

Studies 1 and 2 tested whether FI would relate to higher moral condemnation of various behaviors. We included violations that involved clear harm as well as those that were ambiguously harmful. We predicted that FI would relate positively to ratings of harm and moral wrongness in ambiguously harmful scenarios. We expected that people with low reliance on intuitive processing would be more inclined to distinguish between ambiguously harmful actions and actions that are widely considered harmful and morally wrong (e.g., tax fraud, kicking a dog), henceforth referred to as "unambiguously harmful" actions.

Evaluating Potential Explanatory Variables

Studies 1 and 2 included a number of variables to examine whether the positive association between FI and moral condemnation would remain when controlling for these variables. Given the novelty of our hypothesis, there is little research at the intersection of FI and moral judgment. To identify potential "third variables," we examined the literature on moral judgments. We chose to include a variable if it was at least plausible that it might share a positive relationship with FI (and therefore explain the relationship between moral condemnation and FI). Past research has suggested numerous individual differences pertaining to emotion (e.g., emotional intensity, disgust sensitivity), ideological variables (e.g., moral foundations, religiosity), and demographics, as described below. Note that including this broad range of variables represents a stringent test of our hypothesis that FI shares an independent positive relationship to moral condemnation of ambiguously harmful actions.

Emotion. We included a variety of emotion variables—positive and negative affect, disgust sensitivity, private body con-

sciousness, emotional intensity, and emotional reappraisal—that have been associated with moral judgment in past research (e.g., Schnall, Haidt, Clore, & Jordan, 2008; Feinberg et al., 2012; Valdesolo & DeSteno, 2006). Participants in Study 1 also completed a measure of guilt and shame proneness for the purposes of another study; results for this measure are not reported here.

Ideology. Although individual differences in emotion appear to be the most likely variables that may overlap with FI, it is also possible that FI may relate to ideological differences that predict moral judgment. To evaluate this possibility, we measured several ideological variables, including moral foundations, religiosity, and attitudes toward political/social issues (e.g., abortion, gay marriage), that are known to relate to moral judgment (e.g., Atkinson & Bourrat, 2011; Graham et al., 2011; Graham et al., 2009).

Demographics. Finally, we measured demographic variables that have been associated with moral judgment in past research, namely sex, age, income, and education (e.g., Friesdorf, Conway, & Gawronski, 2015; Haidt et al., 1993; Rest & Thoma, 1985), to ensure that the association between FI and moral condemnation is not attributable to overlap with these variables. However, in no case did any demographic variable explain the role of FI in moral judgments. Because moral decision-making is a broad area that touches on many aspects of psychology, we have included detailed analyses of demographic and other variables in the supplementary materials. Readers with interest in specific analyses relevant to the variables measured in all studies are referred to the supplement.

Method

Participants. Participants were Amazon Mechanical Turk workers (paid $0.50–$1). Table 1 shows the Ns and demographic information. These studies and all subsequent studies were approved by the Institutional Review Board at the first author's institution.[3]

Measures for Studies 1 and 2. Table 2 lists the scales included in each study. Tables 3, 4, and 6 provide descriptive statistics and reliabilities for Studies 1 and 2. Unless otherwise noted, all items were rated on Likert-scales ranging from 1 to 7, with higher scores indicating endorsement. Because these were lengthy online questionnaires, we embedded attention check items in the surveys. Participants who failed two or more (of three)

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[2] We are unaware of any literature that has directly probed whether the influence of people's preexisting moral values on moral judgment varies in response to manipulations of timing or deliberation. We note that past research has shown that a manipulation of cognitive load made conservatives de-emphasize the "binding" moral foundations when completing the Moral Foundations Questionnaire (Wright & Baril, 2011). Cognitive load has also been shown to decrease utilitarian responding (e.g., Greene et al., 2008; Conway & Gawronski, 2013). In Study 4, purity did not interact with the deliberation manipulation to predict moral judgment (see supplementary materials), suggesting it is equally influential to predicting judgment regardless of the level of deliberation employed.

[3] The Institutional Review Board project titles and numbers are as follows: Personality and Judgment II (#1213534), Judgments of Behavior (#1210476), Judgments and Reasoning (#1214025), Personality and Judgments (#2004023), and Personality and Decision Making (# 2004167).

Table 1

Demographic Information, Studies 1 Through 5

Characteristic	Study 1	Study 2	Study 3	Study 4	Study 5
Gender					
Men (*n*)	143	101	137	126	78
Women (*n*)	176	117	169	109	107
Unreported (*n*)	0	0	6	1	0
Age *M* (*SD*)	35.46 (11.99)	35.94 (12.37)	38.64 (12.78)	33.31 (10.07)	18.64 (.84)
Ethnicity					
White/Caucasian	77.7%	73.9%	78.5%	79.2%	85.4%
Black/African-American	10.1%	7.8%	7.2%	6.4%	10.3%
Asian	4.4%	8.7%	8.1%	5.1%	1.1%
Hispanic/Latino	6%	6.9%	3.8%	5.9%	2.2%
Other	1.9%	2.8%	2.4%	1.3%	1.1%
Educational attainment (median/mode)	Some college	—	Bachelor's degree	Some college	—
Income (median)	$35,001–$50,000	$35,001–$50,000	$35,001–$50,000	$35,001–$50,000	$75,001–$100,00
Total sample size	319	218	312	233	185

Note. The total sample size reflects only the participants who are included in analyses, not those dropped for failing attention checks. Data about educational attainment was not collected in Studies 2 or 5. Income in Study 5 reflected the participants' parents' income, as it was a student sample.

attention checks (*n* = 5, Study 1; *n* = 1, Study 2) were excluded from analyses.[4]

Rational Experiential Inventory. The Rational Experiential Inventory (REI; Pacini & Epstein, 1999) includes subscales for Faith in Intuition (FI; 7 items, e.g., "I often go by my instincts when deciding on a course of action") and Need for Cognition (6 items, e.g., "I enjoy solving problems that require hard thinking"). FI is associated with utilizing heuristics as well as with improved performance on measures of divergent thinking and creativity (e.g., Epstein et al., 1996; Norris & Epstein, 2011; Shiloh, Salton, & Sharabi, 2002). Need for cognition is related to enhanced performance and logic in problem solving (Alonso & Fernandez-Berrocal, 2003).

Emotion variables.

Mood. Positive (13 items) and negative affect (14 items) scales of the Positive and Negative Affect Schedule (Watson, Clark, & Tellegen, 1988) asked participants to rate their current

mood based on different feelings and emotions (e.g., interested, scared, distressed). This scale was modified by adding the following words: enjoyment/fun, happy, sad, angry, worried, and pleased.

Emotional intensity. Eight items were taken from the International Personality Item Pool (Goldberg et al., 2006) to measure the intensity with which people experience their emotions (e.g., "I experience my emotions intensely").

Body consciousness. The 6-item private body consciousness subscale of the Body Consciousness Questionnaire (Miller, Murphy, & Buss, 1981) was used to assess to what degree a person is attuned to their own bodily states (e.g., "I can often feel my heart beating").

Emotional regulation. The Emotion Regulation Questionnaire (Gross & John, 2003) was used to assess both emotional reappraisal (6 items; e.g., "I control my emotions by changing the way I think about the situation I'm in"), measuring the tendency to reinterpret emotional responses; and emotion suppression (4 items; e.g., "I control my emotions by not expressing them"), which

Table 2

All Measures, Studies 1 Through 5

Measure	Studies included
Rational Experiential Inventory	All studies
Emotion measures	
Emotional Regulation Questionnaire	1
Private Body Consciousness	1
Positive and Negative Affect	1, 2
Disgust Sensitivity Questionnaire	3
Emotional Intensity	1
Ideological variables	
Political Orientation	3–5
Religiosity	1, 2, 5*
Moral Foundations Questionnaire	2, 3, 4*
Social Issues	2
Other	
Cognitive Reflection Task	3

Note. In Study 2, religiosity was a subset of 2 of the items used in Study 1, "I try hard to live all my life according to my religious beliefs" and "My whole approach to life is based on my religion". In Studies 3 and 4 we included shortened versions of the Moral Foundations Questionnaire.
* *p* < .05.

[4] In Studies 1 and 2, the attention checks asked participants to select a certain response (e.g., "strongly disagree") and were embedded throughout the study. In Study 3, participants completed an instructional manipulation check (adapted from Oppenheimer, Meyvis, & Davidenko, 2009). Participants who incorrectly responded to this item (*n* = 8; or 2.5% of participants) were removed from analyses. Three attention checks were included in Study 4; participants who failed two or more were excluded from analyses (*n* = 3; 1.3% of participants). Study 5 did not include any attention check items. We also analyzed attrition for each online study. Participants who did not fully complete the studies were removed from the data sets prior to any analyses. In Study 1, 19 participants dropped out of the study. In Study 2, 6 participants dropped out of the study. In Study 3, 4 participants dropped out of the study. Of these, 3 participants were in the condition that rated harm/victims prior to moral judgments; the other participant was in the condition that did moral judgments prior to harm/victim ratings. These rates did not differ by condition, $\chi^2(1) = 1.37$, *p* = .24. In Study 4, 68 participants dropped out of the study. Of these, 39 were in the control condition and 29 were in the deliberation condition. These rates did not differ by condition, $\chi^2(1) = 0.41$, *p* = .52. The high dropout rate in Study 4 may have been caused by the required writing tasks (which caused this study to take longer than others did) and the pay rate may not have been competitive enough to incentivize finishing.

Table 3
Descriptive Statistics and Intercorrelations Between Outcome Measures in Studies 1 and 2

Panel	MW	H	D	PD	Study 1 M (SD)	Study 1 α	Study 2 M (SD)	Study 2 α
Panel A: Ambiguously harmful actions								
Moral wrongness	—	.77**	.81**	.72**	4.72 (1.56)	.93	3.22 (1.24)	.87
Harm	.75**	—	.68**	.90**	3.40 (1.62)	.93	2.31 (1.16)	.89
Disgust	.85**	.69**	—	.60**	5.10 (1.12)	.87	3.80 (.95)	.78
Punishment deserved	—	—	—	—	—		1.99 (1.04)	.90
Panel B: Unambiguously harmful actions								
Moral wrongness	—	.73**	.60**	.70**	5.56 (1.02)	.90**	4.72 (1.35)	.79
Harm	.76**	—	.71**	.82**	5.11 (.94)	.86**	3.56 (1.29)	.76
Disgust	.58**	.65**	—	.63**	4.36 (1.46)	.92**	3.10 (1.55)	.83
Punishment deserved	—	—	—	—	—		3.37 (1.36)	.80

Note. Study 1 variables are on the lower left of correlation matrix; Study 2 variables are on the upper right of diagonal. Ratings of punishment deserved for act were only included in Study 2.
** $p < .001$.

assesses the extent to which people attempt to not express emotions.

Ideological values.

Moral foundations. The Moral Foundations Questionnaire (MFQ; Graham et al., 2011) assesses the considerations people use when making moral judgments. First, 16 statements are rated according to whether people consider the description an important aspect they consider when making a moral judgment (e.g., "Whether or not someone did something disgusting," "Whether or not someone acted unfairly"). The second part of the scale involves rating agreement with 16 statements relevant to moral judgment (e.g., "It is more important to be a team player than to express oneself"; "Justice is the most important requirement for a society"). The MFQ measures five foundations with 6-item subscales, including care/harm, fairness/reciprocity, loyalty/in-group, authority/respect, and purity/sanctity. Care/harm refers to sensitivity toward the pain and suffering of others. Fairness/reciprocity reflects consideration of justice and fairness. Loyalty/in-group assesses how much people value loyalty and self-sacrifice toward a group. Authority/respect reflects consideration for respecting authority and traditions. The purity/sanctity subscale assesses how much people value avoiding disgusting stimuli and unnatural acts.

Religiosity. A shortened 5-item version (excluding the 3 negatively worded items on original scale) of the intrinsic subscale of the Revised Intrinsic/Extrinsic Religiosity scale (Gorsuch & McPherson, 1989) was used to measure intrinsic religiosity (e.g., "My whole approach to life is based on my religion").

Social issues. Seventeen behaviors and social issues were rated according to how morally wrong they are considered, including abortion, homosexuality, premarital sex, masturbation, and littering (adapted from Zhong, Strejcek, & Sivanathan, 2010). Higher values reflect more condemnation.

Demographics. We measured age, ethnicity, gender, education (6 categories: ranging from G.E.D. to doctoral degree), and income (8 categories: from less than $15,000 to more than $150,000; see Table 1).

Moral judgments. In both studies, participants made judgments of scenarios that were unusual, disgusting, or weird, but ambiguously harmful. Studies 1 and 2 also included "unambiguously harmful" scenarios, or actions widely considered harmful and morally wrong (e.g., tax fraud, kicking a dog). All scenarios for all studies are shown in the Appendix. Below we review specific features for Studies 1 and 2. Descriptive statistics and intercorrelations for these measures are shown in Tables 4 and 6.

Table 4
Descriptive Statistics and Correlations Among Measures, Study 1

Measure	α	M (SD)	Faith in intuition	Ambiguously harmful scenarios — Moral wrongness	Partials-FI & MW	Harm	Disgust	Unambiguously harmful scenarios — Moral wrongness	Partials-FI & MW	Harm	Disgust
Faith in Intuition	.95	4.39 (1.37)	—	.38**	—	.31**	.29**	.22**	—	.23**	.13*
Need for Cognition	.86	5.09 (1.11)	−.19***	−.15*	.36**	−.10	−.06	−.03	.22**	.02	.01
Body Consciousness	.81	4.75 (1.19)	.30***	.26**	.32**	.20**	.19**	.24**	.16*	.19*	.11
Religiosity	.96	3.55 (2.18)	.22***	.40**	.32**	.39**	.37**	.28**	.16*	.33**	.32**
Positive Affect	.90	4.21 (1.29)	.15**	.25**	.35**	.28**	.22**	.17**	.20**	.24**	.16*
Negative Affect	.94	1.82 (1.10)	.05	.03	.37**	.08	.03	−.03	.22**	−.01	.06
Emotional Intensity	.79	4.10 (1.05)	.24***	.16*	.35**	.10	.11*	.15*	.19*	.08	.11*
Emotion Suppression	.80	3.95 (1.32)	−.18***	−.21**	.35**	−.14*	−.15*	−.18*	.19*	−.12	−.10
Emotion Reappraisal	.90	5.06 (1.10)	.14*	.25**	.35**	.18*	.24**	.18*	.20**	.23**	.18*

Note. $N = 319$. Partial correlations are for the association between FI and moral wrongness ratings, controlling for each variable.
* $p < .05$.   ** $p < .01$.   *** $p < .001$.

Correlations and reliabilities for ratings of moral wrongness, disgust, and harm for the ambiguous scenarios for both studies are shown in Table 3.

Study 1. Participants rated 24 morally relevant scenarios that ranged in severity and type of transgression.[5,6] Twelve scenarios reflected behaviors that were unambiguously harmful (e.g., lying on one's taxes, blaming a coworker for one's mistake). The other 12 involved behaviors that were ambiguously harmful (e.g., having sex in one's grandparent's bed; saying mean things about a person who died). These scenarios were either adapted from prior work (Haidt et al., 1993; Schnall et al., 2008; Helzer & Pizarro, 2011) or designed for the present study. Factor analysis of the items showed they conformed to the expected two-factor (ambiguously and unambiguously harmful) solution.[7]

Participations rated each scenario on several dimensions, including moral wrongness ("Do you think the action described is morally wrong?"), disgust ("Do you think the action described is disgusting?"), and harm ("Do you think the action described caused any harm?")[8] on scales from 1 to 7, with higher values reflecting greater agreement. Separate aggregates of ambiguously and unambiguously harmful moral scenarios exhibited high reliabilities (α's > .86) for ratings of moral wrongness, harm, and disgust.

Study 2. Participants rated 17 morally relevant behaviors (adapted from Haidt et al., 1993; Schnall et al., 2008; Helzer & Pizarro, 2011), presented in a randomized order. Four pertained to conventionally harmful, immoral actions (e.g., keeping money one finds, tax fraud). Thirteen were ambiguously harmful actions, consisting of both purity violations involving disgust (e.g., such as sex with a dead chicken) as well as nondisgusting violations that mostly pertained to breaches of social convention (e.g., breaking a promise to one's dead mother). All scenarios were rated on four dimensions: moral wrongness, disgust, harm (as in Study 1), and deserved punishment ("Do you think the person that engaged in the behavior described should be punished?"), using the 1–7 scale noted above.

Results

Study 1. Unambiguously harmful scenarios were judged as significantly more morally wrong, $M(SD) = 5.56(1.02)$ than ambiguously harmful scenarios, $M(SD) = 4.72(1.56)$, paired $t(316) = 11.74$, $p < .001$, $d = 0.71$. Likewise, unambiguously harmful scenarios were judged as more harmful, $M(SD) = 5.11(0.94)$, than ambiguously harmful scenarios, $M(SD) = 3.40(1.62)$, paired $t(316) = 23.05$, $p < .001$, $d = 1.45$. Table 3 displays the intercorrelations between moral wrongness, harm, and disgust. Consistent with dyadic morality, ratings of harm and immorality were strongly related; disgust was also strongly related to harm and immorality (e.g., Gray et al., 2014; Schein et al., 2016).[9]

As shown in Table 4, FI was significantly correlated with ratings of moral wrongness, harm, and disgust toward both ambiguously harmful and unambiguously harmful scenarios. We had predicted that individuals low in FI would show a capacity to distinguish between unambiguously and ambiguously harmful scenarios. To examine this possibility, moral wrongness ratings for each type of scenario were submitted to a repeated measures General Linear Model with type of scenario (ambiguously harmful vs. unambiguously harmful) as a within-participant factor and FI as a covariate.

Results showed that the tendency for FI to relate to higher levels of condemnation overall, a $F(1, 315) = 44.31$, $p < .001$, partial $\eta^2 = .12$, was qualified by a significant scenario Type × FI interaction, $F(1, 315) = 26.94$, $p < .001$, partial $\eta^2 = .079$. Figure 2: Panel A shows the raw data for moral wrongness ratings for each type of scenario over the levels of FI. As can be seen, and as expected, unambiguously harmful scenarios were generally judged as morally wrong across levels of FI. At low levels of FI, a greater distinction between the types of scenarios was observed. However, as FI increased, the lines representing unambiguously harmful and ambiguously harmful scenarios began to converge. The pattern in Figure 2 fits with the idea from Moral Foundations Theory that individuating values (such as harm) are more likely to be shared commonly (thus the flat line for the unambiguous scenarios). The blurring of the lines as FI increases fits with the dyadic morality contention that objective and perceived harm may blur as a function of reliance on intuitive processes.

Examining potential mechanisms. As shown in Table 4, many of the individual difference variables measured were correlated with FI, raising the possibility that the association between FI and moral condemnation is explained by this shared variance. Partial correlations, also shown in Table 4, indicate that none of these variables eliminated the association between FI and moral condemnation. Mediation models tested whether a combination of variables (including all that were correlated with both FI and moral wrongness), entered as parallel mediators (Hayes, 2012; Model 4)

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[5] The time to make moral judgments was recorded in Studies 1 through 3. In Study 1, FI was unrelated to the time it took to make judgments about ambiguously harmful scenarios, $r = .09$, $p = .11$, and positively related to the length of time taken to rate unambiguously harmful scenarios, $r = .12$, $p = .03$. In Studies 2 and 3, FI was unrelated to the timing of all moral judgment ratings, $rs < .12$, $ps > .09$. Estimates of time in these studies are, admittedly, a crude estimator of decision time, as the online software only records the total time spent on a page. It is possible that people could have made their decisions more quickly than this. Manipulations of timing (and deliberation) in Studies 4 and 5 provided more control over decision timing.

[6] In Study 1, scenarios were randomized within blocks according to the type of scenario. The order of the ambiguously harmful and unambiguously harmful scenarios was counterbalanced. The order of these blocks did not have an overall effect on the composite ratings of either unambiguously/ambiguously harmful transgressions, $ts (316) = .61, .50, ps = .54, .55$, for ambiguously harmful and unambiguously harmful ratings, respectively. Order also did not interact with FI to predict ratings of ambiguously harmful or unambiguously harmful ratings ($\beta s = .10, -.04, ps = .21, .61$, respectively).

[7] In Study 1, two factors were extracted from the moral wrongness ratings. After varimax rotation, these conformed to a two factor solution, with 12 ambiguously harmful acts loading on one factor (eigenvalue = 9.89; 41.11% variance) and the 12 unambiguously harmful loading on the other (eigenvalue = 2.88; 11.99% variance). The only item with notable cross-loadings was the scenario involving slapping one's mother; it was retained on the unambiguously harmful factor.

[8] In Study 1 we also measured the extent to which people could imagine the motivation ("Can you imagine why anyone would engage in the behavior described?"), ranging from 1 to 7, with higher values reflect more understanding. Understanding the motivation was negatively related to FI, $r = -.18$, $p = .001$ and moral judgments of ambiguously harmful scenarios, $r = -.54$, $p < .001$. Controlling for motivation, $\beta = -.49$, $p < .001$, FI still predicted condemnation of the ambiguously harmful scenarios, $\beta = .27$, $p < .001$.

[9] Consistent with the findings of Schein et al., 2016, harm was found to partially mediate the association between disgust and moral wrongness in both Studies 1 and 2. Refer to Table 3 of the supplementary materials for these analyses.
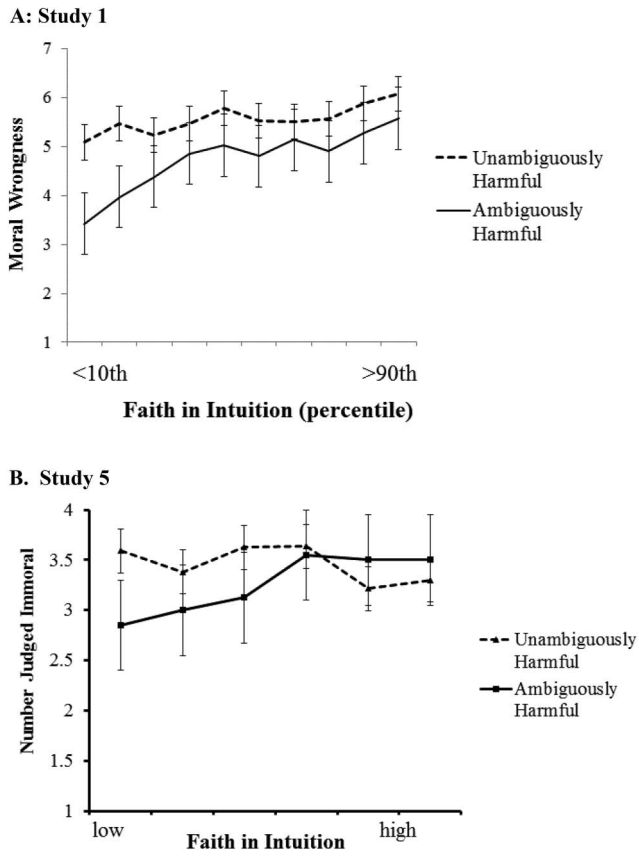
A: Study 1

B. Study 5

Figure 2. Ratings of Moral Wrongness for Ambiguously Harmful versus Unambiguously Harmful scenarios over values of Faith in Intuition in Studies 1 and 5. (A) Study 1. Each percentile n ~32. Error bars are bootstrapped 95% CIs. (B) Study 5. Each data point, n ~30. Error bars are bootstrapped 95% CIs.

affected the association between FI and moral wrongness ratings of ambiguously harmful scenarios. All of the mediational models described below (and in all subsequent studies) were bootstrapped with 10,000 resamplings. Results for Study 1 are shown in Table 5. As can be seen, religiosity, need for cognition, private body consciousness, and positive affect contributed to the association between FI and moral wrongness ratings of ambiguously harmful scenarios. Still, when controlling for these variables, FI significantly predicted moral wrongness ratings, $b(SE) = 0.20(0.06)$, $p = .0009$ (individual models for each predictor are shown in the supplementary materials). These results support the prediction that FI shares an independent positive relationship with moral condemnation of ambiguously harmful actions.

FI, harm, and moral judgment. Dyadic morality predicts that perceptions of harm are prepotent in moral judgments. To test this prediction, we computed another mediational model examining whether perceptions of harmfulness mediated the association of FI and moral wrongness ratings of ambiguously harmful scenarios (Hayes, 2012; Model 4; refer to the supplementary materials for full results). Perceived harmfulness explained part of the association between FI and moral wrongness: indirect effect of FI on moral wrongness, $b(SE) = 0.25(0.04)$; 95% CI = [0.16 to 0.33].

The direct path from FI to moral wrongness was reduced but remained significant, $b(SE) = 0.18(0.04)$, $p < .001$, controlling for harm.[10] These results are consistent with the proposal from dyadic morality that the perception of harm is the most proximate predictor of moral condemnation, however, the very strong association between harm and moral wrongness, $r = .75$, $p < .001$, warrants caution in interpreting these results: Harm and moral wrongness may not be distinguishable.

Study 2. Similar to Study 1, compared with ambiguously harmful scenarios, $M(SD) = 3.25(1.22)$, unambiguously harmful scenarios were more strongly condemned, $M(SD) = 4.72(1.35)$; paired $t(216) = 17.36$, $p < .001$; $d = -1.13$. First, analyses sought to determine whether FI predicted responses to the unambiguously harmful transgressions.[11] FI was not related to finding these scenarios morally wrong, harmful, or disgusting, $rs < .12$; $ps > .08$. Henceforth, analyses exclude these four unambiguously harmful scenarios. Separate composite variables were formed for moral wrongness, harmfulness, and disgust for the 13 ambiguously harmful scenarios (see Table 3).

To address our first research goal, we examined the relationship between FI and moral wrongness ratings for the ambiguously harmful scenarios, along with the potential third variables included in this dataset. As shown in Table 6, replicating Study 1, FI was positively related to finding the ambiguously harmful scenarios morally wrong, harmful, and disgusting. Positive affect, negative affect, and religiosity were also positively correlated with moral wrongness ratings, as in Study 1. The moral foundations of loyalty, harm, authority, and purity were also positively correlated with finding the ambiguously harmful scenarios morally wrong, disgusting, and harmful. Partial correlations showed that none of the potential explanatory variables fully accounted for the association between FI and moral wrongness ratings (see Table 6).[12]

Examining potential mechanisms. Next, analyses examined whether the variables included in this study mediated the association between FI and moral judgments. We calculated a mediation model testing how a combination of variables, entered as parallel mediators (Hayes, 2012; Model 4) affected the association between FI and moral wrongness. As in Study 1, we included all variables that were correlated with both FI and moral wrongness ratings in this model. As shown in Table 5, only the moral foundations of loyalty and purity significantly mediated the association between FI and moral wrongness. When controlling for all of these potential mediators, the direct effect of FI on moral wrongness was not significant, $b(SE) = 0.07(0.05)$;

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[10] In Studies 2 and 3, perceptions of harm again partially mediated the association between FI and moral wrongness. FI remained a significant predictor in these models. Refer to the supplementary materials, Tables 9-10, for mediation analyses involving moral judgment outcome measures.

[11] In Study 2, two factors were extracted from the moral wrongness ratings. After varimax rotation, these conformed to a two factor solution, with 13 ambiguously harmful acts loading on one factor (eigenvalue = 6.33; 35.18% variance) and the 4 unambiguously harmful loading on the other (eigenvalue = 1.79; 9.94% variance).

[12] The inclusion of both disgusting and nondisgusting scenarios in Study 2 allowed us to examine whether it is the feeling of disgust that drives the moral condemnation of those high in FI. FI positively predicted condemning both disgusting and nondisgusting scenarios, $rs = .24$, .24; $ps < .001$. (Refer to the supplementary materials for a full description.)

Table 5

Multiple Mediator Models Predicting Moral Wrongness Ratings of Ambiguously Harmful Scenarios From Faith in Intuition (FI) in Studies 1–3

Mediator	FI to mediator	Mediator to outcome	Indirect effect	95% CI of indirect effect
Direct Effect of FI on moral condemnation controlling for all variables = .20 (.06), p = .0009; CI = [.08, .32]				
STUDY 1, model R^2 = .32**				
Religiosity	0.35 (0.09)**	0.20 (0.04)**	0.07 (0.02)	[0.04, 0.12]
Need for Cognition	−0.16 (0.04)**	−0.21 (0.03)**	0.03 (0.02)	[0.009, 0.07]
Private Body Consciousness	0.26 (0.05)**	0.16 (0.07)*	0.04 (0.02)	[0.007, 0.09]
Positive Affect	0.13 (0.05)*	0.20 (0.07)*	0.03 (0.02)	[0.004, 0.07]
Emotional Suppression	−0.18 (0.05)**	−0.07 (0.06)	0.01 (0.01)	[−0.009, 0.05]
Emotional Intensity	0.19 (0.04)**	0.10 (0.08)	0.02 (0.02)	[−0.01, 0.06]
Emotional Reappraisal	0.11 (0.04)*	0.14 (0.08)	0.02 (0.01)	[−0.001, 0.05]
Total indirect effect			0.22 (0.04)	[0.15, 0.31]
Direct Effect of FI on moral condemnation controlling for all variables = .07 (.05), p = .15; CI = [−.03, .17]				
STUDY 2, model R^2 = .53**				
Need for Cognition	−0.19 (0.05)**	−0.09 (0.06)	0.02 (0.01)	[−0.005, 0.05]
Positive Affect	0.33 (0.06)**	0.06 (0.05)	0.02 (0.02)	[−0.02, 0.07]
Social Issues	0.09 (0.05)	0.46 (0.08)**	0.04 (0.03)	[−0.004, 0.10]
Religiosity	0.18 (0.11)	−0.07 (0.04)	−0.01 (0.01)	[−0.04, 0.001]
Loyalty Moral Foundation	0.23 (0.06)**	0.20 (0.07)*	0.05 (0.02)	[0.01, 0.10]
Authority Moral Foundation	0.21 (0.06)**	0.04 (0.09)	0.008 (0.02)	[−0.03, 0.05]
Purity Moral Foundation	0.30 (0.08)**	0.17 (0.06)*	0.05 (0.02)	[0.01, 0.11]
Harm Moral Foundation	0.19 (0.05)**	−0.03 (0.06)	−0.005 (0.01)	[−0.03, 0.02]
Total indirect effect			0.19 (0.05)	[0.06, 0.27]
Direct Effect of FI on moral condemnation controlling for all variables = .17 (.05), p = .0005; CI = [.08, .28]				
STUDY 3, model R^2 = .52**				
Cognitive Reflection Test	−0.24 (0.05)**	−0.24 (0.05)**	0.06 (0.02)	[0.03, 0.10]
Purity Moral Foundation	0.42 (0.06)**	0.24 (0.06)**	0.10 (0.03)	[0.05, 0.17]
Loyalty Moral Foundation	0.26 (0.05)**	0.27 (0.07)**	0.07 (0.02)	[0.04, 0.13]
Disgust Sensitivity	0.18 (0.04)**	0.30 (0.07)**	0.05 (0.02)	[0.02, 0.10]
Total indirect effect			0.29 (0.05)	[0.20, 0.38]

Note. All models run using Model 4 in the PROCESS macro In SPSS with 10,000 bootstraps (Hayes, 2012). Predictors in all models were unstandardized. Coefficients presented are unstandardized beta weights and accompanying standard errors, along with 95% confidence intervals.
* p < .05. ** p < .001.

CI = [−0.03, 0.16].[13] Apparently, the moral values of highly intuitive people are similar to those of political conservatives (e.g., Graham, Haidt, & Nosek, 2009), with elevated levels of the "binding foundations." However, in this study, FI was unrelated to condemnation of various politically charged issues, such as abortion, homosexuality, and casual sex.

It seems that moral values regarding purity and loyalty explain why individual differences in intuition predict finding these actions morally wrong. Note, however, that finding that moral values predict condemnation of corresponding actions does not provide a complete understanding of what specifically causes condemnation of these actions, as one would expect moral values to strongly inform condemnation of actions in violation of these values. Mediational analyses thus continued to probe additional possible explanations for the link between FI and moral condemnation.

Addressing role of harm and moral foundations. Study 2 data allowed for a comparison of Moral Foundations Theory and dyadic morality regarding the condemnation of ambiguously harmful actions. Moral Foundations Theory posits these actions are condemned because they violate deeply held moral values (that are distinct from harm), whereas dyadic morality asserts that they are condemned because they are perceived as harmful. We propose

that both theories can help explain why people more prone to rely on intuition find ambiguously harmful actions morally wrong. To probe this possibility, we computed mediational models using the PROCESS macro in SPSS (Hayes, 2012; Model 6) with moral foundations and perceptions of harm entered as serial mediators for the association between FI and moral wrongness ratings.[14] These analyses examined the model shown in Figure 1: specifically that FI would lead to higher endorsement of moral foundations, which then predicts perceptions of harm, and subsequent moral wrongness ratings. Because serial models do not allow for mediators entered in parallel, we formed a composite moral foundations variable to be used in analyses, α = .83, with the means of purity, authority, and loyalty (as they were the most relevant domains for these scenarios), which were all strongly correlated, rs > .55, p < .001. Table 7 shows the results of

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[13] We also examined moral foundations in a multiple mediation model with no other predictors, and the results were consistent with the model reported here (see supplementary materials, Table 4). In addition, we also examined the possibility that FI would interact with the moral foundations of purity and loyalty in Studies 2 and 3 to predict ratings of moral wrongness of relevant scenarios: it did not, interaction βs < ±.10 ps > .07.

[14] We are thankful to anonymous reviewers for suggesting these serial mediation analyses as well as the multiple mediation analyses.

Table 6
Descriptive Statistics and Correlations Among Measures, Study 2

Measure	α	M (SD)	Faith in intuition	Moral wrongness	Partials- FI & MW	Harm	Disgust
Faith in Intuition	.95	4.45 (1.37)	—	.28**	—	.23**	.24**
Need for Cognition	.86	4.96 (1.11)	−.22**	−.23**	.24*	−.27**	−.19*
Positive Affect	.94	4.17 (1.29)	.36**	.27**	.20*	.21*	.21*
Negative Affect	.93	1.62 (.92)	.06	.06	.28**	.25**	−.04
Social Issues	.89	3.27 (1.15)	.11	.64**	.26**	.63**	.54**
Religiosity	.86	3.35 (1.79)	.14*	.40**	.25*	.46**	.37**
Moral foundations							
Harm	.77	5.29 (1.12)	.24**	.19**	.24**	.16*	.15*
Fairness	.70	5.28 (.98)	.08	.08	.28**	.07	.09
Loyalty	.77	3.77 (1.17)	.28**	.55**	.15*	.47**	.45**
Authority	.76	4.08 (1.15)	.25**	.57**	.16*	.47**	.50**
Purity	.86	3.69 (1.59)	.27**	.61**	.15*	.55**	.52**

Note. N = 218. Social issues coded such that higher values reflect more condemnation. Partial correlations are for the association between FI and moral wrongness ratings, controlling for each variable.
* p < .05. ** p ≤ .001.

the serial mediation model. As can be seen, the indirect effect of this serial mediation test was significant. These mediators fully accounted for the association between FI and moral wrongness. These results demonstrate that both approaches from moral psychology capture part of the process by which intuition leads to moral condemnation of ambiguously harmful actions.

Brief Discussion of Studies 1 and 2

As predicted, FI related to morally condemning unconventional actions that lack explicit harm. In contrast, FI was weakly (Study 1) or unrelated (Study 2) to condemning more conventional, unambiguously harmful actions (which were viewed as more immoral overall than the ambiguously harmful actions). Studies 1 and 2 ruled out numerous potential variables as accounting for the role of FI in moral judgment. Although many of the individual difference variables predicted moral judgment and were related to FI, they did not fully explain this association.

Thus far, the most plausible explanatory variables for the association between FI and moral wrongness are perceptions of harm and moral values (purity, loyalty), which were found to contribute both independently and jointly to predicting judgments. These findings accord well with both Moral Foundations Theory and dyadic morality. Study 2 results suggest that individuals who rely on intuition are likely to report themselves as caring about whether actions are disgusting or violate social bonds when they render moral judgments. The moral founda-

tions of purity and loyalty mediated the effect of FI on moral condemnation. Possible explanatory roles of purity and loyalty in the association between FI and moral judgment are not surprising. Finding that responses to items about maintaining purity (e.g., sexual mores, naturalness, chastity) and loyalty (i.e., maintaining social bonds) predict moral judgments about the same types of behaviors demonstrates that expected relationships between these judgments exist, but it does not provide sufficient insight about *why* they emerge. Importantly, our analyses suggest that these moral foundations relate to perceptions of harm, which then predict moral wrongness. These findings provide additional evidence, consistent with dyadic morality (Gray et al., 2014; Schein & Gray, 2015), that perceptions of harm are strongly related to moral condemnation, even in judgments of ambiguously harmful actions. Given these results, we tested whether perceptions of harm and moral foundations (loyalty and purity) would again function together to mediate the association between FI and moral wrongness ratings in Study 3.

Studies 1 and 2 suggest that intuitive individuals have a tendency to perceive more harm in ambiguously harmful actions than others do. Perhaps people with low FI more readily recognize the lack of clear harm and victims in these actions and thus temper their condemnation. Study 3 examined whether changing the content of the information considered in the face of ambiguously harmful actions could alter the association between FI and moral condemnation.

Table 7
Tests of Serial Mediation Predicting Moral Wrongness Ratings From Faith in Intuition Through Moral Foundations and Harm, Studies 2 and 3

Study	D.E. FI on Moral Wrongness	Total I.E.	I.E. FI → M.F. → Moral Wrongness	I.E. FI → M.F. → Harm → Moral Wrongness	I.E. FI → Harm → Moral Wrongness
Study 2	0.04 (0.04)	0.20 (0.05); [0.12, 0.30]	0.08 (0.02); [0.04, 0.14]	0.09 (0.03); [0.04, 0.14]	0.03 (0.03); [−0.02, 0.09]
Study 3	0.17 (0.05)**	0.29 (0.05); [0.20, 0.38]	0.16 (0.03); [0.11, 0.23]	0.07 (0.02); [0.04, 0.11]	0.06 (0.03); [0.007, 0.11]

Note. IE = Indirect Effect; DE = Direct Effect; M.F. = Moral Foundation. All models run using Model 6 in the PROCESS macro in SPSS with 10,000 bootstraps (Hayes, 2012). Predictors in all models were unstandardized. Coefficients presented are unstandardized beta weights and accompanying standard errors, along with 95% confidence intervals (additional path coefficients are shown in Table 5, supplementary materials). In Study 2, moral foundations consisted of an aggregate of purity, loyalty, and authority. In Study 3, it included purity and loyalty.
** p < .001.

Study 3

Study 3 employed an experimental manipulation that encouraged people to ponder morally relevant considerations about actions (i.e., harm, victims, moral principles violated) prior to (vs. after) making moral judgments. We predicted that condemnation would be lower when this judgment was rendered after reflecting on the issues of harm, victims, and principles violated. More important to our purposes, we examined whether the manipulation would affect the association between FI and moral condemnation of ambiguously harmful acts. If FI leads to higher condemnation because of a lack of attention to these issues, we would expect the condition who weighed moral considerations prior to judgments to show an attenuated relationship between FI and moral condemnation. However, there are some reasons why we may expect this association to persist despite the manipulation. If automatic reactions to these scenarios encompass perceptions of harm and victims (as expected by dyadic morality), then we should expect FI to be related to higher perceptions of harm and victims as well as subsequent moral judgment. People should only be inclined to temper condemnation if they first recognize that these actions do not involve severe harm or victims. In addition, because FI is linked to moral values that are relevant to ambiguously harmful actions (e.g., purity, loyalty), we may expect it to persist in its association with moral condemnation even after consideration of harm and victims. Actions that violate one's values are likely to continue to be perceived as wrong regardless of whether these actions are first considered in more depth.

In addition, to more thoroughly test the robustness of the positive association between FI and moral condemnation, Study 3 included three additional potential third variables, namely, political orientation, disgust sensitivity, and the CRT. In Study 2, FI was associated with moral foundations related to conservatism (purity, loyalty, authority; Graham et al., 2009), so it was critical to evaluate the possibility that the association between FI and condemnation was explained by conservatism. Likewise, FI was associated with condemning actions that elicit disgust, so disgust sensitivity, a known predictor of moral condemnation (e.g., Horberg, Oveis, Keltner, & Cohen, 2009), was included to ensure FI still was related to moral condemnation when controlling for it. Finally, Study 3 participants completed the CRT. We have argued that FI is distinguishable from the analytical capacities measured by the CRT. However, CRT performance is associated with less condemnation of ambiguously harmful scenarios (e.g., Pennycook et al., 2014) so it was important to rule out the possibility that the association between FI and moral condemnation was accounted for by the CRT.

Method

Participants and procedure. Mturk workers ($N = 320$; paid $0.50) participated in this study. Demographic information is provided in Table 1. Participants completed the REI (Pacini & Epstein, 1999) used in Studies 1 and 2, and then completed the moral judgment activity. Afterward, they completed personality measures and demographics, described below.[15] Descriptive statistics for all measures are shown in Table 8.

Materials.

Moral judgments. Participants rated the moral wrongness and specific features (i.e., harm, victims, principles violated) of six

ambiguously harmful scenarios in counterbalanced order ($n = 174$ moral wrongness then specific features; $n = 146$ specific features then moral wrongness). The scenarios appeared in randomized order. Moral wrongness and harm were rated on 1–7 scales, from 1 *not at all morally wrong/no harm at all* to 7 *extremely morally wrong/extreme harm*. Responses to questions about whether moral principles were violated or whether the scenarios involved victims involved either selecting "no" or selecting one of many "yes" options that were tailored to the specific scenario (see supplementary materials for full list). For example, for the scenario involving a woman cleaning with an old flag, the potential victims listed included the woman, veterans, one's country, society in general, and the flag itself. For the principles violated, the potential options included being loyal/showing respect for one's country, and being respectful to veterans. Participants were able to add additional victims/principles if their preferred answer was not listed.

Moral foundations. Participants completed the purity and loyalty subscales of the MFQ, which were included because they are most relevant to the scenarios used in this study.

Disgust sensitivity. Disgust sensitivity was measured with the Disgust Scale—Revised, which is an individual difference measure of the propensity to experience disgust (Olatunji et al., 2007). Subscales measure core, animal, and contamination disgust. First, participants rated their agreement with 14 items that describe various situations likely to elicit disgust (e.g., "It would bother me to hear someone clear a throat full of mucus"), ranging from 1 *strongly disagree* to 7 *strongly agree*. Then participants rated 13 items based on how disgusting the respondent found a particular behavior (e.g., "You are walking barefoot on concrete and step on an earthworm"), ranging from 1 *not at all disgusting* to 7 *extremely disgusting*. A total disgust sensitivity score was formed with the mean of all items.

Cognitive reflection task. The 3-item Cognitive Reflection Task measures people's ability to suppress an intuitively wrong answer in favor of a correct answer that requires more reflection (CRT, Frederick, 2005). These items were slightly modified from their original version due to previous pilot testing suggesting Mturk participants were already familiar with the wording (e.g., "A cheese and crackers snack costs $2.20 in total. The cheese costs $2.00 more than the crackers. How much do the crackers cost?" see supplementary materials for items). Scores were computed with the sum of correct responses (3 possible).

Political orientation. At the end of the study, participants reported their political orientation, ranging from 1 *very conservative* to 7 *very liberal*.

Results

As shown on Table 8, ratings of moral wrongness, harm, principles violated, and victims had high internal consistency. Composite moral wrongness and harm scales were formed with the mean of standardized scores for the six moral judgments. The victim and principle composite scores were calculated by computing the sum of times a victim was perceived, or a moral principle was violated overall, respectively. Thus, possible scores on these variables ranged from 0 (perceiving no victims/violated moral

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[15] Participants also completed additional measures, described in the supplementary materials.

Table 8

Descriptive Statistics and Correlations Among Measures, Study 3

Measure	FI	Pol	Educ	PURE	LOY	DIS	CRT	VP	PV	HP	MW
Faith in Intuition	.94										
Political Orientation	−.06	—									
Education	−.10	.13*	—								
Purity Moral Foundation	.36**	−.43**	−.13*	.87							
Loyalty Moral Foundation	.29**	−.36**	−.10	.66**	.79						
Total Disgust	.23**	−.09	−.16*	.47**	.34**	.89					
Cognitive Reflection Task	−.26**	.12*	.32**	−.32**	−.26**	−.40**	.67				
Moral scenario ratings											
Victim Perception	.19**	−.07	−.11	.33**	.31**	.21**	−.26**	.72			
Principles Violated	.27**	−.07	−.05	.41**	.39**	.32**	−.24**	.56**	.62		
Harmfulness	.26**	−.12*	−.15*	.42**	.43**	.36**	−.36**	.72**	.45**	.84	
Moral Wrongness	.40**	−.17*	−.22**	.60**	.55**	.50**	−.44**	.52**	.64**	.64**	.83
Partials: FI & Moral Wrongness	—	.40**	.39**	.25**	.31**	.34**	.34**	.36**	.32**	.31**	—
M (SD)	4.55 (1.30)	4.70 (1.65)	—	4.39 (1.52)	4.21 (1.17)	4.33 (.97)	1.34 (1.20)	3.03 (1.92)	4.57 (1.48)	2.69 (1.30)	4.07 (1.47)

Note. $N = 312$. Coefficients on the diagonal in italics are α reliabilities. Higher values of political orientation reflect more liberal attitudes; higher values of education reflect more education. Partial correlations are for the association between FI and moral wrongness, controlling for each variable. The victim and principle composite scores were calculated by computing the sum of times a victim was perceived, or a moral principle was violated overall, respectively (scores range from 0–6).

* $p < .05$. ** $p < .001$.

principles in any of the scenarios) to 6 (perceiving victims/violated moral principles in all scenarios).

The expected main effect of condition emerged: Instructions to consider harm, victims, and principles prior to moral judgments led to significantly lower moral wrongness, $M(SD) = 3.76(1.50)$, 95% CI = [3.53, 4.02] compared with making moral judgments first, $M(SD) = 4.35(1.40)$; 95% CI = [4.14, 4.56]; $t(309) = 3.56$, $p < .001$, $d = 0.41$. Additionally, those who completed moral judgments first perceived a higher number of moral principles violated, $M(SD) = 4.75(1.50)$, 95% CI = [4.54, 4.97], compared with the group that made the principle ratings prior to moral judgments, $M(SD) = 4.35(1.40)$, 95% CI = [4.09, 4.60]; $t(309) = 2.39$, $p = .017$, $d = 0.27$. The order manipulation did not have any effect on any other ratings, all ts < ±1.58, all ps > .12, for ratings of victims, harm, and principles violated.

Importantly, this manipulation did not moderate the association between FI and moral condemnation. When moral wrongness was regressed hierarchically on the main effects of condition (dummy coded: 0 = moral judgments second, 1 = moral judgment first) and FI (standardized), and their interaction, only main effects for condition ($\beta = .17$, $p = .001$; $b(SE) = 0.51(0.15)$, 95% CI = [0.21, 0.81] and FI, $\beta = .41$, $p < .001$; $b(SE) = 0.61(0.11)$, 95% CI = [0.38, 0.83]) emerged. The interaction was not significant, $\beta = −.03$, $p = .69$; $b(SE) = −0.06(0.15)$, 95% CI = [−0.36, 0.24]. FI significantly predicted wrongness, whether moral judgments were rendered before ($\beta = .39$) or after considering harm, victims, and principles ($\beta = .40$, ps < .001). Even after being pressed to consider the issues of harm, victims, and moral principles, individuals high in FI condemned ambiguously harmful actions. Of course, null results within null hypothesis significance testing are inherently ambiguous. Is the lack of interaction here possible evidence in favor of the null? The Bayes factor for the interaction step suggests it is. Bayesian analysis (Rouder & Morey, 2012) indicated the null to be 42.75 times more likely than the alternative of an interaction. A comparison of Bayes Factors for the information value of the models showed that the main effects

only regression model was preferred to the model with an interaction by a factor of approximately 8 (Morey, Rouder, & Jamil, 2015; Rouder, Morey, Speckman, & Province, 2012; Rouder & Morey, 2012).

Condition did not interact with purity, loyalty, political orientation, disgust sensitivity, or CRT scores to predict moral judgment, all interaction βs < ±.13, all ps > .13. Thus, both order conditions were collapsed for correlational analyses. As shown in Table 8, FI was significantly correlated with considering the actions morally wrong, finding them harmful, and perceiving more victims and principle violations. FI was related positively to disgust sensitivity and negatively to CRT performance. As can be seen in the partial correlations in Table 8, none of these variables eliminated the association between FI and moral condemnation. In addition, FI was unrelated to political orientation, ruling out the possibility that its link to moral condemnation was explained by conservatism.

Examining potential mechanisms. As in the first two studies, we tested whether a combination of additional variables included in Study 3 would explain the link between FI and moral wrongness. Table 5 shows that when the CRT, disgust sensitivity, and the purity/loyalty moral foundations were entered as simultaneous mediators (Hayes, 2012; Model 4), they all significantly mediated this association. Yet, even with these four mediators in the model, FI significantly predicted moral wrongness, $b(SE) = 0.17(0.05)$, $p = .0005$.

Mediation by moral foundations and harm. As in Study 2, we also examined moral foundations and perceptions of harm as serial mediators for the association between FI and moral wrongness ratings (model shown in Figure 1), using the PROCESS macro in SPSS (Hayes, 2012; Model 6). We formed a composite moral foundations variable, $\alpha = .78$, with the means of purity and loyalty, $r = .66$, $p < .001$ (the most relevant domains for these scenarios) to be used in analyses. As shown in Table 7 (and consistent with Study 2), the serial mediation model received support. However, in contrast to Study 2, FI remained a significant

predictor of moral wrongness in this model, $b(SE) = 0.17(0.05)$, $p = .0002$ for direct effect of FI on moral wrongness. Thus, in this study, the association between FI and moral wrongness persisted even when controlling for moral values and harm perceptions, though these clearly helped explain the effect.

Brief Discussion

Study 3 demonstrated that encouraging people to consider whether actions involve victims and harm reduced subsequent perceptions of their immorality. However, this manipulation did not alter the association between FI and moral judgment: FI was related to finding these actions morally wrong even if consideration was first given to the harm, victims, and violated moral principles involved in these actions. In addition, Study 3 demonstrated that although FI is positively related to disgust sensitivity and negatively related to the CRT, neither of these individual differences explains the association between FI and moral condemnation. The results of Study 3 did provide additional evidence that moral foundations (purity and loyalty) and perceptions of harm partially mediated the effect of FI on moral condemnation. Although purity and loyalty fully mediated the association between FI and moral condemnation in Study 2, they did not explain the association as strongly here, which may be due to the fact that FI shared a stronger zero-order correlation with moral wrongness in Study 3 ($r = .40$) than in Study 2 ($r = .28$).

Why may FI be related to harsher moral judgments of these evocative though ambiguously harmful actions? It may be that people less prone to rely on intuition have a stronger tendency to think critically about their moral judgments prior to making them, whereas the highly intuitive are more inclined to rely on their first reaction and not employ any further reasoning. If people are prompted to think more deliberatively about why these actions are morally wrong as well as their own emotional reaction to them, then the association between FI and moral judgment may be reduced (or eliminated). Study 4 examined whether the association between FI and moral judgment would be reduced by a manipulation designed to induce deliberation.

Study 4

In Study 4, participants were randomly assigned to deliberate on moral judgments prior to making them or to a control condition. Consistent with past research (e.g., Paxton et al., 2012), we predicted a main effect for condition, such that more deliberation would decrease moral condemnation overall compared to the control condition. As in Study 3, we were most interested in testing whether this manipulation would moderate the association between FI and moral condemnation. After pondering more thoughtfully, it may be that the absence of explicit harm will be recognized, attenuating the link between FI and moral judgments. If FI is associated with condemnation because it captures the extent to which individuals naturally deliberate about a judgment, we might expect FI to be irrelevant (or less relevant) to judgments after the manipulation encouraging deliberation. Alternatively, it may be that, as proposed by dyadic morality, morally relevant information (i.e., victims, harm) is perceived automatically (e.g., Gray et al., 2014). Indeed, as demonstrated in Study 3, FI was positively associated with perceptions of harmfulness and victims involved in

the ambiguously harmful actions. Deliberating may not influence the association between FI and moral condemnation because it may simply lead people with high FI to further reflect on the harm and moral wrongness they have already perceived in these actions. That is, once victims and harm are ascertained, that information might suffice for moral judgment, and deliberation will not minimize the perceived harm or moral wrongness of these actions. Note as well that these perceptions of victims and harm may emerge from nonrational sources but nevertheless feel self-evidently valid for those who are high in reliance on intuition.

Method

Participants and procedure. Mturk workers ($N = 236$; paid $0.75) participated in this study. Demographic information is provided in Table 1. Following the completion of demographic information and personality questionnaires, participants were assigned randomly to either the control condition or a deliberation condition.

Materials.

Demographics and personality questionnaires. Participants rated their political leaning (from 1 *very conservative* to 7 *very liberal*), $M(SD) = 4.68(1.58)$, and educational attainment at the beginning of the study. These variables did not account for the association between FI and condemnation and are not discussed further (refer to the supplementary materials, Table 7). Participants then completed the 7-item FI subscale of REI ($\alpha = .91$, $M(SD) = 4.52 (1.21)$; Pacini & Epstein, 1999) used in Studies 1 through 3.

Manipulation. Following additional mood and personality questionnaires,[16] participants were assigned randomly to either the control condition ($n = 111$) or the deliberation condition ($n = 125$). Control participants made their judgments and then were later asked to explain their reasons for these judgments. In the deliberation condition, participants were required to explain the reasons for their judgments during the process of making the judgments. The questions participants answered pertained to their emotional reaction to the scenario, whether the action violated any rules/principles, whether anyone was harmed by the action, and what particular overall reasons and considerations they had about why they considered the action wrong (or not wrong). Afterward, participants were asked to rate how morally wrong they considered the scenario. The control group answered all of these questions, but did so following all of their judgments.

Moral judgments. Participants read 4 morally relevant scenarios (see the Appendix) presented in randomized order (adapted from Haidt et al., 1993; Schnall et al., 2008; Helzer & Pizarro, 2011) and then rated each based on whether they considered it morally wrong, ranging from 7 *extremely morally wrong* to 1 *not at all morally wrong*. A composite moral condemnation scale was formed with the mean of standardized scores for the four moral judgment ratings ($\alpha = .78$).

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[16] We also included the purity subscale of the MFQ (Graham et al., 2009) in this study to evaluate whether it explained the association between FI and moral condemnation, as it did in Studies 2 and 3. Purity partially mediated the association between FI and moral wrongness ratings of the 3 purity-relevant scenarios (see the Appendix; see Table 10, supplementary materials). This study also included additional exploratory measures (see supplementary materials).

Results

As expected (and consistent with previous research, Feinberg et al., 2012), the deliberation condition condemned the scenarios significantly less than the control group, $t(231) = 2.04$, $p = .043$, $d = 0.27$; $M(SD) = 3.36(1.69)$; 95% CI = [3.03, 3.68] for deliberation condition; $M(SD) = 3.82(1.73)$; 95% CI = [3.50, 4.13] for control condition.

As in Study 3, the manipulation did not moderate the association between FI and moral wrongness. When moral judgment was regressed hierarchically on the main effects of condition (dummy coded: 0 = control, 1 = deliberation) and FI (standardized), and their interaction, main effects for condition, $\beta = -.16$, $p = .012$; $b(SE) = -0.54(0.21)$, 95% CI = $[-0.97, -0.12]$ and FI, $\beta = .25$, $p = .003$; $b(SE) = 0.43(0.14)$, 95% CI = [0.15, 0.72] emerged. The interaction was not significant, $\beta = .08$, $p = .32$; $b(SE) = 0.21(0.22)$, 95% CI = $[-0.22, 0.63]$. FI significantly predicted moral condemnation in both the control, $\beta = .26$, and deliberation conditions, $\beta = .37$, both $ps < .001$. Even after deliberating on these scenarios, intuitive individuals were more condemning of them. The Bayes factor for the interaction step (Rouder & Morey, 2012) indicates the null to be 20.83 times more likely than the alternative of an interaction. A comparison of Bayes Factors showed that the main effects only regression model was preferred to the model with an interaction by a factor of approximately 3.6 (Morey et al., 2015; Rouder et al., 2012; Rouder & Morey, 2012).

Brief Discussion and Content Analysis of Written Responses

The association between FI and moral judgment was not affected by instructions to deliberate on the judgment. What is it about relying on intuition that makes people condemn these ambiguously harmful actions so strongly? The results of Studies 3 and 4 demonstrated that the relation between FI and moral condemnation was not altered by considering the harmfulness or victims involved in the actions, or deliberating about these considerations. Dyadic morality posits that the existence of harm and victims in aberrant, evocative actions occurs implicitly and automatically (e.g., Gray et al., 2014). As such, it may be that those high in FI settle on these immediate reactions, which then guide moral judgments. In contrast, those low in FI may have these same immediate responses but override them upon reflection.

The essays written by participants in the deliberation condition provided a rich source of information about why FI may have continued to predict condemnation despite the deliberation writing manipulation. Perhaps, participants with high FI used the writing exercise merely to support their initial condemnation of the actions rather than reflect on the actions more analytically. To address this possibility, the essays written within the deliberation condition were content analyzed by two research assistants (see supplementary materials for additional information). We were particularly interested in whether FI predicted essay responses indicating that the actions violated moral rules or principles (coded as 0 = the participant wrote the action *does not* violate any moral rules/ principles; 1 = the participant wrote the action *does* violate them) or involved harm to anyone (coded as 0 = the participant wrote the action *did not* harm anyone/anything; 1 = participant wrote the action *did* harm someone/something). We also wanted to examine

whether writing that these actions violated moral principles or were harmful was related to subsequent moral condemnation (rated after these essays), and whether these content categories explained the link between FI and moral condemnation.

Reliability across the raters was good, interrater $r = .93$ for moral principles violation and $r = .88$ for harm (averaging across all scenarios, both $ps < .001$). We averaged the two raters' ratings for each scenario, and then summed across scenario ratings to form aggregates; for moral principle violations, $M(SD) = 2.01(1.33)$; for harm perceptions, $M(SD) = 1.13(1.07)$. These means indicate that on average, of the 4 scenarios rated, 2 were viewed as violating moral principles and approximately 1 was viewed as involving harm. The subsequent analyses assessed how these content categories related to FI and moral wrongness ratings within the deliberation condition.

FI was related to writing that the actions in the scenarios violated moral rules and principles, $r = .30$, $p = .001$ and was marginally related to writing that they involved harm, $r = .16$, $p = .09$. Writing that the scenarios violated moral principles was correlated with writing that they were harmful, $r = .55$, $p < .001$. We next examined whether these content categories related to participants' moral judgments of the scenarios. Moral judgment ratings were associated with writing that the actions violated moral rules/ principles, $r = .83$, and with writing that the actions were harmful, $r = .52$, both p's $< .001$. We next regressed participants' moral wrongness ratings on these content dimensions and FI. Controlling for perceptions of moral principle violations, $\beta = .75$, $p < .001$, and harm, $\beta = .08$, $p = .19$, in the essays, FI significantly predicted moral wrongness, $\beta = .13$, $p = .02$ (vs. $\beta = .37$, $p < .001$, when not controlling for them).

Overall, this study showed that deliberating about relevant dimensions of moral judgment (i.e., the violation of moral principles and the presence or absence of harm) tempered moral condemnation of these ambiguously harmful scenarios, as deliberation encourages people to think more concretely and analytically about their reasons for condemning these actions. However, the results of this content analysis demonstrate that rather than think more analytically about these scenarios during the writing exercises, people with high FI were more inclined to write about how these actions violated moral principles and were harmful, seeking to confirm their initial perceptions. The very strong association between writing that there is a moral principle violation and eventual judgments of moral wrongness highlights the potential role of moral values in these judgments.

An important remaining question is whether most people automatically perceive these scenarios as morally wrong. If so, we would expect those low in FI to be more likely to condemn these actions while under time pressure, a possibility tested in Study 5.

Study 5

Previous research has shown that people automatically perceive harm and victims in ambiguously harmful actions, which leads them to view these actions as immoral (Gray et al., 2014; Schein et al., 2016). In addition, research has demonstrated that people's immediate responses to these types of actions tends to be harsh and that reasoning and time can lower the severity of moral judgments (e.g., Paxton et al., 2012). These manipulations of rapid decision times have been used as a proxy for intuitive judgment, as people

do not have the time to deliberate when rapidly making judgments. The results of Studies 3 and 4 are consistent with the idea from dyadic morality that morally relevant information about an action is perceived automatically. For those who rely on intuition, further reflection about the potential harmfulness or victims involved in these actions does not change their judgments.

The results thus far do not illuminate the process by which people low in reliance on intuition arrive at their less condemning judgments. It is possible that these individuals automatically perceive these ambiguous actions as wrong and then override their initial impulses, but this initial perception has not been directly probed. To address this possibility, in Study 5 participants were asked to judge moral scenarios rapidly (they later rated the same scenarios without time pressure). If the relationship between FI and moral condemnation in Studies 1 through 4 was attributable to those low in FI reasoning away an initial reaction about the actions, then we would expect FI to be unrelated to judgments in rapid ratings. Instead, this time pressure manipulation should produce higher condemnation across levels of FI. However, it is also possible that individual differences in FI may predict judgments of these scenarios even when they are made quickly, which would suggest that people with low FI are not overriding an initial response to these scenarios. Instead, they may simply find them to be less morally wrong. Because FI is associated with moral values relevant to ambiguously harmful actions (i.e., purity, loyalty, authority, as demonstrated in Studies 2 and 3), it is possible that even in rapid judgments, those low in FI would be less likely to condemn. Study 5 also tested the relationship between FI and moral condemnation in a new population: young adults in a university setting.

Method

Participants and procedure. Two hundred and four university students participated in this laboratory study. Demographic information is provided in Table 1. First, participants completed the REI. Then, they began the rapid moral judgment task, which was programmed in DirectRT. Following this task, participants were asked to rate these scenarios again without time pressure. At the end of the study, participants reported their demographic information.

Instructions and practice trials. Prior to the rapid judgment task, participants were instructed that they would be making ratings according to their own judgment and that there were no right or wrong answers. Each category (morally wrong, harmful, victim) was briefly described to them. They were instructed to quickly select an answer for each scenario using the E or I keys and that the rating labels would be appearing in a randomized order on either the top left or right of the screen so it was important to pay attention to the labels prior to making a judgment. Participants received a reminder of these instructions prior to each rating block.

Prior to beginning the moral judgment task, participants were given a practice trial that presented them with the scenarios they would be judging. For practice, they were asked to report the gender of the actor in the scenario. In this task, the labels (woman/man) also switched sides of the screen. If they answered incorrectly they were given a warning. This practice trial also served to familiarize participants with the scenarios to facilitate ease of reading on the subsequent critical blocks.

Rapid moral judgments. Participants rated 12 scenarios in randomized order according to whether they were immoral, harmful, or involved victims, as rapidly as possible. Four scenarios for each of the following three categories were presented: unambiguously harmful, ambiguously harmful, and control. Unambiguously harmful scenarios pertained to everyday violations that are widely regarded as morally wrong (e.g., falsifying a resume, not giving up a bus seat when an elderly, disabled person needs it; see the Appendix). Ambiguously harmful scenarios were taken from Studies 1 through 4 (e.g., cleaning with an old flag, sex in grandparent's bed). Both of these categories were intended to represent relatively minor transgressions that were not too evocative so that strong emotions would not interfere with subsequent judgments. Control scenarios pertained to everyday activities (e.g., eating lunch in a park; watching TV). The structure of this task was loosely adapted from past research on rapid moral judgments (Study 4, Schein & Gray, 2015; Study 3, Gray et al., 2014).

All 12 scenarios were rated according to three binary categories: immoral/not immoral, victim/no victim, harmful/not harmful. These ratings were administered in blocks (e.g., immoral ratings, victim ratings, harm ratings), which were presented in counterbalanced order, such that one group of participants ($n = 91$) completed the immoral/not immoral ratings prior to victim and harm ratings and the other group ($n = 113$) completed immorality ratings following victim and harm ratings.

Prior to each judgment, a scenario was presented on the screen for five seconds. Then, the page automatically progressed to the rating screen. The questions were listed in the middle of the page (e.g., "Do you think the action described in the scenario you just read is immoral or not immoral/involves a victim or does not involve a victim/is harmful or not harmful"). The labels for each category (e.g., immoral/not immoral, harmful/not harmful) varied from the left and right side of the top of the screen so that participants did not automatically prepare their response prior to reaching the screen.

Perceiving the scenario as being immoral, involving harm, or involving a victim was coded as 1; perceiving them as not immoral, harmful, or involving victims was coded as 0. The scores for immorality, victims, and harm were calculated by summing the total perceptions across the four scenarios, scores for each ranged from 0 to 4.

Deliberative moral judgments. Participants were presented with the same ambiguously/unambiguously harmful scenarios used in the rapid rating task and were asked to judge whether they were morally wrong, ranging from 1 *not at all morally wrong* to 7 *extremely morally wrong*. Prior to the ratings they were told they had seen the scenarios before and they "can make the same judgment as you did before or make a new judgment about these scenarios." They were instructed that could take as much time as they wanted to make the judgments. Because of an oversight, timing was not recorded for this section.

Demographics. Participants then reported their religiosity and political ideology, as well as whether English was their first language. Political ideology did not account for the association between FI and condemnation and is not discussed further (see supplementary materials).

Results

Preliminary data analyses. Responses that were less than 300 milliseconds or greater than 3 standard deviations (SD = 992.34 milliseconds) above the mean (1111.47 milliseconds) were removed from analyses (2.1% of total responses). Participants for whom English was not a first language were excluded from analyses (n = 11), as these measures required extremely quick judgments. In addition, participants who responded incorrectly to 25% or more of control trials (n = 8) were excluded (final N = 185) from analyses, as this reflected perceiving harm, victims, and immorality in innocuous scenarios (e.g., eating at a park; staying home to watch movies). Control scenarios were not used in any further analyses.

Order affected moral evaluations of the unambiguously harmful scenarios but not the ambiguously harmful ones. The condition that rated immorality last condemned significantly more of the unambiguously harmful scenarios than the condition who made immorality judgments first, $t(182)$ = −4.62, p < .001, d = −0.68; $M(SD)$ = 3.70(0.57), 95% CI = [3.58, 3.81], for immorality ratings last; $M(SD)$ = 3.14(1.00), 95% CI = [2.92, 3.34] and for immorality first. In addition, the condition that rated immorality first perceived significantly more victims in the unambiguously harmful scenarios than the condition who made immorality judgments last, $t(182)$ = 2.01, p = .046, d = 0.30; $M(SD)$ = 3.11(0.81), 95% CI = [2.94, 3.27], for immorality ratings first; $M(SD)$ = 2.86(0.94), 95% CI = [2.66, 3.04] and for immorality last. In contrast to the results of Study 3, there were no effects of order on ratings of the ambiguously scenarios, t's < ±1.05, ps > .30. The order manipulation did not interact with FI to predict any of the rapid or deliberative judgments of the unambiguously or ambiguously harmful transgressions; all interaction βs < ±.09, all ps > .35. Thus, both orders were collapsed for subsequent analyses.

Means for rapid and deliberative judgments are shown at the bottom of Table 9. Note that because the rapid judgments and deliberative judgments were completed on different scales they cannot be directly compared. However, within each type of rating,

some differences occurred. Rapid ratings of the ambiguously harmful scenarios had significantly lower ratings of immorality, harm, and victims than the rapid ratings of the unambiguously harmful scenarios, all paired ts (184) > 2.26, ps < .025, ds > 0.21. Deliberative ratings of unambiguously harmful and ambiguously harmful scenarios did not differ from each other, paired $t(184)$ = 1.34, p = .18, d = 0.10.

Primary analyses. As shown in Table 9, the relationship between FI and moral judgments of ambiguously harmful scenarios was essentially identical (both rs = .29, ps< .001), whether those judgments were rendered rapidly or with more time. In the rapid ratings, FI was significantly positively correlated with perceiving the ambiguously harmful actions as immoral and to perceiving victims in these transgressions. FI was also positively correlated with deliberative ratings to both the unambiguously and ambiguously harmful transgressions.

The deliberative ratings of both unambiguously and ambiguously harmful scenarios were strongly related to the corresponding rapid judgments of actions from the same category. Ratings of the unambiguously and ambiguously harmful acts were more strongly related in the deliberative ratings, r = .47, than in the rapid ratings, r = .21.

As shown on the bottom of Table 9, controlling for each of the variables measured here did not fully explain the relation between FI and rapid immorality ratings of the ambiguously harmful actions. Interestingly, even controlling for ratings of the exact same scenarios made when time was unrestricted did not fully account for the association that emerged in the rapid ratings.

Because of the low scale reliabilities of rapid moral ratings, we also analyzed the association between FI and ratings on an item-level. As shown in Table 10, FI selectively related to condemning the ambiguously harmful scenarios. These results conform to the patterns discussed above.

Unambiguously harmful versus ambiguously harmful ratings. Next, as in Study 1, we examined whether the distinction between unambiguously and ambiguously harmful scenarios

Table 9
Descriptive Statistics and Correlations Among Measures, Study 5

Measure	FI	Rel	I-AH	H-AH	V-AH	I-UH	H-UH	V-UH	Del-AH	Del-UH
Faith Intuition	.82									
Religiosity	.17*	.91								
Immorality-AH	.29**	.15*	.38							
Harm-AH	.11	.24*	.26**	.62						
Victim-AH	.16*	.23*	.32**	.46**	.50					
Immorality-UH	−.09	−.10	.21*	−.11	−.06	.46				
Harm-UH	−.05	.10	.03	.28**	.05	−.14†	.33			
Victim-UH	−.14†	.10	−.03	.03	.24*	.10	.29**	.24		
Deliberative Ratings-AH	.29**	.33**	.56**	.48**	.41**	−.01	.01	−.10	.65	
Deliberative Ratings -UH	.18*	.27**	.24*	.17*	.18*	.28**	.27**	.16*	.47**	.55
Partials: FI and Immorality										
AH scenarios	—	.27**	—	.27**	.25*	.31**	.29**	.29**	.16*	.26**
M (SD)	4.99 (.87)	3.90 (1.58)	3.23 (.91)	2.07 (1.33)	2.14 (1.20)	3.42 (.86)	3.28 (.90)	2.99 (.89)	5.29 (1.15)	5.40 (.83)

Note. N = 184. AH = Ambiguously harmful scenarios; UH = Unambiguously harmful scenarios. Coefficients on the diagonal in italics are α reliabilities. Immorality, harm, and victim variables were the sum of binary responses (0 = no perception of these categories; 1 = immorality/harmful/or involving victim). Deliberative immoral ratings scale ranged from 1–7; higher values indicate more condemnation. Partial correlations are for the association between FI and rapid immorality ratings of the ambiguously harmful scenarios, controlling for each variable. Rapid ratings of the ambiguously harmful scenarios had significantly lower ratings of immorality, harm, and victims than the rapid ratings of the unambiguously harmful scenarios, paired t's (184) < 2.26, ps < .025, ds > .21. Deliberative ratings of ambiguously and unambiguously harmful scenarios did not differ, paired $t(184)$ = 1.34, p = .18, d = .10.
† p < .10.   * p < .05.   ** p < .001.

Table 10
Correlations Between FI and Scenario-Level Ratings, Study 5

	Rapid ratings			
Scenario	Immorality	Harm	Victim	Deliberative rating
Unambiguously harmful				
Making fun of strangers clothes	−.13[†]	.03	−.08	.12[†]
Not giving up bus seat	.02	−.02	−.02	.22[**]
Lying on Resume	−.09	−.05	−.09	.04
Lying on Taxes	−.00	−.04	−.10	.10
Ambiguously harmful				
Cleaning with flag	.24[**]	.11	.09	.23[**]
Sex in grandparents bed	.12[†]	.02	.03	.14[†]
Throwing pet dog in trash	.22[**]	.12[†]	.14[†]	.21[**]
Breaking promise to dying mother	.17[*]	.08	.16[*]	.21[**]

Note. $N = 184$. Rapid ratings were coded, 0 = not immoral/not harmful/no victim; 1 = immoral/harmful/involves victim. Scale for deliberative ratings ranged from 1 to 7, with higher values reflecting more condemnation.
[†] $p < .10$.   [*] $p < .05$.   [**] $p < .01$.

depended on FI. First, looking only at the rapid judgments, moral wrongness ratings for each type of scenario were submitted to a repeated measures General Linear Model with type of scenario (unambiguously vs. ambiguously harmful) as a within-participant factor and FI as a covariate. Results showed a significant scenario Type × FI interaction, $F(1, 182) = 18.21$, $p < .001$ partial $\eta^2 = .091$. Figure 2: Panel B shows the raw data for moral wrongness ratings for each type of scenario over the levels of FI. As can be seen, people with low FI perceived ambiguously harmful scenarios as less immoral than unambiguously harmful scenarios, but at high levels of FI both types of scenarios were condemned at similar levels. The similarity between these data and those from Study 1 suggest that whether judgments are rendered with no time constraints (as in Study 1) or under time pressure (Study 5), those low in FI distinguish between unambiguously harmful actions and ambiguously harmful ones. These patterns suggest that for some people even immediate reactions to ambiguous scenarios do not involve strong perceptions of immorality. The same analysis for the deliberative judgments of moral wrongness in Study 5 produced similar results. For the interaction of FI and type of scenario, $F(1, 183) = 5.44$, $p = .021$, partial $\eta^2 = .03$.

Brief Discussion

Study 5 demonstrated that, even when people are making extremely quick judgments, individual differences in FI predict harsher moral condemnation of ambiguously harmful actions. Importantly, these results also showed that FI did not relate to rapid judgments of unambiguously harmful transgressions. These results dovetail with the findings from Study 2, showing that FI does not predict ratings to more quotidian and patently harmful violations. Interestingly, these results suggest that people with a lower propensity to trust their intuition are less inclined toward condemning ambiguously harmful actions even during rapid judgments: Some people can apparently quickly judge that these unconventional actions are not immoral, casting doubt on the notion that reasoning is necessary to override initial judgments that unconventional actions are morally wrong.

General Discussion

Despite the crucial role afforded to intuitive information processing in contemporary moral psychology, few studies have investigated the role of individual differences in reliance on intuition in moral judgments. Five studies demonstrated that people more prone to rely on their intuition are especially likely to condemn moral transgressions involving ambiguous harm and victims. Those who report themselves as unlikely to rely on intuition are less inclined to condemn these morally ambiguous actions, whether the judgments are made more deliberatively (Studies 1 through 4) or quickly (as in Study 5). Taken together, the results from the present studies demonstrate that there is substantial variability in judgments of evocative, unconventional moral scenarios. This variability is consistently explained by systematic differences among people in their preference for reliance on intuition. Previous theorizing has often depicted condemnation of these weird but ambiguously harmful moral scenarios as common (Haidt, 2001). Rather than being perceived as inherently immoral by most people, condemnation of these scenarios is instead predicted by individual differences in FI as well as other variables measured in Studies 1 through 3 (e.g., religiosity, political orientation, disgust sensitivity).

Why Is FI Associated With Condemnation?

The present studies ruled out the role of numerous emotion, cognitive, ideological, and demographic variables in explaining the association between FI and moral condemnation. Importantly, though FI was associated with several emotion variables (disgust sensitivity, mood) as well as the Cognitive Reflection Task, these variables did not explain the association between FI and moral judgment. Across studies, the association between FI and moral condemnation was most consistently explained through moral values (moral foundations of loyalty and purity) and perceptions of harmfulness. In Studies 2 through 4, the moral foundations of purity and loyalty helped explain the association between FI and moral condemnation. FI helps to inform the moral values people hold, which impels people to condemn actions that violate these values. Although these results provide evidence for the role of moral values in shaping moral condemnation,

they do not illuminate precisely *why* individual differences in intuition would predict these types of values or condemnation of actions that conflict with these values.

What causes those with high FI to value purity and loyalty and to condemn actions that violate these values? One key explanation linking FI to moral condemnation (and perhaps moral values more generally) is perceptions of harm. Across Studies 1–3, FI predicted perceiving ambiguously harmful actions as harmful, which partially accounted for ratings of the moral wrongness of these actions. Perceptions of harm also helped explain the link between FI, moral values, and moral condemnation. In Studies 2 and 3, the association between FI and moral wrongness was mediated (fully and partially, respectively) by the moral foundations of purity and loyalty as well as perceptions of harmfulness. Thus, moral values and perceptions of harm work in tandem to predict higher condemnation as a function of FI.

In keeping with dyadic morality, these results highlight the importance of harm in moral judgments (e.g., Schein & Gray, 2015; Schein et al., 2016). Indeed, the relationship between harm ratings and moral judgments is so strong as to be considered nearly identical. This close association suggests that harm is a central concern in naïve theories of morality. It is important to consider that the types of ambiguously harmful scenarios used in the present studies—and in much research in moral psychology—may underestimate the degree of overlap between harm and moral condemnation in less unusual circumstances.

The present studies indicate that the process by which individuals judge the morality of actions requires attention to individual differences in reliance on intuition, moral values, and perceptions of harm. Moral Foundations Theory provides a rich explanation for the kinds of values that feed into moral judgment, and the theory rightly anticipates the idiosyncratic and variegated moral landscape. However, previous research has neglected to explain *why* people hold particular moral values (beyond political ideology; e.g., Graham et al., 2009). Given the very strong association between harm and moral condemnation, it seems that understanding why some people come to view actions as harmful will help to illuminate important individual differences underlying moral cognition. Dyadic morality offers a comprehensive framework for understanding the cognitive processes that drive moral judgment. The present data suggest that each of these theories warrants a place in the conversation about intuitive moral judgments.

Interestingly, although moral values and harm perceptions helped explain the association between FI and moral condemnation, even when controlling for them, FI emerged as a significant predictor in Study 3. Likewise, FI significantly predicted moral condemnation in Studies 1–3 when controlling for harm. This suggests that FI's role in producing condemnation is more complex than simply holding certain moral values or viewing these actions as harmful. Perhaps those prone to reliance on intuition may feel that some unconventional actions are wrong even if they do not explicitly recognize these actions as harmful or view them as conflicting with moral values. Indeed, nonconscious impulses about the inherent immorality of an action may be challenging to override even when more rational considerations are brought to bear, as in Studies 3 and 4. In addition, it is possible that the differences in the explanatory role of moral foundations and harm across studies can be accounted for by scenario-specific responses.

The present studies suggest that individual differences in intuition are especially relevant to predicting attitudes about certain types of actions. A key feature of the ambiguously harmful actions condemned by those with high FI was a breach of social norms or conventions. Condemning unconventional yet ambiguously harmful actions is not surprising: Throughout the entirety of human history, it has been critical for humans to monitor the social behavior of others and to avoid or punish those who do not comport with social norms and conventions (e.g., Baumard, André, & Sperber, 2013). Consequently, people are acutely tuned to information that suggests a person may be unstable or untrustworthy (e.g., Baumard et al., 2013). Generally, the actions that evoke a sense of being morally wrong without actually involving harm relate to motivations that are deeply primitive, such as valuing social bonds and avoiding pathogens. Intuitive processing also has a long evolutionary history and is used by both humans and nonhuman animals (e.g., Epstein, 1994). Because it is characterized by holistic and associationistic thinking, intuitive processing may lead people to blur the lines between actions that simply violate social conventions and those that actually involve harm because both actions may reflect evolutionarily important and longstanding sociomoral concerns.

Often, people's moral condemnation of transgressions that lack clear harm or victims has been construed as irrational and difficult to alter (e.g., Haidt, 2001). The results from the present studies provide further support that these ambiguously harmful acts are condemned because they are viewed as harmful (e.g., Gray et al., 2012; Gray et al., 2014). In support of this notion, manipulations designed to raise awareness of the lack of potential harm in these scenarios tempered condemnation. People condemned ambiguously harmful actions less after reasoning about their potential harm and victims, as well as their own emotional reactions to them (Study 4). In addition, in Study 3, a subtle order manipulation caused people who reasoned about specific features of actions (i.e., harm, victims, and moral principles violated) prior to rating their moral wrongness to subsequently view them as less morally wrong compared to people who judged how morally wrong they were first. These results show that rather than being "morally dumbfounded" (Haidt, 2001), people have the ability to arrive at judgments that are more focused on potential harm and victims versus their initial emotionally charged reactions. However, notably, the relationship between FI and moral condemnation was not altered by these manipulations: For people who strongly rely on intuition, condemnation persists even after consideration of harm/potential victims. It appears that the intuitive impulse that these scenarios are morally wrong is harder to alter among those who strongly rely on their intuitive instincts, which we consider next.

The Persistence of the FI–Condemnation Association

The persistent link between FI and moral condemnation across manipulations (Studies 3 through 5) warrants consideration. If high FI individuals' harsh condemnation is attributable to reliance on intuitive processing, then it may be expected that manipulations that encourage rapid responding or extensive deliberation would attenuate the role of individual differences in FI in moral judgment. Within null hypothesis significance testing, null results are essentially uninformative (if the null is true, all *p* values are equally likely). Bayes factors help to address whether observed null results provide evidence against a theory or whether null results are attrib-

utable to data insensitivity and thus have no informational value (Dienes, 2014). The Bayesian analyses presented suggest that the absence of interactions in these studies do reflect evidence for the null. Next, based on the assumption that these null findings are informative, we consider some reasons and implications for the pattern of observed results in Studies 3 through 5.

First, for Study 3, simply drawing attention to the issues of victims, harm, and violated principles did not affect the link between moral judgments and FI. In this study, FI was related to perceiving these actions as harmful, involving victims, and violating moral principles, providing a clue as to why considering these prior to judgment did not decrease condemnation among those with high FI. These subtle considerations are only likely to temper condemnation if people can first recognize the lack of harm or victims involved in the actions being judged. Also, as highlighted earlier, FI is related to attending to irrelevant information in judgments (Kaufman, 2009), so it is also possible that FI was related to using extraneous information beyond the moral considerations that were rated in overall assessments of how morally wrong the actions were.

Similarly, Study 4 showed that a deliberation manipulation did not alter the association between FI and moral judgments. There are a number of reasons why this might be the case. People often use deliberation to justify their initial decisions (i.e., confirmation bias; Nickerson, 1998; Mercier & Sperber, 2011) and do so even in instances when these immediate decisions are objectively wrong (Scherer et al., 2015). Research on problem solving has shown that extensive thinking may not produce better judgment because people may think at length but not in a manner that leads them toward a different (or more accurate) decision (e.g., Thompson et al., 2013). The content analysis of the written responses to the deliberation manipulation questions demonstrated that FI was associated with writing that the actions violated moral principles (and was marginally associated with writing that the actions were harmful), helping to explain why the manipulation was less effective in tempering condemnation among those with high FI. Because decisions reached through intuition often feel correct (e.g., Volz & Von Cramon, 2006), people with high FI may find it futile to engage in any further deliberation about *why* an action is morally wrong once they reach an initial judgment that it simply *is* wrong. This feeling of rightness (e.g., Hicks, Cicero, Trent, Burton, & King, 2010) that intuitive judgments can spark can lead to errors in decision making, as people may favor an intuitive decision that feels correct, rather than engaging in more effortful processing that would lead to a more accurate decision (e.g., Denes-Raj & Epstein, 1994).

In Study 5, even when making decisions rapidly, FI predicted moral wrongness ratings of ambiguously harmful actions. Intuitive decisions are often thought to be reached faster than those reached through deliberation, though timing is only a rough proxy for information processing strategies. Finding that an individual difference in reliance on intuition predicts the content of moral judgments (i.e., values) suggests that this individual difference is more than simply thinking fast or slow. People's moral values may inform even rapid judgments of immorality, providing a potential explanation about why individual differences in intuition still predicted rapid moral condemnation. Another possibility for why FI remained related to moral judgments even in these rapid ratings is that the scenarios employed in Study 5 were less disgusting and severe than those utilized in past research examining rapid ratings (Gray et al., 2014). Individual differences in reliance on intuition may be less influential to rapid ratings

of moral condemnation if more extreme and evocative scenarios were employed, as these may produce less variability in perceptions of harm and victims than the scenarios used here.

The preceding discussion rests on the assumption that the lack of statistically significant interactions in these studies represents evidence in favor of the null being true. Are we justified in treating them as such? The Bayesian analyses support this assumption. However, not all scholars are comfortable with this relatively new status afforded to null results. Of course, FI was consistently (significantly) linked to moral condemnation across all studies and experimental manipulations, providing evidence of its reliable association across numerous contexts. In Studies 3 and 4, significant condition main effects emerged. The (statistically significant) main effects of condition and FI (even in the absence of a significant interaction) are valuable information that contribute to our understanding of individual differences in moral judgments.

Implications for FI Research

These results have fascinating implications for understanding the nature of FI and its role in attitude formation and judgment. FI is viewed as reflecting the extent to which people *rely* on or *prefer* intuitive/experiential processing (e.g., Epstein et al., 1996). Study 5 results suggested that people with high FI *experience* more rapid negative reactions to the ambiguously harmful moral scenarios. A habitual tendency to trust one's gut feelings may dispose individuals to attend more strongly to these intuitions, so it is possible that FI involves not just higher reliance on intuitive processing but also a higher propensity to experience intuitive reactions to some stimuli. An interesting direction for future research is examining whether this higher experience of intuitive reactions among those with high FI applies to other domains beyond the moral realm.

The present results also demonstrate that individual differences in FI may be particularly relevant to judgments of novel information. FI was related to condemning ambiguously harmful actions, which generally involved new and unconventional scenarios that were unlikely to have been previously considered. However, FI was less consistently (or unrelated) to moral judgments of conventionally harmful actions and to condemning politically charged social issues (e.g., abortion), which people likely had more exposure to than the ambiguously harmful scenarios. In addition, though FI was related to moral foundations that are typical of conservative ideology (e.g., purity, loyalty), it was unrelated to political conservatism. Together, these findings suggest that individual differences in FI may be less predictive of attitudes toward topics that are likely to have received more consideration over time compared to more novel topics.

Limitations and Future Directions

Although these studies provide compelling evidence for the robust association between FI and moral condemnation, there are some limitations worth addressing. When considering the consistent lack of moderation of the association between FI and condemnation by manipulations, it is important to note that several features of FI may impel moral condemnation. In the present studies, we tested three possible manipulations that seemed the most likely to alter this association and were consistent with those employed in past research. The manipulations we utilized might be seen as ruling out some candidate moderators but they do not

exhaust these possibilities. If we take the lack of interactions in the present studies as valid information, then, we can conclude that the component(s) of FI that play the strongest role in moral condemnation are those not well represented in the manipulations employed here (i.e., consideration of harm and victims, deliberation, and processing time). There may be manipulations that would alter the association between FI and moral judgments. For example, it may be that mindsets representative of holistic processing (e.g., local vs. global processing; construal level) could disrupt this association. It is also possible that encouraging people to vividly visualize the moral scenarios would heighten condemnation (e.g., Amit & Greene, 2012)—particularly among those with low FI—as experiential/intuitive processing involves mentally simulating information (Epstein & Pacini, 2001), which may help account for the stronger condemnation observed among those with high FI. Also, asking individuals to render judgments "as if" they held the moral foundations of purity or loyalty could increase condemnation of ambiguously harmful actions in those with low FI.

Altering contextual information or perspective taking may also mitigate the role of FI in moral judgments. Because the intuitive/experiential processing system is especially responsive to emotionally evocative and context-specific information (Epstein, 2008), people with high FI may temper their condemnation of the ambiguously harmful actions if more emotionally evocative and socially relevant contextual information is provided about the reasons and justification for these actions. For example, if a man breaks a promise to his dying mother to visit her grave because it makes him too sad to do so, or if a person engages in an unconventional sexual act because their spouse requests it. It is also possible that the association between FI and moral condemnation would be attenuated if people judged how morally wrong it would be for them to personally engage in ambiguously harmful unconventional actions. People with low reliance on intuition may be able to adopt a detached approach to the abstract scenarios used in these studies, whereas they may exhibit stronger intuitively driven negative reactions when considering whether it would be morally wrong to personally engage in evocative, ambiguously harmful actions (e.g., not visiting one's own mother's grave, having sex in one's own grandparent's bed).

The present results provide consistent evidence for FI's role in predicting third-person judgments about the permissibility of various ambiguously harmful behaviors, yet it is unclear how FI relates to a broader range of morally relevant actions. One interesting extension of the present findings is to examine to what extent FI predicts actual moral behavior. People with a tendency to rely on their gut feelings may be less likely to engage in immoral behaviors, particularly when experiencing morally relevant emotions (e.g., Ward & King, 2015). It is possible that people with a strong reliance on intuition may make more moral choices in their everyday lives due to their tendency to attend more strongly to gut feelings.

Another interesting avenue for future research is examining the link between intuitive and emotional judgment, which are often viewed synonymously. Interestingly, none of the emotion variables in Studies 1 through 3—mood, emotional intensity, emotion reappraisal, or disgust sensitivity—substantially accounted for FI's association with condemnation. Furthermore, FI was equally related to condemning both disgusting and nondisgusting scenarios in Study 2 (see footnote #12), providing evidence that it was not merely the emotional evocativeness of the scenarios that caused people prone to rely on intuition

to condemn them. Examining the interplay between emotions and intuition remains an important avenue for future research.

These results complement the growing literature demonstrating the importance of intuition to moral judgment. Individual differences in intuition reliably predict the extent to which people condemn morally ambiguous actions, particularly those involving breaches of social convention. This association emerges whether people are making rapid judgments or deliberating extensively, demonstrating the robust role of intuition in moral judgment. Although these evocative yet ambiguously harmful actions are often considered widely condemned, there is substantial variability in people's views about the moral permissibility of these actions. Together, these studies point to the important role of individual differences in intuition in shaping moral attitudes and judgments.

References

Alonso, D., & Fernandez-Berrocal, P. (2003). Irrational decisions: Attending to numbers rather than ratios. *Personality and Individual Differences, 35,* 1537–1547. http://dx.doi.org/10.1016/S0191-8869(02)00368-9

Alós-Ferrer, C., & Hügelschäfer, S. (2012). Faith in intuition and behavioral biases. *Journal of Economic Behavior & Organization, 84,* 182–192. http://dx.doi.org/10.1016/j.jebo.2012.08.004

Alós-Ferrer, C., & Hügelschäfer, S. (2016). Faith in intuition and cognitive reflection. *Journal of Behavioral and Experimental Economics, 64,* 61–70. http://dx.doi.org/10.1016/j.socec.2015.10.006

Amit, E., & Greene, J. D. (2012). You see, the ends don't justify the means: Visual imagery and moral judgment. *Psychological Science, 23,* 861–868. http://dx.doi.org/10.1177/0956797611434965

Atkinson, Q. D., & Bourrat, P. (2011). Beliefs about god, the afterlife and morality support the role of supernatural policing in human cooperation. *Evolution and Human Behavior, 32,* 41–49. http://dx.doi.org/10.1016/j.evolhumbehav.2010.07.008

Bartels, D. M. (2008). Principled moral sentiment and the flexibility of moral judgment and decision making. *Cognition, 108,* 381–417. http://dx.doi.org/10.1016/j.cognition.2008.03.001

Baumard, N., André, J. B., & Sperber, D. (2013). A mutualistic approach to morality: The evolution of fairness by partner choice. *Behavioral and Brain Sciences, 36,* 59–78. http://dx.doi.org/10.1017/S0140525X11002202

Burton, C. M., Heintzelman, S. J., & King, L. A. (2013). A place for individual differences in what everyone knows about what everyone does: Positive affect, cognitive processing, and cognitive experiential self theory. *Social and Personality Psychology Compass, 7,* 749–761. http://dx.doi.org/10.1111/spc3.12063

Conway, P., & Gawronski, B. (2013). Deontological and utilitarian inclinations in moral decision making: A process dissociation approach. *Journal of Personality and Social Psychology, 104,* 216–235. http://dx.doi.org/10.1037/a0031021

Denes-Raj, V., & Epstein, S. (1994). Conflict between intuitive and rational processing: When people behave against their better judgment. *Journal of Personality and Social Psychology, 66,* 819–829. http://dx.doi.org/10.1037/0022-3514.66.5.819

Dienes, Z. (2014). Using Bayes to get the most out of non-significant results. *Frontiers in Psychology, 5,* 781. http://dx.doi.org/10.3389/fpsyg.2014.00781

Epstein, S. (1994). Integration of the cognitive and the psychodynamic unconscious. *American Psychologist, 49,* 709–724. http://dx.doi.org/10.1037/0003-066X.49.8.709

Epstein, S. (2008). Intuition from the perspective of cognitive-experiential

self-theory. In H. Plessner, C. Betsch, T. Betsch, H. Plessner, C. Betsch, & T. Betsch (Eds.), *Intuition in judgment and decision making* (pp. 23–37). Mahwah, NJ: Erlbaum Publishers.

Epstein, S., & Pacini, R. (2001). The influence of visualization on intuitive and analytical information processing. *Imagination, Cognition and Personality, 20,* 195–216. http://dx.doi.org/10.2190/G4VG-AKQP-2Q91-JQHP

Epstein, S., Pacini, R., Denes-Raj, V., & Heier, H. (1996). Individual differences in intuitive-experiential and analytical-rational thinking styles. *Journal of Personality and Social Psychology, 71,* 390–405. http://dx.doi.org/10.1037/0022-3514.71.2.390

Feinberg, M., Willer, R., Antonenko, O., & John, O. P. (2012). Liberating reason from the passions: Overriding intuitionist moral judgments through emotion reappraisal. *Psychological Science, 23,* 788–795. http://dx.doi.org/10.1177/0956797611434747

Frederick, S. (2005). Cognitive reflection and decision making. *The Journal of Economic Perspectives, 19,* 25–42. http://dx.doi.org/10.1257/089533005775196732

Friesdorf, R., Conway, P., & Gawronski, B. (2015). Gender differences in responses to moral dilemmas: A process dissociation analysis. *Personality and Social Psychology Bulletin, 41,* 696–713. http://dx.doi.org/10.1177/0146167215575731

Goldberg, L. R., Johnson, J. A., Eber, H. W., Hogan, R., Ashton, M. C., Cloninger, C. R., & Gough, H. G. (2006). The international personality item pool and the future of public-domain personality measures. *Journal of Research in Personality, 40,* 84–96. http://dx.doi.org/10.1016/j.jrp.2005.08.007

Gorsuch, R. L., & McPherson, S. E. (1989). Intrinsic/extrinsic measurement: I/E-revised and single-item scales. *Journal for the Scientific Study of Religion, 28,* 348–354. http://dx.doi.org/10.2307/1386745

Graham, J., Haidt, J., & Nosek, B. A. (2009). Liberals and conservatives rely on different sets of moral foundations. *Journal of Personality and Social Psychology, 96,* 1029–1046. http://dx.doi.org/10.1037/a0015141

Graham, J., Nosek, B. A., Haidt, J., Iyer, R., Koleva, S., & Ditto, P. H. (2011). Mapping the moral domain. *Journal of Personality and Social Psychology, 101,* 366–385. http://dx.doi.org/10.1037/a0021847

Gray, K., & Keeney, J. E. (2015). Impure or just weird? Scenario sampling bias raises questions about the foundation of morality. *Social Psychological and Personality Science.* [Advance online publication.]

Gray, K., Schein, C., & Ward, A. F. (2014). The myth of harmless wrongs in moral cognition: Automatic dyadic completion from sin to suffering. *Journal of Experimental Psychology: General, 143,* 1600–1615. http://dx.doi.org/10.1037/a0036149

Gray, K., Waytz, A., & Young, L. (2012). The moral dyad: A fundamental template unifying moral judgment. *Psychological Inquiry, 23,* 206–215. http://dx.doi.org/10.1080/1047840X.2012.686247

Gray, K., Young, L., & Waytz, A. (2012). Mind perception is the essence of morality. *Psychological Inquiry, 23,* 101–124. http://dx.doi.org/10.1080/1047840X.2012.651387

Greene, J. D., Morelli, S. A., Lowenberg, K., Nystrom, L. E., & Cohen, J. D. (2008). Cognitive load selectively interferes with utilitarian moral judgment. *Cognition, 107,* 1144–1154. http://dx.doi.org/10.1016/j.cognition.2007.11.004

Greene, J. D., Nystrom, L. E., Engell, A. D., Darley, J. M., & Cohen, J. D. (2004). The neural bases of cognitive conflict and control in moral judgment. *Neuron, 44,* 389–400. http://dx.doi.org/10.1016/j.neuron.2004.09.027

Gross, J. J., & John, O. P. (2003). Individual differences in two emotion regulation processes: Implications for affect, relationships, and well-being. *Journal of Personality and Social Psychology, 85,* 348–362. http://dx.doi.org/10.1037/0022-3514.85.2.348

Haidt, J. (2001). The emotional dog and its rational tail: A social intuitionist approach to moral judgment. *Psychological Review, 108,* 814–834. http://dx.doi.org/10.1037/0033-295X.108.4.814

Haidt, J. (2013). Moral psychology for the twenty-first century. *Journal of Moral Education, 42,* 281–297. http://dx.doi.org/10.1080/03057240.2013.817327

Haidt, J., & Graham, J. (2007). When morality opposes justice: Conservatives have moral intuitions that liberals may not recognize. *Social Justice Research, 20,* 98–116. http://dx.doi.org/10.1007/s11211-007-0034-z

Haidt, J., & Hersh, M. A. (2001). Sexual morality: The cultures and emotions of conservatives and liberals. *Journal of Applied Social Psychology, 31,* 191–221. http://dx.doi.org/10.1111/j.1559-1816.2001.tb02489.x

Haidt, J., & Joseph, C. (2007). The moral mind: How five sets of innate intuitions guide the development of many culture-specific virtues, and perhaps even modules. *The innate mind, 3,* 367–391.

Haidt, J., Koller, S. H., & Dias, M. G. (1993). Affect, culture, and morality, or is it wrong to eat your dog? *Journal of Personality and Social Psychology, 65,* 613–628. http://dx.doi.org/10.1037/0022-3514.65.4.613

Hayes, A. F. (2012). PROCESS: A versatile computational tool for observed variable mediation, moderation, and conditional process modeling [White paper]. Retrieved from http://www.afhayes.com/public/process2012.pdf

Heintzelman, S. J., & King, L. A. (2016). Meaning in life and intuition. *Journal of Personality and Social Psychology, 110,* 477–492. http://dx.doi.org/10.1037/pspp0000062

Helzer, E. G., & Pizarro, D. A. (2011). Dirty liberals! Reminders of physical cleanliness influence moral and political attitudes. *Psychological Science, 22,* 517–522. http://dx.doi.org/10.1177/0956797611402514

Hicks, J. A., Cicero, D. C., Trent, J., Burton, C. M., & King, L. A. (2010). Positive affect, intuition, and feelings of meaning. *Journal of Personality and Social Psychology, 98,* 967–979. http://dx.doi.org/10.1037/a0019377

Horberg, E. J., Oveis, C., Keltner, D., & Cohen, A. B. (2009). Disgust and the moralization of purity. *Journal of Personality and Social Psychology, 97,* 963–976. http://dx.doi.org/10.1037/a0017423

Kaufman, S. B. (2009). Faith in intuition is associated with decreased latent inhibition in a sample of high-achieving adolescents. *Psychology of Aesthetics, Creativity, and the Arts, 3,* 28–34. http://dx.doi.org/10.1037/a0014822

King, L. A., Burton, C. M., Hicks, J. A., & Drigotas, S. M. (2007). Ghosts, UFOs, and magic: Positive affect and the experiential system. *Journal of Personality and Social Psychology, 92,* 905–919. http://dx.doi.org/10.1037/0022-3514.92.5.905

Koenigs, M., Young, L., Adolphs, R., Tranel, D., Cushman, F., Hauser, M., & Damasio, A. (2007). Damage to the prefrontal cortex increases utilitarian moral judgements. *Nature, 446,* 908–911. http://dx.doi.org/10.1038/nature05631

Koleva, S. P., Graham, J., Iyer, R., Ditto, P. H., & Haidt, J. (2012). Tracing the threads: How five moral concerns (especially Purity) help explain culture war attitudes. *Journal of Research in Personality, 46,* 184–194. http://dx.doi.org/10.1016/j.jrp.2012.01.006

Malka, A., Osborne, D., Soto, C. J., Greaves, L. M., Sibley, C. G., & Lelkes, Y. (2016). Binding moral foundations and the narrowing of ideological conflict to the traditional morality domain. *Personality and Social Psychology Bulletin, 42,* 1243–1257. http://dx.doi.org/10.1177/0146167216653936

Mercier, H., & Sperber, D. (2011). Why do humans reason? Arguments for an argumentative theory. *Behavioral and Brain Sciences, 34,* 57–74. http://dx.doi.org/10.1017/S0140525X10000968

Miller, L. C., Murphy, R., & Buss, A. H. (1981). Consciousness of body: Private and public. *Journal of Personality and Social Psychology, 41,* 397–406. http://dx.doi.org/10.1037/0022-3514.41.2.397

Monin, B., Pizarro, D. A., & Beer, J. S. (2007). Deciding versus reacting: Conceptions of moral judgment and the reason-affect debate. *Review of*

General Psychology, 11, 99–111. http://dx.doi.org/10.1037/1089-2680 .11.2.99

Morey, R. D., Rouder, J. N., & Jamil, T. (2015). BayesFactor: Computation of Bayes factors for common designs. R package version 0.9.12–2. http://CRAN.R-project.org/package=BayesFactor

Nickerson, R. S. (1998). Confirmation bias: A ubiquitous phenomenon in many guises. *Review of General Psychology, 2,* 175–220. http://dx.doi .org/10.1037/1089-2680.2.2.175

Norris, P., & Epstein, S. (2011). An experiential thinking style: Its facets and relations with objective and subjective criterion measures. *Journal of Personality, 79,* 1043–1080. http://dx.doi.org/10.1111/j.1467-6494 .2011.00718.x

Olatunji, B. O., Williams, N. L., Tolin, D. F., Abramowitz, J. S., Sawchuk, C. N., Lohr, J. M., & Elwood, L. S. (2007). The Disgust Scale: Item analysis, factor structure, and suggestions for refinement. *Psychological Assessment, 19,* 281–297. http://dx.doi.org/10.1037/1040-3590.19.3.281

Oppenheimer, D. M., Meyvis, T., & Davidenko, N. (2009). Instructional manipulation checks: Detecting satisficing to increase statistical power. *Journal of Experimental Social Psychology, 45,* 867–872. http://dx.doi .org/10.1016/j.jesp.2009.03.009

Pacini, R., & Epstein, S. (1999). The relation of rational and experiential information processing styles to personality, basic beliefs, and the ratio-bias phenomenon. *Journal of Personality and Social Psychology, 76,* 972–987. http://dx.doi.org/10.1037/0022-3514.76.6.972

Paxton, J. M., Ungar, L., & Greene, J. D. (2012). Reflection and reasoning in moral judgment. *Cognitive Science, 36,* 163–177. http://dx.doi.org/10 .1111/j.1551-6709.2011.01210.x

Pennycook, G., Cheyne, J. A., Barr, N., Koehler, D. J., & Fugelsang, J. A. (2014). The role of analytic thinking in moral judgements and values. *Thinking & Reasoning, 20,* 188–214. http://dx.doi.org/10 .1080/13546783.2013.865000

Pennycook, G., Cheyne, J. A., Koehler, D. J., & Fugelsang, J. A. (2016). Is the cognitive reflection test a measure of both reflection and intuition? *Behavior Research Methods, 48,* 341–348.

Pennycook, G., & Ross, R. M. (2016). Commentary: Cognitive reflection vs. calculation in decision making. *Frontiers in Psychology, 7,* 9. http:// dx.doi.org/10.3389/fpsyg.2016.00009

Pizarro, D. A. (2000). Nothing more than feelings? The role of emotions in moral judgment. *Journal for the Theory of Social Behaviour, 30,* 355–375. http://dx.doi.org/10.1111/1468-5914.00135

Rand, D. G., Greene, J. D., & Nowak, M. A. (2012). Spontaneous giving and calculated greed. *Nature, 489,* 427–430. http://dx.doi.org/10.1038/ nature11467

Rest, J. R., & Thoma, S. J. (1985). Relation of moral judgment development to formal education. *Developmental Psychology, 21,* 709–714. http://dx.doi.org/10.1037/0012-1649.21.4.709

Rouder, J. N., & Morey, R. D. (2012). Default Bayes factors for model selection in regression. *Multivariate Behavioral Research, 47,* 877–903. http://dx.doi.org/10.1080/00273171.2012.734737

Rouder, J. N., Morey, R. D., Speckman, P. L., & Province, J. M. (2012). Default Bayes factors for ANOVA designs. *Journal of Mathematical Psychology, 56,* 356–374. http://dx.doi.org/10.1016/j.jmp.2012.08.001

Royzman, E. B., Landy, J. F., & Goodwin, G. P. (2014). Are good reasoners more incest-friendly? Trait cognitive reflection predicts selective moralization in a sample of American adults. *Judgment and Decision Making, 9,* 176–190.

Schein, C., & Gray, K. (2015). The unifying moral dyad: Liberals and conservatives share the same harm-based moral template. *Personality and Social Psychology Bulletin, 41,* 1147–1163. http://dx.doi.org/10 .1177/0146167215591501

Schein, C., Ritter, R. S., & Gray, K. (2016). Harm mediates the disgust-immorality link. *Emotion, 16,* 862–876. http://dx.doi.org/10 .1037/emo0000167

Scherer, L. D., de Vries, M., Zikmund-Fisher, B. J., Witteman, H. O., & Fagerlin, A. (2015). Trust in deliberation: The consequences of deliberative decision strategies for medical decisions. *Health Psychology, 34,* 1090–1099. http://dx.doi.org/10.1037/hea0000203

Schnall, S., Haidt, J., Clore, G. L., & Jordan, A. H. (2008). Disgust as embodied moral judgment. *Personality and Social Psychology Bulletin, 34,* 1096–1109. http://dx.doi.org/10.1177/0146167208317771

Shiloh, S., Salton, E., & Sharabi, D. (2002). Individual differences in rational and intuitive thinking styles as predictors of heuristic responses and framing effects. *Personality and Individual Differences, 32,* 415–429. http://dx.doi.org/10.1016/S0191-8869(01)00034-4

Suter, R. S., & Hertwig, R. (2011). Time and moral judgment. *Cognition, 119,* 454–458. http://dx.doi.org/10.1016/j.cognition.2011.01.018

Thompson, V. A., Turner, J. A. P., Pennycook, G., Ball, L. J., Brack, H., Ophir, Y., & Ackerman, R. (2013). The role of answer fluency and perceptual fluency as metacognitive cues for initiating analytic thinking. *Cognition, 128,* 237–251. http://dx.doi.org/10.1016/j.cognition.2012.09 .012

Toplak, M. E., West, R. F., & Stanovich, K. E. (2011). The Cognitive Reflection Test as a predictor of performance on heuristics-and-biases tasks. *Memory & Cognition, 39,* 1275–1289. http://dx.doi.org/10.3758/ s13421-011-0104-1

Valdesolo, P., & DeSteno, D. (2006). Manipulations of emotional context shape moral judgment. *Psychological Science, 17,* 476–477. http://dx .doi.org/10.1111/j.1467-9280.2006.01731.x

Volz, K. G., & von Cramon, D. Y. (2006). What neuroscience can tell about intuitive processes in the context of perceptual discovery. *Journal of Cognitive Neuroscience, 18,* 2077–2087. http://dx.doi.org/10.1162/ jocn.2006.18.12.2077

Ward, S. J., & King, L. A. (2015). Individual differences in intuitive processing moderate responses to moral transgressions. *Personality and Individual Differences, 87,* 230–235. http://dx.doi.org/10.1016/j.paid .2015.08.021

Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS scales. *Journal of Personality and Social Psychology, 54,* 1063–1070. http://dx.doi.org/10.1037/0022-3514.54.6.1063

Wright, J. C., & Baril, G. (2011). The role of cognitive resources in determining our moral intuitions: Are we all liberals at heart? *Journal of Experimental Social Psychology, 47,* 1007–1012. http://dx.doi.org/10 .1016/j.jesp.2011.03.014

Zaki, J., & Mitchell, J. P. (2013). Intuitive prosociality. *Current Directions in Psychological Science, 22,* 466–470. http://dx.doi.org/10.1177/ 0963721413492764

Zhong, C. B., Strejcek, B., & Sivanathan, N. (2010). A clean self can render harsh moral judgment. *Journal of Experimental Social Psychology, 46,* 859–862. http://dx.doi.org/10.1016/j.jesp.2010.04.003

(Appendix follows)

Appendix

Scenarios for All Studies

Study 1 Scenarios

Unambiguously harmful.
1. Lie on your taxes
2. Make a fraudulent resume
3. Murder someone
4. Embezzle millions of dollars from your place of employment
5. Cheat on a romantic partner
6. Cheat on a test
7. Insult an overweight colleague
8. Blame a coworker for your mistake
9. Steal food from the grocery store
10. Kick a dog
11. Slap your mother
12. Keep extra change a sales clerk accidentally gives you

Ambiguously harmful.
1. Masturbate while rubbing up against a dog
2. Watch animals have sex in order to get aroused
3. Cover a bible with feces
4. Have sex with a (dead) chicken and then eat it
5. Eat your pet dog after it was hit by a car and killed
6. Passionately kiss your sibling
7. Use an old flag for cleaning
8. Masturbate while fantasizing about your sibling
9. Say mean things about a person who died
10. Break a promise to your mother who just died
11. Have sex in your grandparent's bed while you are housesitting
12. Give your romantic partner a gift that was purchased for an ex.

Study 2 Scenarios

Ambiguously harmful. The following scenarios were categorized as purity-relevant violations and used in mediational analyses investigating purity in Table 9 of the supplementary material. They were also categorized as involving disgust in analyses probing the difference between disgusting versus nondisgusting scenarios (see supplementary materials).

1. Frank's dog was killed by a car in front of his house. Frank had heard that in China people occasionally eat dog meat, and he was curious what it tasted like. So he cut up the body and cooked it and ate it for dinner.

2. Matthew is playing with his new kitten late one night. He is wearing only his boxer shorts, and the kitten sometimes walks over his genitals. Eventually, this arouses him, and he begins to rub his bare genitals along the kitten's body. The kitten purrs, and seems to enjoy the contact.

3. As a practical joke, a man unwraps his office mate's lunch and places it in a sterilized bed pan.

4. A family's dog was killed by a car in front of their house. They cremate the dog, and sprinkle the remains in the sandbox where the neighborhood children play.

5. While house sitting for his grandmother, a man and his girlfriend have sex on his grandmother's bed.

6. After a late-term miscarriage, a woman asks her doctors to take a picture of her cradling the miscarried fetus.

7. A woman enjoys masturbating while cuddling with her favorite teddy bear.

8. A man goes to the supermarket once a week and buys a dead chicken. But before cooking the chicken, he has sexual intercourse with it. Then he cooks it and eats it.

9. After they have been sexually active for over a year, a woman and her boyfriend discover that they have the same father—they are actually half brother and sister, but were raised in separate families from the time they were born. They decide that the new information doesn't matter, and continue their sexual relationship. The couple is careful to use protection.

The following scenarios were categorized as not involving disgust in analyses probing the difference between disgusting versus nondisgusting scenarios, (see supplementary materials). Scenarios # 1–3 were considered loyalty violations and used in mediational analyses investigating loyalty in Table 9 of the supplementary materials.

1. A woman is cleaning out her closet, and she finds her old American flag. She doesn't want the flag anymore, so she cuts it up into pieces and uses the rags to clean her bathroom.

2. A man and his son are acting in a skit at the local community center. As part of the skit, the director calls on the son to slap his father in the face. The son complies with this request.

3. A woman was dying, and on her deathbed she asked her son to promise that he would visit her grave every week. The son loved his mother very much, so he promised to visit her grave every week. But after the mother died, the son didn't keep his promise because he was very busy.

4. One day, while organizing his closet, a man finds a nice sweater that he had bought for his ex-girlfriend, but had never given her. Several weeks later, as he approaches his 6-month anniversary with his current girlfriend, he realizes he cannot afford a gift for her. Instead, he wraps up the sweater that he had bought for his ex, and gives it to his girlfriend.

Unambiguously harmful.

1. You are walking down the street when you come across a wallet lying on the ground. You open the wallet and find that it contains several hundred dollars in cash as well the owner's driver's license. From the credit cards and other items in the wallet it's very clear that the wallet's owner is wealthy. You, on the other hand, have been hit by hard times recently and could really use some extra money. You consider sending the wallet back to the owner without the cash, keeping the cash for yourself. You decide to keep the money you found in the wallet in order to have more money for yourself.

2. You have a friend who has been trying to find a job lately without much success. He figured that he would be more likely to get hired if he had a more impressive resume. He decided to put some false information on his resume in order to make it more impressive. By doing this he ultimately managed to get hired, beating out several candidates who were actually more qualified than he.

3. Last year at tax time, a small business owner in a local town found that he could not afford his tax burden due to unexpected medical costs that had gone toward a surgery for his mother. He therefore carefully reported only the income for which he could pay taxes, leaving several thousand dollars unaccounted for.

4. In order to increase her chances of getting a job at a prestigious firm, a college graduate writes a reference letter that honestly details her strengths, but signs it with the name of a former boss (who she knew liked her).

Study 3 Scenarios

All are categorized as ambiguously harmful. The following were categorized as loyalty violations in mediation analyses for loyalty, supplementary materials, Table 10.

1. A woman is cleaning out her closet, and she finds her old American flag. She doesn't want the flag anymore, so she cuts it up into pieces and uses the rags to clean her bathroom.

2. The dog a woman had for 11 years as a pet dies suddenly. Instead of burying or cremating her dog, she throws it in a trash can.

3. A woman was dying, and on her deathbed she asked her son to promise that he would visit her grave every week. The son loved his mother very much, so he promised to visit her grave every week. But after the mother died, the son didn't keep his promise because he was very busy.

The following were categorized purity violations in mediation analyses for purity, supplementary materials, Table 10.

1. While house sitting for his grandmother, a man and his girlfriend have sex on his grandmother's bed.

2. A man goes to the supermarket once a week and buys a dead chicken. But before cooking the chicken, he has sexual intercourse with it. Then he cooks it and eats it.

3. Frank's dog was killed by a car in front of his house. Frank had heard that in China people occasionally eat dog meat, and he was curious what it tasted like. So he cut up the body and cooked it and ate it for dinner.

Study 4: Scenario Ratings

All are categorized as ambiguously harmful. Scenarios # 1–3 were considered purity violations and used in mediational analyses investigating purity, supplementary materials, Table 10

1. While house sitting for his grandmother, a man and his girlfriend have sex on his grandmother's bed.

2. Frank's dog was killed by a car in front of his house. Frank had heard that in China people occasionally eat dog meat, and he was curious what it tasted like. So he cut up the body and cooked it and ate it for dinner.

3. A man goes to the supermarket once a week and buys a dead chicken. But before cooking the chicken, he has sexual intercourse with it. Then he cooks it and eats it.

4. A woman is cleaning out her closet, and she finds her old American flag. She doesn't want the flag anymore, so she cuts it up into pieces and uses the rags to clean her bathroom.

Study 5: Scenario Ratings

Unambiguously harmful.

1. A woman makes fun of a stranger's clothing as she walks by.
2. A man fails to offer his seat on a bus to an elderly, disabled individual who has to stand.
3. A man exaggerates his past work experience and academic history on his resume in order to increase his chances of getting a job.
4. A woman lies on her tax returns because she does not want to pay the government any additional money this year.

Ambiguously harmful.

1. A woman uses an old American flag that she does not want any more to clean her bathroom.
2. A woman throws the dog she had for 11 years in the trash can after it dies, instead of burying or cremating it.
3. A man breaks the promise he made to his dying mother to visit her grave often because he is very busy.
4. A man has sex on his grandmother's bed while housesitting for her.