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Moralization Through Moral Shock: Exploring Emotional Antecedents to Moral Conviction

Daniel C. Wisneski[1] and Linda J. Skitka[2]

Abstract

The current research tested whether exposure to disgusting images increases moral conviction and whether this happens in the presence of incidental disgust cues versus disgust cues relevant to the target of moralization. Across two studies, we exposed participants to one of the four sets of disgusting versus control images to test the moralization of abortion attitudes: pictures of aborted fetuses, animal abuse, non-harm related disgusting images, harm related disgusting images, or neutral pictures, at either sub- or supraliminal levels of awareness. Moral conviction about abortion increased (compared with control) only for participants exposed to abortion-related images at speeds slow enough to allow conscious awareness. Study 2 replicated this finding, and found that the relationship between attitudinally relevant disgust and moral conviction was mediated by disgust, and not anger or harm appraisals. Findings are discussed in terms of their relevance for intuitionist theories of morality and moral theories that emphasize harm.

Keywords

morality, attitudes, disgust, moral conviction, emotion

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> Moralization is a psychological state that can be turned on and off like a switch, and when it is on, a distinctive mind-set commandeers our thinking. This is the mind-set that makes us deem actions immoral ("killing is wrong"), rather than merely disagreeable ("I hate Brussels sprouts"), unfashionable ("bell-bottoms are out"), or imprudent ("don't scratch mosquito bites").
>
> —Steven Pinker (2008)

On March 11, 2013, Jonathan Watkins was shot and critically injured on Chicago's Southside while changing his 6-month-old daughter's diaper in the front seat of his car. His daughter was also shot and died, as a result, a few days later (ABC News, 2013). Community outrage at this and other news of gun violence, such as the murder of 26 children and staff at Sandy Hook Elementary school by a gunman who stormed the building several weeks before the Chicago incident, and no shortage of other examples since then has led to continued debate about gun control laws in the United States. There were heated arguments about a culture of violence and the need for gun control on the one side, and Second Amendment protections and individual liberty on the other, with both sides framing their arguments in the language of morality.

The emotion events such as these tend to evoke is referred to as "moral shock" (Jasper, 1997; Jasper & Poulsen, 1995). That is, some events are so emotionally moving or morally reprehensible that they force people both to articulate their moral intuitions and to seek solutions. Moral shocks can lead formerly disinterested people to become politically engaged (Snow & Soule, 2010) or further radicalize those already committed to a given cause (Gould, 2009; Lowe, 2006).

Research on moral shocks, however, has primarily been anecdotal and descriptive, rather than experimental. The goal of the two studies reported here was to extend research on moral shocks in an effort to understand how attitudes become moralized (or more strongly moralized), and to experimentally test the moral shock hypothesis. We also tested boundary conditions of moral shock, that is, whether the emotions aroused by moral shocks need to be attitudinally relevant and consciously processed, or if instead, strong emotional cues have the potential to moralize attitudes even when they are

[1]Saint Peter's University, Jersey City, NJ, USA
[2]University of Illinois at Chicago, USA

Corresponding Author:
Daniel C Wisneski, Saint Peter's University, 2641 Kennedy Blvd, Jersey City, NJ 07306, USA.
Email: dwisneski@saintpeters.edu

evoked by attitudinally irrelevant stimuli or outside of conscious awareness.

Attitude Moralization

The field of moral psychology seems to agree that there is a strong association between morality and emotion. For example, although Haidt's (2001) social intuitionist model (SIM) of moral judgment places intuition (a form of cognition) as the central driving force behind most of morality, most tests of the theory have used emotional cues to arouse people's moral intuitions (e.g., Wheatley & Haidt, 2005). That is, although intuition is the proximate theoretical cause of moral judgments, emotions are thought to serve as triggers for these intuitions. A defining component of intuition, however, is that people are likely unaware of its source (Haidt, 2001); people may be aware of the outcome of the process of making a moral judgment, but not of the process itself. As a result, studies testing intuition's role in moral judgment have relied on emotions unrelated to the moral judgment being made. Other theories of morality, however, give more weight to cognitive processes occurring within conscious awareness. For example, some have argued that discrete emotions and their related cognitive appraisals (such as threat to safety or injustice) serve to heighten the salience of related sociomoral concerns that will, in turn, affect only moral judgments related those concerns (Horberg, Oveis, & Keltner, 2011; Horberg, Oveis, Keltner, & Cohen, 2009). Although cognitive appraisal theories of emotion and moral judgment are not inconsistent with the possibility that intuition plays a role in moralization, they nonetheless imply that intuition is not enough; some additional form of cognition is also needed and incidental emotions may not always "carry over" and be misattributed to affect any moral judgment. In sum, although there is a growing consensus that emotion is important in some way to people's sense of morality, disagreement exists about how much of a role conscious cognition might play, whether emotions need to be related to the moral phenomena at hand, or if incidental emotion is enough to prime moral concerns.

We know from past research that attitudes held with strong moral conviction should have strong ties to emotions (Skitka & Wisneski, 2011; see also Arsenio, 1988; Arsenio & Lover, 1995), and people may use emotional cues to identify the degree to which an attitude is one they experience with the force of moral conviction (Brandt, Wisneski, & Skitka, 2015; Skitka, 2014; Skitka, Bauman, & Sargis, 2005). This research relating moral conviction to emotion points to the possibility that moral shocks may have the power to moralize in part because of the emotions they invoke, such as disgust. What is unclear, and what the current studies seek to explore, is whether the emotions need to be attitude relevant or if incidental emotion is enough to activate moralization. In doing so, the current studies also seek to provide some evidence about the role of conscious, cognitive processes necessary for attitude moralization to occur.

Attitude Relevant Versus Incidental Disgust

There are reasons to believe that disgust may have a unique power to moralize. For example, people who see smoking as more disgusting are also more likely to see smoking as a moral issue (Rozin & Singh, 1999), and moral vegetarians are more disgusted at the idea of eating meat than health vegetarians (Rozin, Markwith, & Stoess, 1997). Although correlational, this research suggests that integral emotions—that is, the emotions elicited by the object of moralization itself—may have the power to moralize. Other research, however, has demonstrated that incidental emotions—that is, emotions evoked by something besides the target of moralization—can make moral judgments more severe, perhaps by arousing people's moral intuitions. For example, participants who experienced disgust due to a dirty lab environment or in response to offensive odors made harsher moral judgments (e.g., saw lying as more immoral and wrong) than those in clean laboratory environments or who were not exposed to offensive odors (Schnall, Haidt, Clore, & Jordan, 2008; cf. Johnson et al., 2016; Landy & Goodwin, 2015). Similarly, people induced to feel physical disgust by drinking a bitter beverage also judged moral transgressions more harshly than those who drank a sweet beverage or water (Eskine, Kacinik, & Prinz, 2011). People are probably explicitly aware of integral emotions and what evokes them, but are unlikely to be aware that incidental emotions are affecting their moral judgments. In the latter case, people no doubt misattribute the source of their emotional arousal, and assume it is aroused by the behaviors they are being asked to evaluate.

Although the Schnall et al. (2008) studies are provocative and provide evidence that incidental affect can alter people's moral judgments, there are some reasons to be skeptical about whether the effect of incidental affect will generalize to explain attitude moralization. Moral judgments tend to involve one-shot evaluations of the rightness or wrongness of a given behavior, actor, or hypothetical, that are easily influenced by small changes in context (e.g., Liu & Ditto, 2013). In contrast, attitudes are linked with other cognitive elements in memory, such as other attitudes, personal values and goals, and concepts of self (a phenomena known as embeddedness, for example, Pomerantz, Chaiken, & Tordesillas, 1995), that makes them relatively invulnerable to context effects such as incidental emotion (e.g., Lavine, Huff, Wagner, & Sweeney, 1998). Attitudes also come with a host of their own associations with emotions, which could completely replace incidentally aroused emotions from people's working memory once an attitude object comes to mind.

Recent research has also provided initial evidence consistent with the hypothesis that the moralization of attitudes (rather than judgments) results more from attitude relevant, rather than incidental, emotion. For example, correlational studies have found links between disgust toward homosexual

behavior and anti-gay moral attitudes, but not attitudes toward other groups (e.g., Inbar, Pizarro, Knobe, & Bloom, 2009), and similar arguments have been advanced to explain moral objections to eating meat or incest avoidance (Borg, Lieberman, & Kiehl, 2008; Rozin et al., 1997). Furthermore, longitudinal data collected in the months leading up to the 2012 U.S. presidential election looked at whether emotions related to each of the major candidates predicted changes in people's moral conviction about each candidate (Brandt et al., 2015). Only emotional responses directly related to each candidate predicted increases in candidate-based moral conviction as Election Day approached. Specifically, participants' feelings of hostility toward their non-preferred and their feelings of enthusiasm toward their preferred candidate predicted an increase in moral conviction about each in the run up to the election, but these emotions did not "crossover" to affect perceptions of the other candidate. In other words, emotional reactions to preferred candidates only influenced moral convictions about preferred candidates, and emotional reactions to non-preferred candidates only influenced moral convictions about non-preferred candidates' overtime.

Although provocative, this new research is nonetheless correlational, and experimental evidence testing the role of either attitude relevant or incidental emotion effects on attitude moralization remains scant or non-existent (Avramova & Inbar, 2013; Pizarro, Inbar, & Helion, 2011). One set of studies did find that experimentally induced disgust (compared with sadness) increased people's condemnation of purity violating behaviors (e.g., "keeping an untidy and dirty living space") and their approval of purity upholding behaviors (e.g., "maintaining a healthy body"; Horberg et al., 2009). It is unclear, however, whether the effect of disgust on judgments of individual behaviors extends to also include people's feelings of moral conviction related to their political attitudes. That is, it is an open empirical question whether attitudes, such as judgments, can be moralized via incidental emotion, or if instead attitude relevant emotion is required.

The Current Research

The current research experimentally tested whether and how attitude moralization occurs in the process of a moral shock. Specifically, we tested whether exposure to emotionally evocative disgust cues (i.e., moral shocks) have the power to moralize attitudes. Mirroring theories in moral psychology that emphasize either incidental emotion or attitude relevant emotion and conscious cognition, we came up with competing hypotheses for how disgusting images commonly used to elicit moral shock might lead to attitude moralization. The *incidental emotion hypothesis* predicts that moralization results solely from disgust aroused from sources unrelated to the attitude being moralized. In contrast, the *integral emotion hypothesis* predicts that participants must be aware of the source of their disgust and it must be related to the attitude being moralized. Each of these hypotheses speak to theory and research about the amount of cognitive processing needed for emotion to affect people's moral beliefs and judgments. On one hand, the incidental emotion hypothesis is consistent with intuitionist theories of morality and the research testing them (e.g., Haidt, 2001; Schnall et al., 2008). According to these theories, incidental disgust can moralize through the arousal of moral intuition. On the other hand, the integral emotion hypotheses suggest that there needs to be some additional form of conscious processing beyond intuition of the morally shocking stimulus and/or its emotional aftermath (e.g., Horberg et al., 2011; Horberg et al., 2009).

To test the incidental and integral emotion hypotheses, we presented participants with potentially morally shocking, disgusting stimuli and varied (a) whether the stimuli were integral or incidental to the attitude being moralized, and (b) the speed that the stimuli were presented. More specifically, we tested whether people would report stronger moral convictions (relative to control) about the issue of abortion after being exposed to disgusting stimuli either subliminally (i.e., so that they were unaware of the emotion's source) or supraliminally (i.e., to allow for conscious awareness). Furthermore, because previous research has also used incidental emotion to affect moral judgment, we also manipulated whether the disgusting stimuli were either relevant to the topic of abortion or were incidental to the target issue of abortion.

Based on pilot testing, three sets of stimuli consisting of six images each were selected to use in Study 1 because they aroused similarly high levels of disgust, and higher levels of disgust than neutral control images (see the Supplemental Materials for the pilot study results). The selected stimuli varied in terms of whether they were (a) relevant to the issue of abortion, (b) relevant to the issue of animal rights, or (c) disgusting images not related to either abortion or animal rights. The abortion pictures were taken from various prolife websites and depicted graphic images of aborted fetuses. These images were chosen because of their potential ability to elicit a "moral" form of disgust relevant to the issue of abortion (see Marzillier & Davey, 2004, and Simpson, Carter, Anthony, & Overton, 2006, for discussions of different forms of disgust). We also chose images depicting animal abuse from the people for the ethical treatment of animals (PETA) website. This category of images also elicited disgust, but the content was unrelated (i.e., incidental) to the issue of abortion, while holding other features constant (harm, depiction of blood). We also had another category of images unrelated to the issue of abortion meant to elicit non-moral disgust. For this category, we selected pictures that depicted disgusting but not explicitly harm related scenes, such as toilets overflowing with feces and piles of unwashed dishes. Our pilot participants rated these images as arousing the same degree of disgust as the pictures selected for the abortion and animal abuses conditions. Finally, our neutral stimulus condition consisted of pictures that depicted everyday objects (e.g., tables, desk chairs, pens, and pencils).

Based on these manipulations, we propose the following competing hypotheses for how emotion might lead to moralization. If the incidental emotion hypothesis is correct, we should observe an increase in moral conviction (relative to control) among participants presented with stimuli unrelated to their abortion attitude or presented outside of conscious awareness (or both). If, however, the integral emotion hypothesis is correct, then we should observe an increase in moral conviction (relative to control) only among participants presented disgusting stimuli directly relevant to the issue of influence (abortion) and who are consciously aware of what they saw. We should find no differences between the participants in the incidental disgust and subliminal presentation conditions and the control condition.

Attitude Stance Differences

Although the primary goal of the current study is to test whether disgust, in general, moralizes, it is also possible that we will find differences as a function of participants' attitude on abortion—specifically in response to the stimuli related to the issue of abortion. That is, the abortion images used in the current study might be perceived as consistent with the attitudes of participants who oppose abortion and inconsistent with the attitudes of abortion supporters (after all, these images are often used in attempts to persuade people to oppose abortion). Although the images were likely shocking and emotionally evocative for all participants, the disgust participants felt may have different sources depending on their attitude stance. Abortion opponents may feel disgust about the act of abortion itself whereas supporters may feel disgusted at the attempt to manipulate their emotions, and thus their attitudes. We, therefore, tested whether the same or different patterns of results emerged as a function of participants' starting position on the issue of abortion.[1]

Study 1

Method

Participants. Four hundred sixty-two undergraduate students at the University of Illinois at Chicago completed the study for partial credit in introductory psychology. A particularly large *N* was used for two reasons. First, we expected a small effect size given that many participants would likely report high levels of moral conviction about their abortion attitudes (i.e., possible ceiling effects). Second, we wanted to ensure sufficient statistical power to detect possible moderating effects by participants' level of private body consciousness (PBC, Miller, Murphy, & Buss, 1981),[2] as well as their support/opposition to abortion.

Procedure. Participants were told they would be participating in two different experiments for two different experimenters (an effort to reduce suspicion of the true purpose of the study). Participants were told that the first experiment would be a short computerized "recognition task." Participants were told that six pictures and six words would be presented on the computer screen one at a time in a random order. Their task was to identify, as quickly and accurately as they could, whether a picture or a word appeared on the screen using the "A" and "L" keys, respectively. In reality, the pictures consisted of one of the four sets of stimuli described above. The stimulus words were neutral and the same across experimental conditions; only the content of the pictures varied. Furthermore, the pictures were shown to the participants at a rate that was either too fast for them to determine the pictures' content (14 ms) or slow enough that they could see what the pictures depicted (250 ms).[3] Each picture and each word was also preceded and followed by a "noise mask" consisting of a black square filled with blue lines with the same dimensions as the pictures shown. The mask remained on the screen for 500 ms. The entire stimulus presentation task took less than 5 min.

After the stimulus presentation task, the experimenter told each participant that the first study was completed and that he or she could begin the second study. To make it more believable that there were in fact two studies, the experimenter closed the experimental file on the participant's computer for the "first study," and opened another file for the "second study" and reentered the participant's identification number. Once this was done, participants were told they could begin the "second study." The amount of time between the end of the stimulus presentation task and the beginning of Study 2 was never more than a minute.

The "second study" began with participants answering questions about their abortion attitudes. Participants always indicated their support of or opposition to the issue of abortion first, then questions about their level of attitude importance and moral conviction about the issue of abortion in a random order. After the attitude measures, participants completed the stimulus awareness manipulation and suspicion checks. Before leaving the experimental session, participants were allowed to play a short computer game designed to restore a positive mood, and were debriefed and thanked for their participation.

Measures

Abortion attitude. Participants' position and attitude extremity on the issue of abortion was assessed with the following item: "To what extent do you support or oppose the availability of legalized abortion in the United States?" on a 7-point, bipolar scale with point labels as follows: *strongly oppose/support*, *moderately oppose/support*, *slightly oppose/support*, and *uncertain.* We used participants' responses to this question to create two items. First, we created a trichotomous variable reflecting whether participants supported (coded +1), opposed (coded −1), or were uncertain (coded 0) on the issue of abortion (i.e., their position on the issue). Second, we created an

attitude extremity variable by "folding" the bipolar support/opposition variable in half. The resulting item consisted of a 4-point scale that ranged from *uncertain* (0), *slightly* (1), *moderately* (2), and *strongly* (3). Thus, participants' extremity score reflected the distance of their response from the midpoint of the bipolar scale.

Attitude importance. Attitude importance was assessed by asking participants the extent to which their position on abortion was important to who they are as a person. Participants responded using a 5-point scale with point labels as follows: *not at all*, *slightly*, *moderately*, *much*, and *very much.*

Moral conviction. We measured participants' feelings of moral conviction about the issue of abortion using two items: the extent to which participants' attitude about abortion was (a) "a reflection of your core moral beliefs and convictions," and (b) "deeply connected to beliefs about fundamental questions of 'right' and 'wrong.'" Responses were given using 5-point scales with point labels as follows: *not at all*, *slightly*, *moderately*, *much*, and *very much.* Scores from these two questions were averaged, resulting in one overall measure of participants' level of moral conviction about abortion, $r(462) = .60$.[4] Higher scores indicated stronger feelings of moral conviction.

Stimulus awareness manipulation checks. The effectiveness of the stimulus awareness manipulation was assessed in two ways. First, participants responded to two close-ended questions to assess their subjective processing fluency for the pictures they saw (Mayer & Tormala, 2010). Participants reported how easy it was for them to (a) process the content of the pictures in Study 1, and (b) comprehend the content of the pictures in Study 1. Responses were given using a 7-point scale ranging from *not easy at all* to *extremely easy.* These two items were strongly correlated, $r(462) = .76$, and were averaged to create a single measure of processing fluency. Higher values indicated greater awareness of the picture's content and a greater ability to cognitively process their content. Second, participants completed an open-ended question that asked them to recall the content of the pictures they saw in "Study 1." Participants who felt that they could not recall the picture content were told to write "I don't know."

Suspicion checks. Two open-ended questions were also used to assess whether participants were suspicious of the cover story that they were participating in two separate experiments. Participants were asked what they thought the purpose was of the "first" and "second" studies, or to write "I don't know" if they were unsure.

Results

Stimulus awareness manipulation checks. To test the effectiveness of our stimulus awareness manipulation, we first ran a 4 (stimulus content) × 2 (stimulus awareness) ANOVA with participants' processing fluency scores as the dependent measure. Results revealed only a main effect of stimulus awareness condition, $F(1, 455) = 381.85$, $p < .001$, $\hat{\omega}^2 = .449$. Participants in the high awareness condition, $M = 5.27$, $SD = 1.40$, 95% confidence interval (CI) = [5.08, 5.48], reported a greater ability to process and comprehend the content of the stimuli than those in the low awareness condition, $M = 2.43$, $SD = 1.70$, 95% CI = [2.23, 2.26]. The main effect of stimulus content, $F(3, 455) = 0.97$, $p = .406$, $\hat{\omega}^2 = .000$, and the stimulus content by awareness interaction, $F(3, 455) = 1.80$, $p = .15$, $\hat{\omega}^2 = .003$, were both non-significant.

As a second check on our stimulus awareness manipulation, we examined participants' responses to the open-ended question that asked them to recall the content of the images they had been shown. Only three participants in the low awareness neutral condition reported seeing the images and correctly reported their content. None of the other low awareness participants were able to report the content of the images. Among the high awareness participants, only one reported not being able to recall the content of the images.

Even though participants in the low awareness condition reported not being able to recall the content of the images in their open-ended responses and reported lower scores on the processing fluency measure, participants in both the high and low awareness conditions were generally accurate in their ability to correctly identify whether they were shown a picture or a word on a given trial. Out of the six pictures shown, the average number identified correctly was 5.92 ($SD = 0.38$, 95% CI = [5.86, 5.98]) in the high awareness condition and 5.80 ($SD = 0.57$, 95% CI = [5.73, 5.86]) in the low awareness condition. Taken together, these results indicated that participants in the low awareness condition were still able to process the content of the stimuli, even if they were not consciously aware of what they saw. In sum, these results provide support for the effectiveness of the awareness manipulation.

Suspicion check. Only 40 participants (8.7%) were potentially suspicious that the studies were related (e.g., mentioned Study 1 when describing what they believed was the purpose of Study 2). Excluding these participants from the moralization analyses presented below resulted in our effects dropping from significant to marginally significant, but did not change the pattern of results. All participants were, therefore, retained.

Moralization. As an initial test of the incidental and integral emotion hypotheses, we ran a 4 (stimulus content: abortion, animal rights, pure disgust, and control) × 2 (stimulus awareness: high, low) ANCOVA with participants' level of moral conviction about abortion as the dependent measure, and attitude importance and extremity as control variables to rule out any effects due to a general "strengthening" of the attitude rather than moralization alone.[5] There has been considerable debate in the attitudes literature about whether

"attitude strength" should be thought of as a unidimensional or multi-dimensional construct (e.g., Krosnick, Boninger, Chuang, Berent, & Carnot, 1993; Visser, Bizer, & Krosnick, 2006). Controlling for attitude importance and extremity, thus, is necessary for us to differentiate the antecedents of moral conviction from those of other, related attitude strength variables. Effect sizes for all significant effects are reported as omega squared (Olejnik & Algina, 2000). Finally, in analyses where we used ANCOVA, all reported means are estimated rather than observed. Consistent with the integral emotion hypothesis, attitude moralization required emotion relevant to the attitude object, and did not emerge solely from processes outside of conscious awareness, or because of misattributed, incidental emotions.

Specifically, we found a significant content by awareness interaction, $F(3, 453) = 3.43$, $p = .02$, $\hat{\omega}^2 = .011$, but no main effects for either stimulus content, $F(3, 453) = 0.87$, $p = .457$, $\hat{\omega}^2 = .000$, or stimulus awareness, $F(1, 453) = 0.00$, $p = .988$, $\hat{\omega}^2 = .000$. Analysis of the simple effects of stimulus content at each level of awareness revealed no differences in moral conviction about abortion as a function of stimulus conditions at low level awareness (14 ms), $F(3, 453) = 1.34$, $p = .26$, $\hat{\omega}^2 = .002$, but differences in strength of moral conviction about abortion at high levels of awareness (250 ms), $F(3, 453) = 2.90$, $p = .04$, $\hat{\omega}^2 = .009$. Comparisons of each of the experimental conditions (abortion, animal rights, and pure disgust) with the control condition at the level of high awareness yielded one significant result: Moral conviction about abortion was higher in the abortion image condition relative to the control, $F(1, 453) = 4.84$, $p = .03$, $\hat{\omega}^2 = .006$ (see Figure 1). People's moral conviction about abortion did not differ from the control condition in the animal rights, $F(1, 453) = 0.19$, $p = .666$, $\hat{\omega}^2 = .000$, and pure disgust, $F(1, 453) = 0.03$, $p = .843$, $\hat{\omega}^2 = .000$. Other exploratory analyses indicated that participants' position on the issue of abortion (i.e., whether they were pro-life or pro-choice) did not moderate the stimulus content by awareness interaction, but that the basic moral shock effect (exposure to the fetus images vs. control) was stronger when participants opposed rather than supported legalized abortion.[6]

In sum, these results indicated that attitude relevant emotion and conscious awareness of the emotion eliciting stimulus led to attitude moralization. Only participants exposed to images related to their abortion attitude (aborted fetuses) at conscious levels of awareness, and not those exposed to animal rights or pure disgust images, reported stronger moral conviction about abortion relative to those exposed to neutral, non-disgusting stimuli.

Attitude strength. As another test of discriminant validity, we conducted two additional analyses to test whether exposure to attitudinally relevant disgust primes only affect moral conviction, or whether disgust relevant stimuli also affect other aspects of attitude strength. Specifically, we ran two additional 4 (stimulus content) × 2 (stimulus awareness) ANCOVAs with attitude importance and extremity as dependent measures, controlling for moral conviction. No significant effects were observed, Fs < 2.04, *ns*. Thus, participants exposed to attitudinally relevant disgust cues at conscious levels of awareness reported higher moral conviction, but not higher attitude extremity or importance on the issue of abortion. These results provide additional evidence that the effect of our abortion images resulted in greater moralization of participants' abortion attitudes over and above attitude strength.

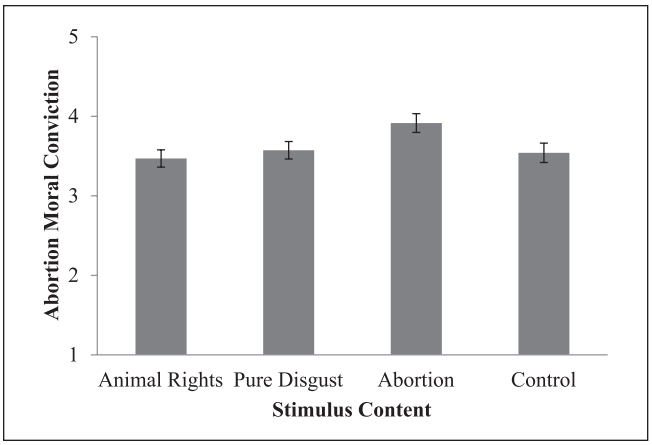

Figure 1. Mean levels of moral conviction for participants in the high awareness condition as a function of stimulus content.

Study 1 Discussion

The results of Study 1 provide initial evidence in support of the moral shock hypothesis, that is, that attitudinally relevant negative affect (i.e., disgust) can lead to attitude moralization. Consistent with the integral emotion hypothesis, attitude moralization only occurred when people were consciously exposed to disgusting images that were related to the target attitude, an effect that remained significant when controlling for attitude importance and extremity. In contrast, we found no support for the incidental emotion hypothesis. Incidental and subliminally presented disgusting images and, presumably, the resulting moral intuition had no effects on moral conviction. The effect of attitude relevant disgust was also specific to moral conviction: Exposure to disgusting images, regardless of relevance to the attitude or level of awareness, did not affect participants' attitude importance or extremity.

Although our pilot testing indicated that the images used for the experimental conditions, when presented subliminally and supraliminally, successfully aroused disgust, the pictures did vary in other ways. Specifically, the abortion and animal rights stimuli also depicted harm (the control and pure disgust images did not). Given that we found evidence of abortion attitude moralization in only the abortion, and not the animal rights abuse condition, one could argue that harm

has been ruled out as an alternative explanation for the observed results. That said, just as we have argued that there might be something special about emotions that are relevant to the target of moralization, one could also argue that there might be something special about the salience of attitudinally relevant versus irrelevant harms. There also could be something special about harm to human rather than animal victims. Given that harm has been proposed as a possible unifying construct that underlies all moral cognition (Gray, Young, & Waytz, 2012), it is especially important to test whether the observed effects are in fact due to attitudinally relevant disgust, or if instead, moralization is a result of priming attitudinally relevant harm.

One could mount similar arguments about the degree to which our stimulus conditions may have manipulated anger instead of or in addition to disgust. Indeed, some in the field of moral psychology have argued that anger is more important than disgust in terms of people's reactions to moral transgressions (Royzman, Atanasov, Landy, Parks, & Gepty, 2014). It is, therefore, possible that Study 1 participants will have responded with more anger when exposed to aborted fetuses than to the other stimulus conditions, which, in turn, could have led to greater attitude moralization. Study 2 was designed both to replicate the results of Study 1 and to tease apart these various competing explanations for the observed results.

Study 2

The goal of Study 2 was to replicate the results of Study 1 and test which variable or combination of variables best explain the attitude moralization effect: disgust, anger, or harm. To test whether attitude relevant or incidental harm rather than disgust leads to attitude moralization, we identified a set of incidental disgust images from the International Affective Priming System (IAPS) images that depicted harm to humans (e.g., mangled body parts). Several previous studies have confirmed that these IAPS images elicit disgust independent of other discrete emotions (Mikels et al., 2005). We used these images instead of the animal rights and nonharm related pure disgust images from Study 1 as a comparison to the aborted fetus images. In addition to including a new condition of images that depicted human harm unrelated to abortion, we tested whether the effect of stimulus condition on attitude moralization was mediated by disgust, anger, or harm appraisals, or some combination of these variables.

The analytic strategy for Study 2 mirrored that of Study 1. We first analyzed the full sample, including abortion supporters, opponents, and those that were uncertain on the issue. Again, these analyses are reported controlling for attitude importance and extremity to ensure that our findings are specific to moral conviction and cannot be explained by other variables related to attitude strength. Second, we tested whether our manipulations had any effect on attitude strength variables (i.e., attitude importance and extremity) to test whether observed effects represent attitude moralization and not attitude strengthening. Finally, Study 2 extended Study 1 by testing whether the moral shock effect is mediated by disgust, anger, and/or harm appraisals.

Design

Study 2 used a three level (stimulus content: abortion, IAPS disgust, and control) between-subjects design, with all stimuli presented at conscious levels of awareness (250 ms). The dependent measures were moral conviction, attitude extremity, and attitude importance.

Method

Participants. One hundred seventy-one undergraduate students at the University of Illinois at Chicago completed the study for partial credit in introductory psychology.[7]

Procedure. The procedures for Study 2 were identical to Study 1 with the exception that Study 2 only included the "high awareness" condition and included measures of the anger, disgust, and perceived harm.

Measures

All attitude measures were identical to those used in Study 1.

Harm appraisals. Participants reported the harm appraisals they associated with the images they saw with a single item. Participants were told to "think back to the images you saw at the beginning of the study" and to answer the item "to what extent was harm depicted in the images?" Responses were given using a 5-point scale with point labels as follows: *not at all*, *slightly*, *moderately*, *much*, and *very much.*

Emotional reactions. Participants reported the level of disgust and anger they experienced in reaction to the images they saw. Specifically, each emotion was measured with a single item. Similar to the harm appraisals, participants were told to "think back to the images you saw at the beginning of the study" and were asked "to what extent did the images make you feel disgusted (angry)?" They responded using a 5-point scale with point labels as follows: *not at all*, *slightly*, *moderately*, *much*, and *very much.* The three items measuring harm, disgust, and anger were presented to the participants in a random order.

Results

Moralization. Study 2 replicated the moral shock effect observed in Study 1 and supported the integral, rather than incidental, emotion hypothesis. Specifically, we conducted a one-way ANCOVA to test participants' level of moral conviction on the issue of abortion with stimulus condition as

Table 1. Study 2 Means and Standard Deviations for Moral Conviction, Anger, Disgust, and Harm as a Function of Stimulus Condition.

	Stimulus condition								
	Abortion			IAPS disgust			Neutral		
		95% CI			95% CI			95% CI	
	M (*SD*)	Lower	Upper	*M* (*SD*)	Lower	Upper	*M* (*SD*)	Lower	Upper
Moral conviction	3.75 (0.93)	3.53	3.96	3.36 (0.78)	3.15	3.58	3.38 (0.93)	3.17	3.59
Anger	2.93_a (1.18)	2.61	3.25	2.02_b (1.23)	1.72	2.32	1.16_c (0.72)	0.86	1.46
Disgust	4.05_a (0.95)	3.74	4.35	3.29_b (1.34)	3.01	3.58	1.10_c (0.59)	0.82	1.39
Harm	4.12_b (0.79)	3.89	4.35	4.54_a (0.90)	4.32	4.76	1.18_c (0.57)	0.97	1.40

Note. Different subscripts indicate significant difference within each row at $p < .05$ (Bonferroni corrected). Moral conviction means are estimated. Means for anger, disgust, and harm are observed. IAPS = International Affective Priming System; CI = confidence interval.

the independent variable and attitude importance and extremity as covariates. Results revealed a significant main effect of stimulus condition, $F(2, 167) = 3.93$, $p = .02$, $\hat{\omega}^2 = .028$. Abortion moral conviction was higher for participants shown the abortion images relative to those shown control images, $F(1, 167) = 5.66$, $p = .02$, $\hat{\omega}^2 = .044$. No difference in moral conviction was found between the IAPS disgust and control conditions, $F(1, 167) = 0.02$, $p = .90$, $\hat{\omega}^2 = .000$ (see the first row of Table 1). The same findings emerged when attitude importance and extremity were not included as controls (see Supplemental Materials).

Attitude strength. Also replicating the results of Study 1, stimulus condition did not affect attitude importance or extremity of participants' abortion attitudes. Specifically, we analyzed separate one-way ANCOVAs with stimulus content as the independent variable, and attitude importance and extremity as the dependent variables, controlling for moral conviction. Attitude importance and extremity were unaffected by experimental conditions, Fs < 1, *ns*. Furthermore, the results remained non-significant even if we did not include moral conviction as a covariate.

Mediation. To test whether the effects of stimulus condition on attitude moralization were mediated by disgust, anger, and/or harm, we first tested whether participants' self-reported emotional reactions to the images they saw differed across conditions with a 3 (stimulus content: abortion, IAPS disgust, neutral) × 3 (reaction: disgust, anger, harm) mixed-model ANOVA with stimulus content varying between participants and reactions to the images varying within-participants.

Consistent with the hypothesis that participants' emotional reactions differed as a function of stimulus condition, we found a significant two-way stimulus condition by reaction interaction, $F(4, 274) = 40.00$, $p < .001$, $\hat{\omega}^2 = .073$. As can be seen in Table 1, the abortion and the IAPS disgust conditions elicited more disgust, anger, and harm than the neutral condition, Fs(2, 138) > 31, $p < .001$, $\hat{\omega}^2 = .088 = .172$. IAPS disgust images aroused stronger appraisals of harm than the abortion images did, but the abortion images elicited more disgust and anger than the IAPS disgust condition.[8]

To test whether the effect of the abortion images on moral conviction, relative to control, were mediated by anger, disgust, and/or harm, we used bootstrapping techniques for testing direct and indirect effects with multiple mediators, based on 5,000 bootstrapped samples (Preacher & Hayes, 2008). We began by creating two dummy coded variables, one representing the abortion versus control condition and the other representing the IAPS disgust versus control condition. The abortion versus control dummy code was included as the independent variable in the analysis, and participants' self-reported anger, disgust, and harm reactions to the images they saw were included as mediators. The IAPS versus control dummy variable, attitude importance, and extremity were included in the analysis as controls. As can be seen in Figure 2, disgust fully mediated the effect of the abortion images on moral conviction relative to control, indirect effect = .58, 95% CI = [0.07, 1.11]. The indirect effects through anger and harm were non-significant, indirect effects = .06 and −.14, 95% CIs = [−0.17, 0.33] and [−0.76, 0.43], respectively.[9]

Study 2 Discussion

Study 2 provided a second demonstration that attitude relevant emotion can strengthen moral conviction. As predicted by the integral emotion hypothesis, abortion moral conviction increased relative to control only for participants exposed to "moral shocks" related to the issue of abortion. Attitudinally irrelevant, disgusting images that depicted harm did not lead to any change in moral conviction relative to the control condition. Furthermore, mediational analyses indicated that the difference in moral conviction between the abortion and control conditions resulted from the disgust participants' felt toward the abortion images, and not from their feelings of anger or appraisals of harm.

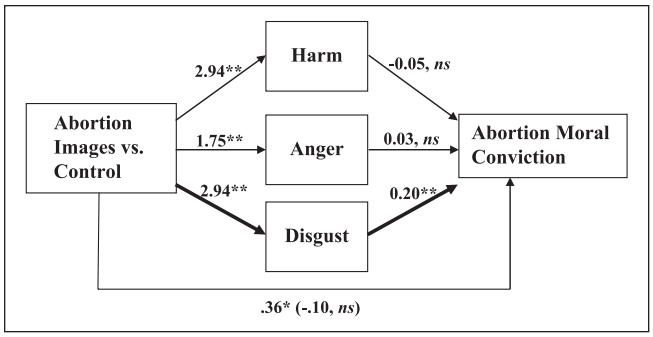

Figure 2. Multiple mediator model testing the indirect effect of the abortion images (vs. control) on abortion moral conviction through harm, anger, and disgust. *$p < .05$. **$p < .01$.

General Discussion

Activist organizers intuitively believe that visual depictions of shocking and disgusting material have the power to persuade and mobilize, a phenomenon labeled by sociologists as a "moral shock" effect (Jasper, 1997; Jasper & Poulsen, 1995). The two studies presented here experimentally tested the hypothesis that exposure to graphic and emotionally charged images can increase the degree to which people see an issue in moral terms. We also tested the processes that lead to, and possible boundary conditions of, moral shock effects. The results of this research are consistent with the interpretation that exposure to attitudinally relevant (but not irrelevant) emotionally evocative images increased moral convictions relative to control, and the effects of attitudinally relevant moral shocks on subsequent attitude moralization is mediated (at least in this case) by disgust, and not by anger or appraisals of harm. Furthermore, we also found that the moral shock effects were unique to morality: Attitudinally relevant, disgust inducing stimuli led to increased moral conviction, but did not affect attitude importance or extremity. Moral shocks, therefore, appear to moralize attitudes without affecting other dimensions of attitude strength.

One major goal of the current research was to also test competing hypotheses about the processes that lead to moral shock effects. One possibility is that moral shock effects are intuitive (Haidt, 2001), and appear in consciousness without the person's awareness of its source (i.e., the "outcome but not the process is accessible to consciousness," Haidt, 2001, p. 818). Alternatively, people may need to consciously be aware of a moral shock for moralization to occur. Our results supported the latter prediction: Moralization of people's abortion attitudes only occurred when people were consciously aware of morally shocking, emotional stimuli related to the issue of abortion. Subconscious and incidental disgust, in contrast, did not affect moral conviction.

Even in light of the results from the current studies in support of the integral emotion hypothesis, it should still be noted that it does not rule out intuition as playing some role in attitude moralization. Rather, it only predicts that intuition will not be sufficient to lead to moralization. It is possible, for example, that the consciously presented abortion-related images presented still aroused intuition that, in turn, affected people's feeling of moral conviction. That is, perhaps the results found in the current studies still reflect an, at least partially, intuitive process and the consciously presented abortion-related images were just particularly good at arousing such intuitions. This explanation would be consistent with other research showing that consciously presented manipulations can still affect behavior even without participants being aware of it (e.g., Bargh, Chen, & Burrows, 1996; Higgins, Rholes, & Jones, 1977). Future research is needed to fully rule out this possibility. Specifically, future studies could use new methods that help tease apart automatic and controlled processes (e.g., process disassociation, Conway & Gawronski, 2013), that assess cognitive appraisal processes associated with specific forms of discrete emotion (Horberg et al., 2011; Keltner, Horberg, & Oveis, 2006), and methods used in cognitive psychology to understand how emotion affects belief formation (Frijda, Manstead, & Bem, 2000).

In addition to demonstrating that moral shocks require conscious processing for moralization to occur, the results of our second study demonstrated that moralization effects depended more on disgust than on anger or perceptions of harm. Exposure to pictures of aborted fetuses, for example, could theoretically lead to a number of different reactions, including disgust, anger, and/or appraisals of harm. It was, therefore, important to empirically test which of these factors (or combinations of these factors) mediated the effect of moral shocks on attitude moralization. Study 2 revealed that moral shocks lead to attitude moralization primarily through aroused disgust, and not anger or appraisals of harm. These findings are inconsistent with theories that place harm in unique position in determining what people see as morally relevant (Gray et al., 2012) and those that emphasize anger over disgust (Royzman et al., 2014). Future research is still to explore when and how harm appraisals as well as discrete emotions affect different types of moral phenomena.

Finally, it is important to note that the generalizability of current results is somewhat limited and may be specific to the issue of abortion. Future work should test whether moral shock can affect people's sense of moral conviction related to other attitudes and whether this process operates solely through disgust or if other emotions can moralize as well. Given the variety of attitudes that people moralize (e.g., Ryan, 2014; Skitka et al., 2005), it seems unlikely that moralization results from a single emotion or even a single process. Indeed, recent correlational research has already found that stronger moral conviction can result both from feelings of hostility and anger and from positive emotion such as enthusiasm (Brandt et al., 2015).

In closing, we now know more than we did before about the psychology of moral shock and the processes that lead to attitude moralization. Moral shocks require the activation of attitudinally relevant disgust and conscious awareness of the

source of that disgust. This research also reveals the value of integrating theory and research across disciplines, and studying morality in the context of real world concerns.

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Notes

1. Participants' attitude stance on the issue of abortion (i.e., pro-life/oppose vs. pro-choice/support) was not included in the initial analysis because it required dropping the small number of participants who identified as "uncertain" about their attitude on the issue (n = 54 out of 462). Crossing these participants with the other eight cells of our design resulted in some cells containing fewer than 10 participants in some conditions. Thus, we decided to run our initial tests looking first at the full sample. Following the initial analyses, additional tests for moderation by attitude stance using the reduced sample excluding uncertain participants are also presented. A complete breakdown for both studies of the number of participants who support, oppose, or were uncertain about the issue of abortion is presented in the Supplemental Materials.
2. We decided to include private body consciousness (PBC) in the current study given its importance as a moderator of the relationship between incidental disgust and moral judgments (Schnall, Haidt, Clore, & Jordan, 2015; cf. Johnson et al., 2016). Regression analyses testing for PBC as a moderator of the central moralization results presented in both studies, however, were non-significant—F tests for the change in R^2 for Study 1, $F(3, 446) = 1.46$, $p = .226$, $\Delta R^2 = .009$; and Study 2, $F(2, 165) = 0.22$, $p = .804$, $\Delta R^2 = .002$. These findings provide additional evidence for the distinction between moral judgments and moral conviction (Bauman & Skitka, 2009). The specifics of these analyses are not presented here for the sake of simplicity; however, they can be obtained by contacting the first author.
3. The choice of presentation speeds was based on previous research showing the effect of subliminally presented stimuli on behavior and attitudes (Bargh & Pietromonaco, 1982; Kunst-Wilson & Zajonc, 1980; Neuberg, 1988), as well as work showing that subliminally presented images can affect performance on a recall test of those images, even following a 15-min delay (Bar & Biederman, 1998). Furthermore, we also ran an additional study to determine whether our three specific sets of experimental images could elicit a disgust response when presented at 14 ms using an implicit measure of discrete emotion (Bartoszek & Cervone, 2016). Results from this study found evidence for the effectiveness of our experimental stimuli (see the Supplemental Materials for a full description of these findings). Taken together, these studies show that it is reasonable to believe that our subliminal presentation of the negative images was sufficient to trigger a disgust response.
4. The correlation between the two moral conviction items was low relative to past moral conviction work (it usually falls well above .7). For this reason, we reran all analyses discussed here for each moral conviction item separately. The pattern of results did not differ as a function of how we operationalized moral conviction, but was slightly stronger for the item asking participants if their abortion stance was "closely related to their beliefs about right and wrong" than the item that asked if their abortion stance reflected their "core moral beliefs and convictions." We also ran our analysis including the two moral conviction items as a within-subjects factor. This factor did not moderate any of our results, which indicated that the pattern of results did not significantly differ across the two items. Thus, in keeping with past research, the results reported here are for the measure combining the two items.
5. The attitude moralization results were the same regardless of whether attitude importance and extremity were or were not included as covariates in the analysis. Analyses not including control variables are provided in the Supplemental Materials.
6. Other exploratory analyses indicated that participants' position on the issue of abortion (i.e., whether they were pro-life or pro-choice) did not moderate the stimulus content by awareness interaction, but that the basic moral shock effect (exposure to the fetus images vs. control) was stronger when participants who opposed rather than supported legalized abortion. Study 2, however, found the reverse pattern when side of issue was included in analyses: that is, stronger moral shock effects among abortion opponents than supporters. Because we do not find a stable result as a function of side of issue across studies, we are not emphasizing these results in the current article. The complete analyses taking into account side of issue, however, are provided in the Supplemental Materials.
7. The decision to include the additional measures of participants' harm appraisals and emotional reactions were made after data were collected for 31 participants. As a result, the N for any analyses including these measures is 140 rather than 171. Excluding these participants from the moralization analyses, however, does not change the pattern of our results.
8. We also followed up this interaction comparing the three reactions within each stimulus content condition. Participants in the neutral condition reported equally low levels of harm, anger, and disgust. The abortion images elicited equally strong perceptions of harm and disgust, and more harm and disgust than anger. Finally, the International Affective Priming System (IAPS) disgust condition elicited stronger harm than disgust reactions that, in turn, were greater than anger.
9. We also ran five additional mediational analyses testing: (a) the disgust, anger, and harm mediators separately, (b) whether anger moderated the mediation effect of disgust (i.e., a "moral outrage" effect, Salerno & Peter-Hagene, 2013), and (c) whether harm appraisals leads to anger that, in turn, leads to moral conviction (i.e., these two mediators included in series, Rozin, Lowery, Imada, & Haidt, 1999). None of these alternative models found significant indirect effects beyond the one for disgust reported here. Details of these analyses can be obtained by contacting the first author.

Supplemental Material

The online supplemental material is available at http://pspb.sagepub.com/supplemental

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