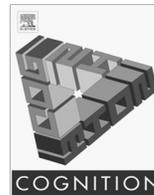




ELSEVIER

Contents lists available at ScienceDirect

Cognition

journal homepage: [www.elsevier.com/locate/COGNIT](http://www.elsevier.com/locate/COGNIT)

## Tainting the soul: Purity concerns predict moral judgments of suicide

Joshua Rottman<sup>a,\*</sup>, Deborah Kelemen<sup>a</sup>, Liane Young<sup>b</sup>

<sup>a</sup>Department of Psychology, Boston University, 64 Cummington Mall, Boston, MA 02215, United States

<sup>b</sup>Department of Psychology, Boston College, 140 Commonwealth Ave., Chestnut Hill, MA 02467, United States

### ARTICLE INFO

#### Article history:

Received 17 May 2013

Revised 11 November 2013

Accepted 13 November 2013

Available online xxxx

#### Keywords:

Morality

Suicide

Purity

Disgust

Harm

### ABSTRACT

Moral violations are typically defined as actions that harm others. However, suicide is considered immoral even though the perpetrator is also the victim. To determine whether concerns about *purity* rather than harm predict moral condemnation of suicide, we presented American adults with obituaries describing suicide or homicide victims. While harm was the only variable predicting moral judgments of homicide, perceived harm (toward others, the self, or God) did not significantly account for variance in moral judgments of suicide. Instead, regardless of political and religious views and contrary to explicit beliefs about their own moral judgments, participants were more likely to morally condemn suicide if they (i) believed suicide tainted the victims' souls, (ii) reported greater concerns about purity in an independent questionnaire, (iii) experienced more disgust in response to the obituaries, or (iv) reported greater trait disgust. Thus, suicide is deemed immoral to the extent that it is considered impure.

© 2013 Published by Elsevier B.V.

### 1. Introduction

Every year, approximately one million people take their own lives (World Health Organization, 2005). These acts of suicide elicit considerable moral condemnation (Gallup, 1978). Suicide represents an unusual kind of moral violation insofar as the perpetrator of the act is also the victim. This self-directed nature of suicide presents a puzzle for dyadic accounts of morality (Gray & Wegner, 2009, 2012), which require a violator (agent) and a victim (patient), and which identify other-directed concerns about harm as the cornerstone of moral psychology (Gray, Young, & Waytz, 2012; also see Royzman, Leeman, & Baron, 2009). If moral violations are typically considered wrong because of the harm inflicted on third parties, why is suicide so often judged to be immoral?

Some researchers have argued that objectively innocuous actions can nevertheless be *perceived* as causing

unseen harm to others, which then renders these actions immoral (Gray & Wegner, 2012; Gray et al., 2012; Turiel, Killen, & Helwig, 1987). There are several ways in which suicide could be conceptualized as harmful; for example, suicide may be thought to cause damage to the deceased person's family, to their community, or even to God or to a "future self". In order for people to perceive harm, one of these potential victims must first be identified. In a recent study, when participants were asked whether anyone is wronged when an individual ends her life, the majority (71%) answered in the affirmative, typically designating either the person's family or the person herself as the victim (DeScioli, Gilbert, & Kurzban, 2012). These perceptions of victimhood, which could then lead to perceptions of harm, have been claimed to account for people's moral condemnation of suicide (Gray et al., 2012).

Here we test whether these inferences of harmed victims play a fundamental role in the moral judgment itself or, alternatively, whether they are more likely to reflect post hoc rationalizations in support of the initial moral judgment of suicide (DeScioli et al., 2012; Ditto, Liu, &

\* Corresponding author. Tel.: +1 970 250 7048; fax: +1 617 353 6933.  
E-mail address: [rottman@bu.edu](mailto:rottman@bu.edu) (J. Rottman).

80 Wojcik, 2012). As prior work has shown, explicit justifica-  
81 tions do not always reflect the intuitive processes underly-  
82 ing moral judgments (Haidt, 2001; Hauser, Cushman,  
83 Young, Jin, & Mikhail, 2007). Recent research reveals that  
84 inferences of harm in moral violations where actual harm  
85 is absent (e.g., eating human tissue derived from cloning)  
86 tend to be effortful; harm inferences are impaired under  
87 cognitive load and are unrelated to the severity of moral  
88 judgments (Gutierrez & Giner-Sorolla, 2007). Thus, while  
89 justifications of moral judgments often include appeals to  
90 harm, actual or imagined harm are not necessarily the true  
91 causes of those judgments.

92 According to an alternative model of moral psychology,  
93 some moral concerns take the form of “sacred” or deonto-  
94 logical values that are considered inviolable regardless of  
95 clear consequences for the wellbeing of others (Chakroff,  
96 Dungan, & Young, 2013; Ditto et al., 2012; Graham, Haidt,  
97 & Nosek, 2009; Haidt, 2012; Haidt, Koller, & Dias, 1993;  
98 Shweder, Mahapatra, & Miller, 1987; Tetlock, 2003). In par-  
99 ticular, the “purity/sanctity” foundation of morality  
100 encompasses transgressions that are considered wrong be-  
101 cause they contaminate or degrade a sacred entity (Haidt,  
102 2012; Koleva, Graham, Iyer, Ditto, & Haidt, 2012). Because  
103 moral purity violations do not require harm to third par-  
104 ties, and because suicide is often described as a violation  
105 of God’s holy dominion over human life (e.g., Bering,  
106 2006), we suggest that moral judgments of suicide may  
107 be closely linked to concerns about impurity and sacrilege.  
108 Indeed, people with stronger beliefs that their life belongs  
109 to God (Ross & Kaplan, 1994) and that life is sacred  
110 (Sawyer & Sobal, 1987) are more disapproving of suicide,  
111 providing preliminary support for this claim. The present  
112 research provides a direct empirical test of the hypothesis  
113 that individual differences in the moral condemnation of  
114 suicide stem from variance in the tendency to value  
115 purity/sanctity, and, in particular, variance in concerns  
116 regarding the defilement of the soul. While it is possible  
117 that “purity” and “sanctity” have subtly different concep-  
118 tual profiles, these concepts are often treated as synony-  
119 mous (e.g., Graham et al., 2009), and we will use “purity”  
120 for the remainder of the paper as a shorthand term to refer  
121 to these concerns.

122 In Study 1, half of the participants were presented with  
123 a series of obituaries describing cases of suicide. The  
124 remaining participants were assigned to a control  
125 condition in which they were presented with obituaries  
126 describing cases of homicide, a prototypical harm-based  
127 violation. We asked all participants to rate each obituary  
128 according to five dimensions (i.e., how morally wrong,  
129 how harmful, how impure, how angering, how disgusting),  
130 and we entered these variables into a regression analysis to  
131 assess which factors predicted individual differences in  
132 judgments of moral wrongness. We hypothesized that par-  
133 ticipants would judge a suicide as morally wrong to the ex-  
134 tent that they perceived the suicide to have diminished the  
135 victim’s purity, but not to the extent that they perceived  
136 the suicide to have caused harm. We expected to find the  
137 opposite pattern for homicide. Additionally, because harm  
138 violations have been found to selectively elicit anger,  
139 whereas purity violations have been shown to selectively  
140 elicit disgust (Horberg, Oveis, Keltner, & Cohen, 2009;

Inbar, Pizarro, & Bloom, 2009; Rozin, Lowery, Imada, & 141  
Haidt, 1999; Russell & Giner-Sorolla, 2013; Russell, Piazza, 142  
& Giner-Sorolla, 2013; Seidel & Prinz, 2013; but see 143  
Chapman & Anderson, 2013), we investigated whether 144  
individual differences in moral judgments of suicide and 145  
homicide are associated with distinct emotional responses. 146

147 Because some researchers define harm very broadly 147  
(e.g., Gray et al., 2012), Study 2 aimed to ensure that the 148  
purity item in Study 1 (which asked about “taint to the 149  
soul”) was not being re-construed as a form of actual or 150  
symbolic harm. We therefore focused on suicide obituaries 151  
and asked participants to report the harm they perceived 152  
being done to others, to the self, and to God, in addition 153  
to reporting perceived impurity as in Study 1. Again, a 154  
regression analysis assessed the degree to which these 155  
factors independently predicted individual differences in 156  
moral judgments of suicide. 157

## 158 2. Study 1

### 159 2.1. Participants

160 Adults ( $n = 224$ ) living in the United States were 160  
recruited from Amazon Mechanical Turk, an online 161  
crowdsourcing website that has been found to yield valid 162  
and reliable data (Buhrmester, Kwang, & Gosling, 2011). 163  
Participants were excluded from analyses if they com- 164  
pleted the survey very quickly (less than 1 *SD* below the 165  
mean response time: 18 participants), missed at least one 166  
of two “catch questions” used as attention checks (19 addi- 167  
tional participants), or reported being non-American (13 168  
additional participants).<sup>1</sup> The final sample comprised 174 169  
participants (114 female;  $M_{\text{age}} = 21.14$ ,  $SD = 13.96$ ). Partici- 170  
pants were generally liberal ( $M = 3.35$ ,  $SD = 1.74$ ) and 171  
non-religious ( $M = 3.34$ ,  $SD = 2.22$ ), as confirmed by 172  
one-sample *t*-tests (scale midpoint = 4),  $ps < .001$ . 173

### 174 2.2. Materials and procedure

#### 175 2.2.1. Obituary task

176 Participants were randomly assigned either to the Sui- 176  
cide condition or to the Homicide condition. In each condi- 177  
tion, participants read eight fabricated obituaries 178  
(presented in randomized order) describing men and wom- 179  
en who had either taken their own lives (Suicide condi- 180  
tion) or who had been killed (Homicide condition). 181  
Crucially, the obituaries were identical across conditions 182  
except for a single word stating the cause of the death. 183  
The nature of the suicide or homicide was intentionally left 184  
unspecified, both in order to prevent extraneous factors 185  
from influencing the moral judgments and in order to 186  
make the obituaries more realistic. (All participants were 187  
briefed at the conclusion of the study and told that the 188  
obituaries were fictitious.) A sample obituary is as follows 189  
(other obituaries are reproduced in online supplementary 190  
materials): 191

<sup>1</sup> We restricted the Turk participants to the United States in order to obtain a higher proportion of native English speakers. However, the results did not change when the 13 non-Americans were included in the sample.

**Table 1**

Questions asked about each suicide/homicide obituary in Study 1.

Variable	Question
Wrong	Was it morally wrong for [name] to kill [himself/herself] to be killed?
Anger	When you think about [name]'s suicide/death, do you experience feelings of anger?
Disgust	When you think about [name]'s suicide/death, do you experience feelings of disgust?
Harm	Did [name]'s suicide/homicide cause harm?
Purity	Was the purity of [name]'s soul tainted as a result of [his/her] suicide/homicide?

192 Louise Parker, who was 68 years old, died on January 11,  
193 2008 due to [suicide/homicide].

194 Louise had always been very close with her siblings, and  
195 had recently spent the holidays with all five of them.  
196 Her brother Roger wrote, "Louise was a terrific sister.  
197 She was a joy to be around, and always knew how to  
198 make a person laugh. Her charm and energy were con-  
199 tagious and appreciated by everyone who met her. Lou-  
200 ise couldn't go anywhere without running into people  
201 she knew. I've been truly lucky to have spent so many  
202 quality years with her."

203  
204 Louise is survived by her brothers, Mark and Roger, and  
205 three sisters: Geraldine, Karen, and Theresa. Her memory  
206 will live on in the hearts of many.

207 All participants answered five questions about each  
208 obituary: how morally *wrong* the death was, how *angry* it  
209 made them feel, how *disgusted* it made them feel, how  
210 much *harm* had been done, and how *impure* the victim  
211 became<sup>2</sup> (see Table 1). All items were rated on a seven-point  
212 Likert scale. The question about moral wrongness was al-  
213 ways the first or last of these five questions (counterbalanced  
214 across participants), and the order of the other questions was  
215 randomized.

### 216 2.2.2. Additional questionnaires

217 We next administered the "Explicit Justification Task"  
218 (described in Section 2.2.3), after which we measured par-  
219 ticipants' general moral concerns about harm and purity  
220 with the Harm and Purity subscales of an independent mea-  
221 sure, the Moral Foundations Questionnaire (MFQ; Graham  
222 et al., 2011). Items were randomized across participants.  
223 Then, to measure whether individual differences in moral  
224 judgments of suicide and homicide were influenced by  
225 variations in stable dispositional tendencies to experience  
226 different emotions, we administered short measures of trait  
227 disgust (Inbar et al., 2009) and trait anger (Spielberger,  
228 Jacobs, Russell, & Crane, 1983). These trait emotion  
229 questionnaires were administered in a counterbalanced  
230 order after the MFQ; items were randomized within each

<sup>2</sup> Because the victim is also the perpetrator in the case of suicide, we conducted a replication study (Replication #3 in the online supplementary materials) in which we asked about the taint to the perpetrator's soul for both homicide and suicide (e.g., "Did [Joel's killer/Joel] taint the purity of his soul by killing [Joel/himself]?"). Reframing the question in this way did not affect the results for the purity variable (i.e., it remained a significant predictor for suicide,  $p < .001$ , and a non-significant predictor for homicide,  $p = .123$ ). In another replication study (Replication #4), we rephrased the purity question to ask whether the suicide or homicide was thought to "violate the sacredness" of the person's life, and again found similar results. See Tables S1 and S2 in the online supplementary materials.

questionnaire. At the conclusion of the study, participants  
completed a brief demographic survey measuring political  
and religious beliefs. Because political conservatism and  
religiosity are associated with increased endorsements of  
purity values (Graham et al., 2009; Preston & Ritter,  
2012), we predicted that these ideological variables would  
predict moral condemnations of suicide but not homicide.

### 238 2.2.3. Explicit justification task

239 As noted in the Introduction, there is reason to believe  
240 that the underlying bases of moral judgments are not al-  
241 ways accurately reflected in explicit moral beliefs (Haidt,  
2001; Hauser et al., 2007). To determine whether this is  
242 the case for suicide and/or homicide, participants were  
243 asked to rate their agreement (on a 7-point Likert scale)  
244 with the following justifications for moral judgments of  
245 suicide and moral judgments of homicide (adapted from  
246 Rozin et al., 1999). These were presented in random order,  
247 immediately after all eight of the obituaries had been  
248 evaluated:  
249

[Suicide/homicide] is wrong because it directly hurts  
other people. To decide if [suicide/homicide] is wrong,  
you might consider the harms that have been experienced  
by others, as well as thinking about things like justice and  
human rights.

[Suicide/homicide] is wrong because it disrespects the  
sacredness and purity of the self. To decide if [suicide/  
homicide] is wrong, you might think about things like  
sin, the natural order of things, and the sanctity of the soul.

## 260 2.3. Results

### 261 2.3.1. Preliminary analyses

262 Reliability analyses conducted on all task variables re-  
263 vealed high internal consistency among the eight obituar-  
264 ies in the Homicide and Suicide conditions (Cronbach's  $\alpha$   
265 ranged from .92 to .99). Responses were therefore col-  
266 lapsed across obituaries in subsequent analyses. Prelimin-  
267 ary analyses indicated that neither the participants' gender  
268 nor the order in which the moral wrongness question was  
269 asked (first vs. last) significantly influenced moral wrong-  
270 ness judgments; these variables were therefore removed  
271 from further analyses.<sup>3</sup>

<sup>3</sup> These variables were not significant covariates in regression analyses and did not change the results of the regressions, with one exception: Question Order (moral judgment: first vs. last) was a significant predictor of homicide judgments in a regression with trait anger and trait disgust,  $p = .04$ . This unpredicted result is not easily interpretable and will not be discussed further.

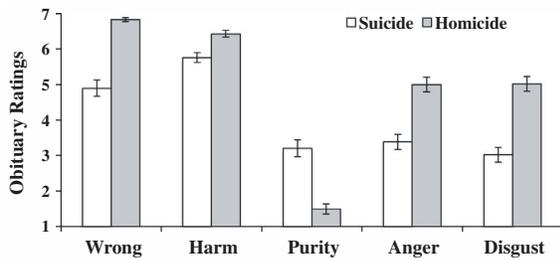


Fig. 1. Descriptive statistics for questions asked about each obituary. Variables were rated on a Likert scale ranging from 1 (low) to 7 (high). Error bars represent standard errors of the mean.

principal hypothesis: suicide, but not homicide, is considered immoral when there are elevated concerns about spiritual taint (impurity), while the same is not true for concerns about harm.

Second, we regressed judgments of moral wrongness onto ratings of anger and disgust reactions to the obituaries. For suicide obituaries, disgust ratings significantly predicted moral judgments of suicide, while anger ratings did not (see Table 4). For homicide obituaries, a regression analysis could not be run due to the multicollinearity of these variables. However, neither anger nor disgust was significantly correlated with moral wrongness ratings of homicide at a zero-order level. Our finding that disgust is a unique predictor of moral judgments of suicide is consistent with prior work on the distinctive role of disgust for judging purity-based transgressions (Horberg et al., 2009; Rozin et al., 1999; Russell et al., 2013; Seidel & Prinz, 2013). This result therefore provides further support for the hypothesis that suicide is perceived as a purity violation.

Third, we regressed judgments of moral wrongness onto ratings of MFQ harm and MFQ purity. For suicide obituaries, greater concerns about purity predicted moral wrongness judgments, whereas greater concerns about harm did not (see Table 4). For Homicide obituaries, the opposite was true: greater concerns about harm predicted moral wrongness judgments, whereas greater concerns about purity did not (see Table 5). We were thus able to detect the suicide/purity association and the homicide/harm association once again, this time by measuring moral concerns for harm and purity using a well-validated measure independent of, and unrelated to, the obituary task.

Fourth, we regressed judgments of moral wrongness onto ratings of trait anger and trait disgust. For suicide obituaries, trait disgust, but not trait anger, significantly predicted moral judgments (see Table 4). For Homicide obituaries, neither predictor reached significance (see Table 5). These findings provide a conceptual replication of the unique association between disgust and moral judgments of suicide.

For completeness, we also created composite “harm/anger” and “purity/disgust” variables, which combined equal weightings of the variables from the previous four analyses. For suicide obituaries, a linear regression demonstrated that the purity/disgust composite predicted moral judgments,  $B = 1.20, p < .001$ , while the harm/anger composite did not,  $B = -0.04, p = .870$ . For Homicide obituaries, a logistic regression showed that the harm/anger composite predicted moral judgments,  $B = 2.21, p = .001$ , while the purity/disgust composite was a non-significant negative predictor,  $B = -0.76, p = .070$ . Additionally, regression analyses with all eight predictor variables entered at once found that purity ratings,  $B = 0.29, p = .004$ , and MFQ purity concerns,  $B = 0.62, p < .001$ , predicted moral judgments of suicide, while harm ratings,  $B = 1.72, p = .004$ , predicted moral judgments of homicide.

### 2.3.3. Ideological influences

Given prior work linking purity-based (but not harm-based) morals to political conservatism and religiosity (Graham et al., 2009; Preston & Ritter, 2012), additional

Consistent with previous survey findings (e.g., Gallup, 1978), suicide was judged as morally wrong: Ratings of moral wrongness across the eight obituaries were significantly above the midpoint (4) of the Likert scale,  $M = 4.90$  ( $SD = 2.14$ ),  $t(86) = 3.93, p < .001$ . As expected, homicide was considered to be very morally wrong,  $M = 6.83$  ( $SD = 0.50$ ),  $t(86) = 52.28, p < .001$ , and more wrong than suicide,  $t(96) = 8.20, p < .001$ . Descriptive statistics (Fig. 1) also demonstrated that participants found homicide and suicide to be much more harmful than impure, although homicide was judged to be more harmful than suicide, and suicide was judged to be more impure than homicide ( $ps < .001$ ). Additionally, anger and disgust were both evoked at moderate levels, but both emotions were experienced more strongly for homicide than suicide ( $ps < .001$ ). However, as indicated by an examination of correlations (Tables 2 and 3), mean ratings are not very informative about the relationships amongst the different variables. Therefore, we turned to regression analyses for an examination of the factors that underlie individual differences in moral judgments of suicide and homicide.

### 2.3.2. Primary analyses

We conducted a series of regressions to investigate the factors predicting participants’ moral judgments of suicide and homicide. Because moral wrongness ratings on the Homicide obituaries were highly skewed toward the upper end of the scale, with kurtosis and skewness values that indicated a non-normal distribution, we carried out logistic regressions with this variable. Moral wrongness ratings were dummy coded for “extremely morally wrong” (ratings of 7 for all obituaries) and “not extremely morally wrong” (below-ceiling average ratings). Because moral wrongness ratings on the suicide obituaries did not violate normality assumptions, linear regressions were conducted on this variable.<sup>4</sup>

First, we regressed judgments of moral wrongness onto ratings of harmfulness and impurity (i.e., taint to the soul). For suicide obituaries, purity ratings significantly predicted judgments of moral wrongness, while harm ratings did not (see Table 4). For Homicide obituaries, we found the opposite pattern: harm, but not purity, significantly predicted moral wrongness (see Table 5). These results support our

<sup>4</sup> For completeness, logistic regressions were also conducted for Suicide obituaries, and these yielded similar results to the linear regressions reported here (see Table S3 in the online supplementary materials).

**Table 2**

Correlations between variables in the Suicide condition.

	Harm	Purity	Anger	Disgust	MFQ harm	MFQ purity	Trait anger	Trait disgust	Polit.	Relig.
Wrong	.26 <sup>*</sup>	.64 <sup>***</sup>	.30 <sup>**</sup>	.50 <sup>***</sup>	.08	.65 <sup>***</sup>	-.17	.25 <sup>*</sup>	.42 <sup>***</sup>	.56 <sup>***</sup>
Harm		.18	.18	.18	.09	.06	.03	.08	.22 <sup>*</sup>	.07
Purity			.38 <sup>***</sup>	.55 <sup>***</sup>	-.06	.55 <sup>***</sup>	-.03	.26 <sup>*</sup>	.42 <sup>***</sup>	.41 <sup>***</sup>
Anger				.73 <sup>***</sup>	-.10	.12	.35 <sup>**</sup>	.10	.11	-.04
Disgust					-.07	.33 <sup>**</sup>	.15	.17	.31 <sup>**</sup>	.11

<sup>\*</sup>  $p < .05$ .<sup>\*\*</sup>  $p < .01$ .<sup>\*\*\*</sup>  $p < .001$ .**Table 3**

Correlations between variables in the homicide condition.

	Harm	Purity	Anger	Disgust	MFQ harm	MFQ purity	Trait anger	Trait disgust	Polit.	Relig.
Wrong	.41 <sup>***</sup>	-.35 <sup>**</sup>	.15	.16	.21	-.05	-.15	.09	-.01	-.09
Harm		-.11	.33 <sup>**</sup>	.35 <sup>**</sup>	.37 <sup>***</sup>	.09	-.10	.26 <sup>*</sup>	-.02	.05
Purity			.04	.06	.01	.16	.16	.13	-.04	-.01
Anger				.90 <sup>***</sup>	.34 <sup>**</sup>	.24 <sup>*</sup>	.10	.32 <sup>**</sup>	.15	.18
Disgust					.38 <sup>***</sup>	.21	.08	.34 <sup>**</sup>	.09	.13

<sup>\*</sup>  $p < .05$ .<sup>\*\*</sup>  $p < .01$ .<sup>\*\*\*</sup>  $p < .001$ .**Table 4**

Results of the linear regression analyses of suicide obituaries, with moral wrongness as the outcome variable. Beta values represent unstandardized regression coefficients. Significant predictors are bolded.

Regression	Predictor	Beta	SE (B)	t	p	Semi-partial correlation
#1	Harm	0.23	0.13	1.72	.089	.141
	<b>Purity</b>	<b>0.60</b>	<b>0.08</b>	<b>7.39</b>	<b>.000</b>	<b>.607</b>
#2	Anger	-0.13	0.15	-0.91	.365	-.086
	<b>Disgust</b>	<b>0.64</b>	<b>0.15</b>	<b>4.26</b>	<b>.000</b>	<b>.402</b>
#3	MFQ harm	0.02	0.25	0.07	.948	.005
	<b>MFQ purity</b>	<b>1.03</b>	<b>0.13</b>	<b>7.74</b>	<b>.000</b>	<b>.644</b>
#4	Trait anger	-0.25	0.18	-1.37	.174	-.144
	<b>Trait disgust</b>	<b>0.43</b>	<b>0.19</b>	<b>2.19</b>	<b>.031</b>	<b>.229</b>

**Table 5**

Results of the logistic regression analyses of homicide obituaries, with moral wrongness as the outcome variable. Beta values represent unstandardized regression coefficients. Significant predictors are bolded.

Regression	Predictor	Beta	SE (B)	Wald	df	p	Odds ratio
#1	<b>Harm</b>	<b>1.76</b>	<b>0.44</b>	<b>15.95</b>	<b>1</b>	<b>.001</b>	<b>5.82</b>
	Purity	-0.36	0.22	2.76	1	.097	0.70
#2	Could not be run due to multicollinearity						
#3	<b>MFQ Harm</b>	<b>1.27</b>	<b>0.41</b>	<b>9.44</b>	<b>1</b>	<b>.002</b>	<b>3.55</b>
	MFQ purity	-0.36	0.26	1.87	1	.171	0.70
#4	Trait anger	-0.23	0.27	0.72	1	.395	0.79
	Trait disgust	0.44	0.26	2.93	1	.087	1.56

374 analyses provide further support of the hypothesis that  
 375 moral judgments of suicide can be accounted for by  
 376 purity-related concerns. Participants who were more  
 377 politically conservative found suicide to be more morally  
 378 wrong,  $r(85) = .42$ ,  $p < .001$ ; this was not the case for

homicide,  $r(85) = -.01$ ,  $p = .899$ . Similarly, participants  
 who were more religious found suicide to be more morally  
 wrong,  $r(85) = .56$ ,  $p < .001$ ; this was not the case for homi-  
 cide,  $r(85) = -.09$ ,  $p = .387$ . Both political conservatism and  
 religiosity were found to independently predict moral

379  
 380  
 381  
 382  
 383

384 judgments of suicide, as shown in a regression analysis: for  
385 conservatism,  $B = .345$ ,  $p = .004$ ; for religiosity,  $B = .450$ ,  
386  $p < .001$ .

387 Critically, however, political conservatism and religiosity  
388 did not account for the link between purity concerns and  
389 moral judgments of suicide. When controlling for political  
390 conservatism and religiosity in the regression analyses con-  
391 ducted on the suicide obituaries, obituary purity ratings and  
392 MFQ purity concerns remained highly significant predictors  
393 of moral wrongness ( $ps < .003$ ). Even when the analyses  
394 were restricted to non-religious liberals (ratings of political  
395 conservatism  $< 4$  and ratings of religiosity  $< 4$ ), both purity,  
396  $B = 0.77$ ,  $p = .001$ , and MFQ purity,  $B = 1.00$ ,  $p < .05$ , contin-  
397 ued to predict moral judgments of suicide; harm and MFQ  
398 harm remained non-significant predictors ( $ps > .35$ ).<sup>5</sup> Addi-  
399 tionally, both the purity ratings on the obituaries and MFQ  
400 purity concerns significantly mediated the effects of  
401 conservatism and religiosity on moral judgments of suicide  
402 (see Fig. S1 in the online supplementary materials).<sup>6</sup>

#### 403 2.3.4. Explicit Justifications

404 We examined participants' relative support for the two  
405 explicit justifications (i.e., sets of general principles)  
406 provided to them regarding the immorality of suicide and  
407 homicide. Overall, the harm principle was explicitly  
408 endorsed as a more relevant justification than the purity  
409 principle not only for homicide (Harm:  $M = 6.67$ ,  $SD =$   
410  $0.81$ ; Purity:  $M = 4.80$ ,  $SD = 2.30$ ),  $t(172) = 9.79$ ,  $p < .001$ ,  
411 but also for suicide (Harm:  $M = 5.26$ ,  $SD = 1.85$ ; Purity:  
412  $M = 3.94$ ,  $SD = 2.38$ ),  $t(172) = 7.38$ ,  $p < .001$ . These results  
413 indicate that participants did not realize (or did not accu-  
414 rately report) why they judged suicide to be morally wrong,  
415 demonstrating that verbal reports do not always reflect the  
416 underlying source of judgments (Haidt, 2001; Nisbett & Wil-  
417 son, 1977). Additionally, endorsements of the purity-based  
418 justification correlated with moral judgments of suicide,  
419  $r(85) = .76$ ,  $p < .001$ , while endorsements of the harm-based  
420 justification did not,  $r(85) = .08$ ,  $p = .488$ . Endorsements of  
421 the purity-based justification also correlated with disgust  
422 toward the obituaries,  $r(85) = .45$ ,  $p < .001$ , beliefs that sui-  
423 cide tainted the person's soul,  $r(85) = .65$ ,  $p < .001$ , beliefs  
424 that suicide caused harm,  $r(85) = .26$ ,  $p = .017$ , trait disgust,  
425  $r(85) = .26$ ,  $p < .001$ , MFQ Purity,  $r(85) = .68$ ,  $p < .001$ , politi-  
426 cal conservatism,  $r(85) = .34$ ,  $p < .001$ , and religiosity,  
427  $r(85) = .52$ ,  $p < .001$ . When explicit justification ratings were  
428 controlled for, purity (i.e., "tainting the soul") remained a  
429 significant predictor of moral judgments of suicide,  $B =$   
430  $0.25$ ,  $p = .004$ , as did MFQ Purity,  $B = 0.34$ ,  $p = .027$ .

#### 431 2.4. Discussion

432 Study 1 provides evidence that suicide is considered  
433 morally wrong because it is perceived to taint the

<sup>5</sup> Disgust, but not trait disgust, also continued to predict moral judgments of suicide when controlling for conservatism and religiosity. Both disgust and trait disgust remained significant predictors for the subset of non-religious liberals.

<sup>6</sup> Disgust, but not trait disgust, also significantly mediated the effect of conservatism on moral judgments of suicide. Neither disgust nor trait disgust significantly mediated the relationship between religiosity and moral judgments of suicide.

soul – and not because it is perceived to cause harm. This  
conclusion is supported by converging results from four  
regression analyses, demonstrating that moral judgments  
of suicide were predicted by assessments of impurity and  
feelings of disgust when reading obituaries, as well as  
independently reported tendencies to be concerned about  
purity and to be easily disgusted. In a stark juxtaposition,  
participants' moral judgments of homicide were predicted  
by assessments of harm when reading obituaries and inde-  
pendently reported concerns about harm, a pattern that  
was found despite restricted variability in wrongness judg-  
ments of homicide.

In the obituary task, participants were asked simply  
whether the death caused harm. While this question was  
designed to be broad enough to allow participants to  
construe harm in a variety of ways, the generality of this  
question could also be seen as a potential limitation insofar  
as the "harm" may have been too vague to capture partic-  
ipants' nuanced perceptions of damage or suffering. To  
address this issue, we ran a second study in which we  
asked participants to rate the same suicide obituaries on  
a variety of specific harms – to others, to the self, and to  
God – in addition to evaluating the impurity of the victim's  
soul as in Study 1.<sup>7</sup>

### 458 3. Study 2

#### 459 3.1. Participants

460 Adults ( $n = 101$ ) living in the United States were re-  
461 cruited from Amazon Mechanical Turk. Participants were  
462 excluded from data analysis if they completed the survey  
463 too quickly (less than 1  $SD$  below the mean response time:  
464 7 participants) or reported being non-American (5  
465 additional participants). The final sample comprised 89  
466 participants (42 female,  $M_{age} = 31.65$ ,  $SD = 12.49$ ). Again,  
467 participants were liberal ( $M = 3.38$ ,  $SD = 1.61$ ) and non-reli-  
468 gious ( $M = 2.55$ ,  $SD = 1.96$ ), as confirmed by one-sample  
469  $t$ -tests (scale midpoint = 4),  $ps \leq .001$ .

#### 470 3.2. Materials and procedure

471 Participants read the same suicide obituaries from  
472 Study 1. All participants answered five questions about  
473 each obituary: how morally *wrong* the death was, how  
474 much *harm* had been done *to other people*, how much *harm*  
475 had been done *to the self*, how much *harm* had been done *to*  
476 *God*, and how *impure* the victim's soul became (see Table  
477 6). Participants were also given the explicit justification  
478 task and the demographics questionnaire administered in  
479 Study 1. Counterbalancing and randomization methods  
480 paralleled Study 1.

<sup>7</sup> In light of recent concerns about replicability in psychological science (e.g., Open Science Collaboration, 2012), we also conducted four replication studies that used the same general methods reported here. For brevity, and to avoid repetitiveness, the materials and results of these studies are presented in brief in the online supplementary materials (see Tables S1 and S2). More details are available from the authors upon request.

## 481 3.3. Results and discussion

## 482 3.3.1. Preliminary analyses

483 Reliability analyses found high internal consistency  
484 among the eight obituaries (Cronbach's  $\alpha$  ranged from .90  
485 to 1.00), so the data were again collapsed across obituaries.  
486 The order in which the moral wrongness question was  
487 asked (first vs. last) did not influence moral judgments or  
488 change the results, and this variable was not a significant  
489 covariate, so it was removed from analyses.<sup>8</sup> Descriptive  
490 statistics (Fig. 2) and correlations (Table 7) were explored  
491 for all variables.

## 492 3.3.2. Primary analyses

493 We regressed judgments of moral wrongness onto rat-  
494 ings of impurity and our three measures of harm. Once  
495 again, purity ratings independently predicted judgments  
496 of moral wrongness, while harm ratings did not, either  
497 for others, the self, or God (see Table 8). These results pro-  
498 vide converging evidence that suicide is considered more  
499 immoral when concerns about purity, rather than harm,  
500 are elevated.<sup>9</sup>

## 501 3.3.3. Additional analyses

502 All relevant results regarding political conservatism and  
503 religiosity from Study 1 were replicated in this sample (see  
504 Additional Results in online supplementary materials). We  
505 also replicated the Study 1 finding that the harm principle  
506 was explicitly endorsed as a more relevant justification  
507 than the purity principle (Harm:  $M = 5.22$ ,  $SD = 1.78$ ;  
508 Purity:  $M = 3.17$ ,  $SD = 2.33$ ),  $t(87) = 8.21$ ,  $p < .001$ .

## 509 4. General discussion

510 Philosophers have long debated whether suicide is best  
511 considered a harm-based violation or a defilement of the  
512 sacred (see Battin & Mayo, 1980). This meta-ethical uncer-  
513 tainty was perhaps best captured by Dante, who expressed  
514 ambivalence in his categorization of suicide by assigning it  
515 to a unique ring of hell precariously situated between the  
516 rings of harm and impurity in the Seventh Circle (Alighieri,  
517 1314/2000). The present research investigated this issue in  
518 a new light by examining the distinct signatures of folk  
519 moral attitudes toward suicide vs. homicide. Across two  
520 studies, we found that suicide is considered wrong to the  
521 extent that it taints the soul – not the degree to which it  
522 is perceived as harmful. This suggests that harm-based or  
523 dyadic theories of morality (e.g., Gray & Wegner, 2012;  
524 Gray et al., 2012) cannot fully account for all moral

judgments. Indeed, it is unlikely that all moral judgments  
are based upon a single unifying principle, and models of  
moral cognition therefore need to account for multiple  
foundations upon which different kinds of judgments can  
be based (Haidt, 2012; Sinnott-Armstrong & Wheatley,  
2013).

Notably, suicide was considered very harmful, both to  
other people and to the self. Unlike other studies that have  
investigated putatively *harmless* purity violations, includ-  
ing consensual sibling incest or eating dead pet dogs (Haidt  
et al., 1993), we found that suicide is viewed as even more  
harmful than impure (see Figs. 1 and 2). This research  
therefore provides the first demonstration that purity con-  
cerns can be more closely linked to moral judgments than  
harm concerns even when both concerns are potentially  
relevant. In other words, even though participants did  
not judge suicide to taint victims' souls to the same extent  
that they judged suicide to cause harm, their moral judg-  
ments were associated only with their purity-based assess-  
ments about the tainting of souls. Following previous  
research that has identified relevant foundations by look-  
ing at correlations rather than mean endorsements (e.g.,  
Koleva et al., 2012), we take this pattern to suggest that  
suicide should be classified as a purity-based violation.

The current work also demonstrates that, while politi-  
cally conservative and religious individuals find suicide  
more morally wrong than secular liberals, even self-de-  
scribed non-religious liberals consider suicide to be morally  
wrong – and, crucially, they consider it to be morally  
wrong on account of purity concerns. These results suggest  
that even if people explicitly deny the existence of religi-  
ous phenomena, natural tendencies to at least implicitly  
believe in souls (Bering, 2006) can underlie intuitive moral  
judgments. While previous studies have primarily found  
evidence for purity concerns in conservative, religious,  
low-SES, and/or non-Western societies (Graham et al.,  
2009; Haidt et al., 1993; Shweder et al., 1987), this re-  
search demonstrates that purity concerns can also  
significantly account for the moral judgments of liberal,  
non-religious Americans. Indeed, purity concerns may be  
more widespread than previously realized (Koleva et al.,  
2012), and studying "WEIRD" (Western, educated, indus-  
trialized, rich, democratic; Henrich, Heine, & Norenzayan,  
2010) samples may be especially informative in under-  
standing the pervasiveness of purity concerns.

Claims that moral judgments are affectively laden  
(Greene, 2007; Haidt, 2001; Nichols, 2004) received some  
support. In Study 1, state disgust (as felt while reading  
the obituaries) and trait disgust both uniquely predicted  
judgments of moral wrongness for suicide. These patterns  
dovetail with previous findings that state disgust height-  
ens the moral condemnation of purity violations (Horberg  
et al., 2009; Seidel & Prinz, 2013), as well as previous find-  
ings that dispositional tendencies to experience disgust  
(i.e., disgust sensitivity) predict purity-based moral judg-  
ments (e.g., Inbar et al., 2009). This research is among the  
first to document a moral purity violation that is associated  
with disgust in the absence of obvious physical or bodily  
(including sexual) contamination, such as touching a  
corpse (Rozin et al., 1999) or belonging to a necrophilia  
club (Gutierrez & Giner-Sorolla, 2007). The current findings

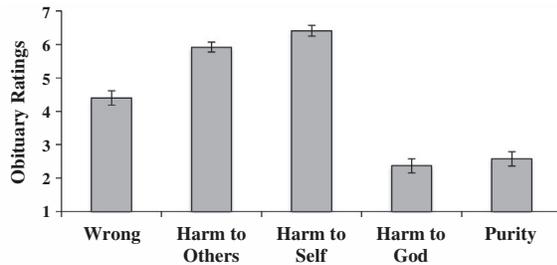
525  
526  
527  
528  
529  
530  
531  
532  
533  
534  
535  
536  
537  
538  
539  
540  
541  
542  
543  
544  
545  
546  
547  
548  
549  
550  
551  
552  
553  
554  
555  
556  
557  
558  
559  
560  
561  
562  
563  
564  
565  
566  
567  
568  
569  
570  
571  
572  
573  
574  
575  
576  
577  
578  
579  
580  
581  
582  
583  
584  
585

<sup>8</sup> A gender difference was found in this study, however. Although males and females judged suicide as equally morally wrong,  $t(87) = 1.00$ ,  $p = .319$ , gender influenced the results of the regression analysis. While purity ratings significantly predicted moral wrongness judgments for both males and females ( $ps \leq .001$ ), ratings of harm to others also predicted moral wrongness judgments for men ( $B = 0.44$ ,  $p < .01$ ) but not for women ( $B = 0.03$ ,  $p = .907$ ).

<sup>9</sup> Of course, it is conceivable that spiritual taint could be re-construed as yet another form of "harm" that is unrelated to harm to others, to the self, or to God (e.g., Gray et al., 2012), but such an interpretation of harm may be too broad to serve as a useful extension of the typical "harm" concept (Sinnott-Armstrong & Wheatley, 2013).

**Table 6**  
Questions asked about each suicide obituary in Study 2.

Variable	Question
Wrong	Was it morally wrong for [name] to kill [himself/herself]?
Harm to others	Did [name]'s suicide cause harm to other people?
Harm to self	Did [name]'s suicide cause harm to [himself/herself]?
Harm to God	Did [name]'s suicide cause harm to God?
Purity	Was the purity of [name]'s soul tainted as a result of [his/her] suicide?



**Fig. 2.** Descriptive statistics for questions asked about each obituary in Study 2. Variables were rated on a Likert scale ranging from 1 (low) to 7 (high). Error bars represent standard errors of the mean.

ent measures of disgust should be utilized in future studies. Other forms of suicide should be studied as well; for example, the morality of suicide terrorism (Rottman & Kellermen, 2014), assisted suicide, and honor suicide (including sati) are ripe topics for experimental inquiry. Additionally, a broader population pool (especially the inclusion of participants from other cultures) would allow conclusions to be drawn about the universality or cultural variability of moral judgments of suicide (Henrich et al., 2010). Finally, while this research has demonstrated that purity concerns explain a substantial proportion of the variance in people's moral condemnation of suicide, other factors should also be investigated in future studies. It is especially important to identify and investigate variables that attenuate rather than amplify moral condemnation of suicide, as the factors that mitigate moral judgments of harm-based transgressions (e.g., intention and causality; Cushman, 2008; Pizarro, Uhlmann, & Bloom, 2003) are often distinct from the factors that mitigate moral judgments of purity-based transgressions (Piazza, Russell, & Sousa, 2013; Russell & Giner-Sorolla, 2011; Young & Saxe, 2011).

Overall, this research informs a scientific understanding of the nature and scope of moral cognition, the relevance of emotions to moral judgments, and the dissociation between moral judgments and justifications. Beyond these theoretical contributions, the current findings also shed light on the real-world issue of people's psychological reactions to suicide, demonstrating that moral judgments of suicide are not only complex but connected to potentially

586 therefore conflict with claims that moral purity violations  
587 are inherently tied to bodily disease or degradation (e.g.,  
588 Russell & Giner-Sorolla, 2013). The present work, however,  
589 is consistent with research showing that self-directed moral  
590 transgressions are perceived as purity violations regard-  
591 less of whether they are contaminating (Chakroff et al.,  
592 2013; also see Young & Tsoi, 2013), and with research  
593 demonstrating that various non-bodily forms of degrada-  
594 tion (e.g., air pollution or littering) can also become linked  
595 to moral purity concerns (Feinberg & Willer, 2013).

596 Certain limitations of this research should be addressed  
597 in future investigations. Because linguistic measures of  
598 emotions, and particularly disgust, have been proposed  
599 as problematic (e.g., Nabi, 2002; Russell et al., 2013), differ-

**Table 7**  
Correlations between variables in Study 2.

	Harm to others	Harm to self	Harm to God	Purity
Wrong	.21	.16	.46***	.63***
Harm to others		.20	.18	.04
Harm to self			.07	-.02
Harm to God				.72***

\*  $p < .05$ .  
\*\*  $p < .01$ .  
\*\*\*  $p < .001$ .

**Table 8**  
Results of the Study 2 linear regression analyses of suicide obituaries, with moral wrongness as the outcome variable. Beta values represent unstandardized regression coefficients. Significant predictors are bolded.

Predictor	Beta	SE (B)	t	p	Semi-partial correlation
Harm to others	0.24	0.12	1.93	.057	.156
Harm to self	0.20	0.11	1.72	.089	.140
Harm to God	-0.06	0.12	-0.49	.628	-.039
<b>Purity</b>	<b>0.67</b>	<b>0.12</b>	<b>5.62</b>	<b>.000</b>	<b>.456</b>

629 unexpected, implicit conceptual concerns. A greater under-  
630 standing of the processes that are relevant to the condem-  
631 nation of suicide victims may prove useful for the millions  
632 worldwide who are affected by this widespread tragedy.

### 633 Acknowledgments

634 This research was supported by NSF GRF DGE-1247312  
635 to J.R., a John Templeton Foundation grant to L.Y., and NSF  
636 1007984 to D.K. Thanks to Rawan Missouri for research  
637 assistance, Tim Brown and Kim Saudino for statistical  
638 advice, and Lysa Adams, Deborah Belle, Alek Chakroff,  
639 Peter DeScioli, James Dungan, Roger Giner-Sorolla, Kurt  
640 Gray, Elena Hoicka, Izzat Jarudi, Mary Kayyal, Joanna  
641 Korman, Joe Paxton, Adrian Ward, and two anonymous  
642 reviewers for invaluable feedback.

### 643 Appendix A. Supplementary material

644 Supplementary data associated with this article can be  
645 found, in the online version, at [http://dx.doi.org/10.1016/](http://dx.doi.org/10.1016/j.cognition.2013.11.007)  
646 [j.cognition.2013.11.007](http://dx.doi.org/10.1016/j.cognition.2013.11.007).

### 647 References

- 648 Alighieri, D. (2000). *Inferno*. (R. Hollander & J. Hollander, Trans.) New  
649 York: Anchor Books (Original work published 1314).
- 650 Battin, M. P., & Mayo, D. J. (Eds.). (1980). *Suicide: The philosophical issues*.  
651 New York: St. Martin's Press.
- 652 Bering, J. (2006). The folk psychology of souls. *Behavioral and Brain*  
653 *Sciences*, 29(5), 453–462.
- 654 Buhrmester, M., Kwang, T., & Gosling, S. D. (2011). Amazon's mechanical  
655 Turk: A new source of inexpensive, yet high-quality, data?  
656 *Perspectives on Psychological Science*, 6(1), 3–5. [http://dx.doi.org/](http://dx.doi.org/10.1177/1745691610393980)  
657 [10.1177/1745691610393980](http://dx.doi.org/10.1177/1745691610393980).
- 658 Chakroff, A., Dungan, J., & Young, L. (2013). Harming ourselves and  
659 defiling others: What determines a moral domain? *PLoS ONE*, 8(9),  
660 e74434. <http://dx.doi.org/10.1371/journal.pone.0074434.s003>.
- 661 Chapman, H. A., & Anderson, A. K. (2013). Things rank and gross in nature:  
662 A review and synthesis of moral disgust. *Psychological Bulletin*, 139(2),  
663 300–327. <http://dx.doi.org/10.1037/a0030964>.
- 664 Cushman, F. (2008). Crime and punishment: Distinguishing the roles of  
665 causal and intentional analyses in moral judgment. *Cognition*, 108,  
666 353–380. <http://dx.doi.org/10.1016/j.cognition.2008.03.006>.
- 667 DeScioli, P., Gilbert, S. S., & Kurzban, R. (2012). Indelible victims and  
668 persistent punishers in moral cognition. *Psychological Inquiry*, 23(2),  
669 143–149. <http://dx.doi.org/10.1080/1047840X.2012.666199>.
- 670 Ditto, P. H., Liu, B. L., & Wojcik, S. P. (2012). Is anything sacred anymore?  
671 *Psychological Inquiry*, 23(2), 155–161. [http://dx.doi.org/10.1080/](http://dx.doi.org/10.1080/1047840X.2012.669248)  
672 [1047840X.2012.669248](http://dx.doi.org/10.1080/1047840X.2012.669248).
- 673 Feinberg, M., & Willer, R. (2013). The moral roots of environmental  
674 attitudes. *Psychological Science*, 24(1), 56–62. [http://dx.doi.org/](http://dx.doi.org/10.1177/0956797612449177)  
675 [10.1177/0956797612449177](http://dx.doi.org/10.1177/0956797612449177).
- 676 Gallup, G. (1978). *The Gallup poll: Public opinion 1971–1977*. (Vol. 1).  
677 Wilmington, DE: Scholarly Resources.
- 678 Graham, J., Haidt, J., & Nosek, B. A. (2009). Liberals and conservatives rely  
679 on different sets of moral foundations. *Journal of Personality and Social*  
680 *Psychology*, 96(5), 1029–1046.
- 681 Graham, J., Nosek, B. A., Haidt, J., Iyer, R., Koleva, S., & Ditto, P. H. (2011).  
682 Mapping the moral domain. *Journal of Personality and Social*  
683 *Psychology*, 101(2), 366–385. <http://dx.doi.org/10.1037/a0021847>.
- 684 Gray, K., & Wegner, D. M. (2009). Moral typecasting: Divergent  
685 perceptions of moral agents and moral patients. *Journal of*  
686 *Personality and Social Psychology*, 96(3), 505–520. [http://dx.doi.org/](http://dx.doi.org/10.1037/a0013748)  
687 [10.1037/a0013748](http://dx.doi.org/10.1037/a0013748).
- 688 Gray, K., & Wegner, D. M. (2012). Morality takes two: Dyadic morality and  
689 mind perception. In P. R. Shaver & M. Mikulincer (Eds.), *The social*  
690 *psychology of morality: Exploring the causes of good and evil*  
691 (pp. 109–127). Washington, DC: American Psychological Association.
- 692 Gray, K., Young, L., & Waytz, A. (2012). Mind perception is the essence of  
693 morality. *Psychological Inquiry*, 23(2), 101–124. [http://dx.doi.org/](http://dx.doi.org/10.1080/1047840X.2012.651387)  
694 [10.1080/1047840X.2012.651387](http://dx.doi.org/10.1080/1047840X.2012.651387).

- Greene, J. D. (2007). The secret joke of Kant's soul. In W. Sinnott-  
695 Armstrong (Ed.), *Moral psychology. The neuroscience of morality: Emotion, brain disorders, and development* (Vol. 3, pp. 35–79).  
696 Cambridge, MA: MIT Press.
- 697 Gutierrez, R., & Giner-Sorolla, R. (2007). Anger, disgust, and presumption  
698 of harm as reactions to taboo-breaking behaviors. *Emotion*, 7(4),  
699 853–868. <http://dx.doi.org/10.1037/1528-3542.7.4.853>.
- 700 Haidt, J. (2001). The emotional dog and its rational tail: A social  
701 intuitionist approach to moral judgment. *Psychological Review*,  
702 108(4), 814–834.
- 703 Haidt, J. (2012). *The righteous mind: Why good people are divided by politics*  
704 *and religion*. New York: Pantheon.
- 705 Haidt, J., Koller, S., & Dias, M. (1993). Affect, culture, and morality, or is it  
706 wrong to eat your dog? *Journal of Personality and Social Psychology*,  
707 65(4), 613–628.
- 708 Hauser, M., Cushman, F., Young, L., Jin, R. K., & Mikhail, J. (2007). A  
709 dissociation between moral judgments and justifications. *Mind &*  
710 *Language*, 22(1), 1–21.
- 711 Henrich, J., Heine, S. J., & Norenzayan, A. (2010). The weirdest people in  
712 the world? *Behavioral and Brain Sciences*, 33, 61–83. [http://dx.doi.org/](http://dx.doi.org/10.1017/S0140525X0999152X)  
713 [10.1017/S0140525X0999152X](http://dx.doi.org/10.1017/S0140525X0999152X).
- 714 Horberg, E. J., Oveis, C., Keltner, D., & Cohen, A. B. (2009). Disgust and the  
715 moralization of purity. *Journal of Personality and Social Psychology*,  
716 97(6), 963–976. <http://dx.doi.org/10.1037/a0017423>.
- 717 Inbar, Y., Pizarro, D. A., & Bloom, P. (2009). Conservatives are more easily  
718 disgusted than liberals. *Cognition and Emotion*, 23(4), 714–725. [http://](http://dx.doi.org/10.1080/02699930802110007)  
719 [dx.doi.org/10.1080/02699930802110007](http://dx.doi.org/10.1080/02699930802110007).
- 720 Koleva, S. P., Graham, J., Iyer, R., Ditto, P. H., & Haidt, J. (2012). Tracing the  
721 threads: How five moral concerns (especially Purity) help explain  
722 culture war attitudes. *Journal of Research in Personality*, 46(2),  
723 184–194. <http://dx.doi.org/10.1016/j.jrp.2012.01.006>.
- 724 Nabi, R. L. (2002). The theoretical versus the lay meaning of disgust:  
725 Implications for emotion research. *Cognition and Emotion*, 16(5),  
726 695–703. <http://dx.doi.org/10.1080/02699930143000437>.
- 727 Nichols, S. (2004). *Sentimental rules: On the natural foundations of moral*  
728 *judgment*. New York: Oxford University Press.
- 729 Nisbett, R. E., & Wilson, T. D. (1977). Telling more than we can know:  
730 Verbal reports on mental processes. *Psychological Review*, 84(3),  
731 231–259.
- 732 Open Science Collaboration. (2012). An open, large-scale, collaborative  
733 effort to estimate the reproducibility of psychological science.  
734 *Perspectives on Psychological Science*, 7, 657–660. [http://dx.doi.org/](http://dx.doi.org/10.1177/1745691612462588)  
735 [10.1177/1745691612462588](http://dx.doi.org/10.1177/1745691612462588).
- 736 Piazza, J., Russell, P. S., & Sousa, P. (2013). Moral emotions and the  
737 envisaging of mitigating circumstances for wrongdoing. *Cognition and*  
738 *Emotion*, 27(4), 707–722. [http://dx.doi.org/10.1080/](http://dx.doi.org/10.1080/02699931.2012.736859)  
739 [02699931.2012.736859](http://dx.doi.org/10.1080/02699931.2012.736859).
- 740 Pizarro, D. A., Uhlmann, E., & Bloom, P. (2003). Causal deviance and the  
741 attribution of moral responsibility. *Journal of Experimental Social*  
742 *Psychology*, 39(6), 653–660. [http://dx.doi.org/10.1016/S0022-](http://dx.doi.org/10.1016/S0022-1031(03)00041-6)  
743 [1031\(03\)00041-6](http://dx.doi.org/10.1016/S0022-1031(03)00041-6).
- 744 Preston, J. L., & Ritter, R. S. (2012). Cleanliness and godliness: Mutual  
745 association between two kinds of personal purity. *Journal of*  
746 *Experimental Social Psychology*, 48(6), 1365–1368. [http://dx.doi.org/](http://dx.doi.org/10.1016/j.jesp.2012.05.015)  
747 [10.1016/j.jesp.2012.05.015](http://dx.doi.org/10.1016/j.jesp.2012.05.015).
- 748 Ross, L. T., & Kaplan, K. J. (1994). Life ownership orientation and attitudes  
749 toward abortion, suicide, doctor-assisted suicide, and capital  
750 punishment. *Omega*, 28(1), 17–30.
- 751 Rottman, J., & Kelemen, D. (2014). The morality of martyrdom and the  
752 stigma of suicide. *Behavioral and Brain Sciences*, 37(4).
- 753 Royzman, E. B., Leeman, R. F., & Baron, J. (2009). Unsentimental ethics:  
754 Towards a content-specific account of the moral-conventional  
755 distinction. *Cognition*, 112(1), 159–174. [http://dx.doi.org/10.1016/](http://dx.doi.org/10.1016/j.cognition.2009.04.004)  
756 [j.cognition.2009.04.004](http://dx.doi.org/10.1016/j.cognition.2009.04.004).
- 757 Rozin, P., Lowery, L., Imada, S., & Haidt, J. (1999). The CAD triad  
758 hypothesis: A mapping between three moral emotions (contempt,  
759 anger, disgust) and three moral codes (community, autonomy,  
760 divinity). *Journal of Personality and Social Psychology*, 76(4), 574–586.
- 761 Russell, P. S., & Giner-Sorolla, R. (2011). Moral anger is more flexible than  
762 moral disgust. *Social Psychological and Personality Science*, 2(4),  
763 360–364. <http://dx.doi.org/10.1177/1948550610391678>.
- 764 Russell, P. S., & Giner-Sorolla, R. (2013). Bodily moral disgust: What it is,  
765 how it is different from anger, and why it is an unreasoned emotion.  
766 *Psychological Bulletin*, 139(2), 328–351. [http://dx.doi.org/10.1037/](http://dx.doi.org/10.1037/a0029319)  
767 [a0029319](http://dx.doi.org/10.1037/a0029319).
- 768 Russell, P. S., Piazza, J., & Giner-Sorolla, R. (2013). CAD revisited: Effects of  
769 the word *moral* on the moral relevance of disgust (and other  
770 emotions). *Social Psychological and Personality Science*, 4(1), 62–68.  
771 <http://dx.doi.org/10.1177/1948550612442913>.

- 774 Sawyer, D., & Sobal, J. (1987). Public attitudes toward suicide  
775 demographic and ideological correlates. *The Public Opinion Quarterly*,  
776 51(1), 92–101. 790
- 777 Seidel, A., & Prinz, J. (2013). Sound morality: Irritating and icky noises  
778 amplify judgments in divergent moral domains. *Cognition*, 127(1),  
779 1–5. <http://dx.doi.org/10.1016/j.cognition.2012.11.004>. 791
- 780 Shweder, R. A., Mahapatra, M., & Miller, J. G. (1987). Culture and moral  
781 development. In J. Kagan & S. Lamb (Eds.), *The emergence of morality in*  
782 *young children* (pp. 1–83). Chicago: University of Chicago Press. 792
- 783 Sinnott-Armstrong, W., & Wheatley, T. (2013). Are moral judgments  
784 unified? *Philosophical Psychology*. [http://dx.doi.org/10.1080/](http://dx.doi.org/10.1080/09515089.2012.736075)  
785 [09515089.2012.736075](http://dx.doi.org/10.1080/09515089.2012.736075). 793
- 786 Spielberger, C. D., Jacobs, G., Russell, S., & Crane, R. S. (1983). Assessment  
787 of anger: The state-trait anger scale. In J. N. Butcher & C. D.  
788 Spielberger (Eds.), *Advances in personality assessment* (Vol. 2,  
789 pp. 161–189). Hillsdale, NJ: Lawrence Erlbaum. 794
- Tetlock, P. E. (2003). Thinking the unthinkable: sacred values and taboo  
cognitions. *Trends in Cognitive Sciences*, 7(7), 320–324. [http://](http://dx.doi.org/10.1016/S1364-6613(03)00135-9)  
[dx.doi.org/10.1016/S1364-6613\(03\)00135-9](http://dx.doi.org/10.1016/S1364-6613(03)00135-9). 795
- Turiel, E., Killen, M., & Helwig, C. C. (1987). Morality: Its structure,  
functions, and vagaries. In J. Kagan & S. Lamb (Eds.), *The emergence of*  
*morality in young children* (pp. 155–244). Chicago: University of  
Chicago Press. 796
- World Health Organization (2005, January). *WHO European ministerial*  
*conference on mental health*. Helsinki, Finland. 797
- Young, L., & Saxe, R. (2011). When ignorance is no excuse: Different roles  
for intent across moral domains. *Cognition*, 120(2), 202–214. [http://](http://dx.doi.org/10.1016/j.cognition.2011.04.005)  
[dx.doi.org/10.1016/j.cognition.2011.04.005](http://dx.doi.org/10.1016/j.cognition.2011.04.005). 798
- Young, L., & Tsoi, L. (2013). When mental states matter, when they don't,  
and what that means for morality. *Social and Personality Psychology*  
*Compass*, 7(8), 585–604. <http://dx.doi.org/10.1111/spc3.12044>. 799
- 800  
801  
802  
803  
804  
805