



Testing moral foundation theory: Are specific moral emotions elicited by specific moral transgressions?

Helen Landmann & Ursula Hess

To cite this article: Helen Landmann & Ursula Hess (2017): Testing moral foundation theory: Are specific moral emotions elicited by specific moral transgressions?, Journal of Moral Education, DOI: [10.1080/03057240.2017.1350569](https://doi.org/10.1080/03057240.2017.1350569)

To link to this article: <http://dx.doi.org/10.1080/03057240.2017.1350569>



Published online: 03 Aug 2017.



Submit your article to this journal [↗](#)



View related articles [↗](#)



View Crossmark data [↗](#)



Testing moral foundation theory: Are specific moral emotions elicited by specific moral transgressions?

Helen Landmann^{a,b} and Ursula Hess^a

^aHumboldt-Universität zu Berlin, Germany; ^bUniversity of Hagen, Germany

ABSTRACT

Moral foundation theory posits that specific moral transgressions elicit specific moral emotions. To test this claim, participants ($N = 195$) were asked to rate their emotions in response to moral violation vignettes. We found that compassion and disgust were associated with care and purity respectively as predicted by moral foundation theory. However, anger, rage, contempt, resentment and fear were not associated to any single moral transgression. Thus, even though the type of moral violation matters for the type of emotion that is elicited, the link between moral foundations and moral emotions seems more complex than moral foundation theory suggests. Rather, the findings suggest that there are both emotion-specific foundations (i.e. care and purity) and emotion-unspecific foundations (i.e. fairness, authority and loyalty).

KEYWORDS

Moral foundation theory; anger; contempt; disgust; compassion

Introduction

Most people who see an athlete cheating or a student bullying another judge this behaviour as morally wrong. How we derive these moral judgments is the subject of ongoing debate (e.g. Greene, 2015; Haidt, 2007; Prinz, 2006). One answer proposed by social and cultural psychologists is moral foundation theory (Graham et al., 2011, 2013; Haidt & Graham, 2007; Haidt & Joseph, 2004), which proposes that we judge behaviour as morally transgressive when a moral principle is violated. For instance, cheating violates the moral principle of fairness, whereas bullying violates the moral principle of care. Moral foundation theory proposes a set of such innate moral principles and states that each principle is connected to a specific emotion (Haidt & Joseph, 2004, 2008). In the present study, we investigated this proposal.

According to moral foundations theory (Graham et al., 2011, 2013; Haidt & Graham, 2007; Haidt & Joseph, 2004), moral judgment is based on five (or six) moral systems. These systems are care, fairness, authority, loyalty and purity with liberty as a potential sixth system (Graham et al., 2013). For instance, the care system is sensitive to signs of others' suffering and explains why we intuitively judge that hurting others is morally wrong. Its evolutionary basis is seen in childcare. Similarly, we condemn cheating (fairness system),

disrespect towards authorities (authority system), disloyalty to members of the own group (loyalty system) or incest (purity system), all of which can be derived from evolutionary explanations (see Graham et al., 2013).

These principles are used intuitively (Graham, Haidt, & Nosek, 2009). That is, moral judgments rely on 'fast gut feelings' about right and wrong rather than on thoughtful deliberation (Haidt, 2001). Moral foundation theory proposes for each moral foundation a specific prototypical emotion, which is triggered when the respective moral principle is violated (Haidt & Joseph, 2004, 2008). Specifically, care violations should elicit compassion, fairness violations should elicit anger, authority violations should elicit resentment, loyalty violations should elicit rage and purity violations should elicit disgust.¹

The idea that specific moral principles are linked to specific emotions goes back to the CAD triad hypothesis (Rozin, Lowery, Imada, & Haidt, 1999). The CAD triad hypothesis links anger, contempt and disgust to the Shweder-ethics of autonomy, community and divinity, which are based on Hindu Indian explanations of morality (Shweder, Much, Mahapatra, & Park, 1997). This moral trinity was refined by Haidt and Graham (2007) who propose care and fairness as the 'psychological foundation' of the autonomy ethic, authority and loyalty as the foundation of the community ethic and purity as the foundation of the divinity ethic.

Early research on the CAD triad hypothesis supported the notion that people link anger to autonomy violations, contempt to community violations and disgust to divinity violations when selecting dominant emotional reactions (Rozin et al., 1999). However, when participants are free to indicate mixed emotions, it becomes clear that these links are not exclusive (Cameron, Lindquist, & Gray, 2015). For instance, anger is not exclusively elicited by injustice and injustice does not exclusively elicit anger. Rather, moral violations normally lead to mixed emotions (for a review see Cameron et al., 2015). However, moral foundation theory does not propose exclusive links, instead it proposes 'characteristic emotions' (Haidt & Joseph, 2004, 2008). This less restrictive approach allows for mixed emotions but nonetheless suggests that emotional reactions differ between the moral violations. That is, the characteristic emotion should be elicited more intensely by the proposed moral violation compared to other moral violations. To test this notion, it is necessary to compare emotional reactions to all five moral foundations.

Research that considers all violation types proposed by moral foundation theory points in different directions. On the one side, facial muscle activity related to anger (i.e. corrugator supercilii) is strongest for violations of care (Cannon, Schnall, & White, 2011). On the other side, in a recent diary study, anger at violations of fairness did not differ significantly from anger at other norm violations (Hofmann, Wisneski, Brandt, & Skitka, 2014; see re-analysis by Cameron et al., 2015). Besides these inconsistencies, the extant evidence is limited to a subset of the proposed emotions. To clarify the relation between moral foundations and moral emotions, the present research aims to provide a full picture of the proposed morality-emotion links using methodology proposed by moral foundation theorists.

Therefore, we investigated the five moral principles proposed by moral foundation theory and seven emotions. This allows to directly test the prediction that specific moral violations lead to unique emotional reactions. In particular, we tested whether there are specific links between care-compassion, fairness-anger, authority-resentment, loyalty-rage and purity-disgust as hypothesised in moral foundation theory (Haidt & Joseph, 2004, 2008). As individual differences in moral foundations are associated with political orientation (Franks & Scherr, 2015; Graham et al., 2009, 2011), we investigated whether the

emotion–foundation links generalise across individuals with different moral values and different political orientation.

Method

A total of 195 members of the community (117 women) aged between 16 and 76 ($M_{age} = 34.3$, $SD = 15.3$) participated during an open door day at the Humboldt-University in Berlin. Visitors to this event are typically residents of Berlin and the surrounding area who are interested in science. Participants agreed to take part in a questionnaire-based study and to listen to a lecture thereafter. In groups of about 50, participants read stories about moral violations that covered five violation types (i.e. care, fairness, authority, loyalty and purity), and indicated their feelings on seven emotion labels (i.e. anger, rage, compassion, disgust, fear, contempt and resentment). The type of moral violation was varied within subjects. Individual differences were assessed at the end of the questionnaire.

Moral Violation Stories. As emotion inducing stimuli, a subset of the Moral Foundation Vignettes (MFV) (Clifford, Iyengar, Cabeza, & Sinnott-Armstrong, 2015) was used (see Appendix 1). These vignettes describe behaviour that violates a particular moral foundation such as care ($\alpha = .56$), fairness ($\alpha = .66$), authority ($\alpha = .80$), loyalty ($\alpha = .70$) and purity ($\alpha = .66$). Clifford et al. (2015) validated this set of vignettes by showing that each vignette describes one of the five moral violations but not the others. For instance, although loyalty vignettes accommodate national as well as family loyalty, violations in both contexts are appraised as violating the moral foundation of loyalty. Similarly, although some purity vignettes describe behaviour linked to sexual orientation, whereas others do not, these vignettes are similarly appraised as violating the moral foundation of purity. Given these validation studies by Clifford et al. (2015), we can assume that these vignettes in fact describe violations of one specific moral foundation.

Emotions. Participants were asked to read these stories and to vividly imagine the respective situation. After reading each story, participants rated the degree to which they experienced each of seven emotions while imagining the described situation: Anger (*‘Ärger’*), rage (*‘Wut’*), compassion (*‘Mitleid’*), disgust (*‘Ekel’*), resentment (*‘Abneigung’*), contempt (*‘Verachtung’*) and fear (*‘Angst’*) were assessed using Likert-Type scales anchored with 1 = *not at all* and 6 = *extremely*. Anger, rage, compassion, disgust and resentment were assessed as they are proposed as prototypical emotions for specific moral foundations (Haidt & Joseph, 2004, 2008). Contempt was assessed because contempt is an important part of the CAD-triad hypothesis and allows to link the present results to previous research. In addition, fear was assessed as a negative emotion presumably not related to witnessing immoral acts, which allows to control for the role of general negative affect (a procedure proposed by Cameron et al., 2015).

Individual Differences. To assess individual differences in the valuation of specific moral foundations, participants responded to the Moral Foundation Questionnaire (MFQ) (Graham et al., 2011). Participants indicated their agreement with moral statements (15 items) and the extent to which they found something morally relevant (15 items) on a scale ranging from 1 (*strongly disagree/ not relevant at all*) to 6 (*strongly agree/ very relevant*). Care ($\alpha = .59$), fairness ($\alpha = .57$), authority ($\alpha = .65$), loyalty ($\alpha = .62$) and purity ($\alpha = .58$) were assessed by 6 items each.

Individual differences in political orientation were assessed by voting intentions. For this, participants indicated which party they were going to vote for in the next election.

Results

To test whether specific emotions were related to specific moral foundations, we conducted a five (moral foundation) by seven (emotion) repeated measures ANOVA on the emotion ratings. Greenhouse-Geisser correction was used to correct for violations of sphericity. Means and standard errors are displayed in Figure 1. Main effects of emotion, $F(3.77, 678.85) = 318.01, p < .001, \eta_p^2 = .64$, and moral foundation, $F(3.75, 675.51) = 44.78, p < .001, \eta_p^2 = .20$, emerged, which were qualified by their interaction, $F(13.06, 2351.54) = 89.52, p < .001, \eta_p^2 = .33$. This interaction reveals that emotional reactions differed depending on the type of moral violation. To investigate whether the specific associations between emotions and moral foundations are in line with moral foundation theory, we ran post hoc comparisons with Bonferroni-correction. Results are displayed in Table 1.

Disgust. Disgust elicited by purity violations was significantly stronger than disgust elicited by other violations (see Table 1). Thus, for disgust, findings were compatible with moral foundation theory as this emotion was associated with the predicted foundation.

All other emotions, however, were not associated with one specific moral foundation:

Compassion. Compassion elicited by violations of care and purity was significantly stronger than compassion elicited by violations of fairness, authority and loyalty (see Table 1). Thus, compassion was associated with care but also with purity.

Anger and Rage. Anger about violations of care, fairness and authority was significantly stronger than anger about violations of loyalty and purity (see Table 1) with a larger difference to the latter (see Table 2). Similarly, rage about violations of care and fairness was significantly stronger than rage about violations of authority, loyalty and purity with the largest difference to the latter. Thus, findings for anger and rage differed strongly from the moral foundation prediction. In fact, these emotions were strongly elicited by all violations with the sole exception of purity violations.

The remaining emotions were less strongly affected by the specific foundations:

Contempt and Resentment. Although ratings of contempt and resentment were high in all moral violation conditions, significant differences emerged (see Table 1). Specifically, contempt towards authority violations was significantly lower than contempt towards other violations. Similarly, resentment was significantly stronger for violations of care and fairness than for violations of authority, loyalty and purity. However, in contrast to other emotions, these differences were comparably small (see Table 2).

Fear. In contrast to all other emotions, fear was low in all moral violation conditions. Specifically, fear elicited by authority violations was significantly lower than fear elicited by other violations (see Table 1). Also, compared to other emotions, these differences were rather small (see Table 2).

In sum, emotional reactions differed according to the type of moral violation. However, only disgust revealed the emotion–foundation link predicted by moral foundation theory.

Individual Differences. To investigate the generalisability of the emotion–foundation links, we tested whether the preceding findings persist for individuals with different moral values and different political orientation.

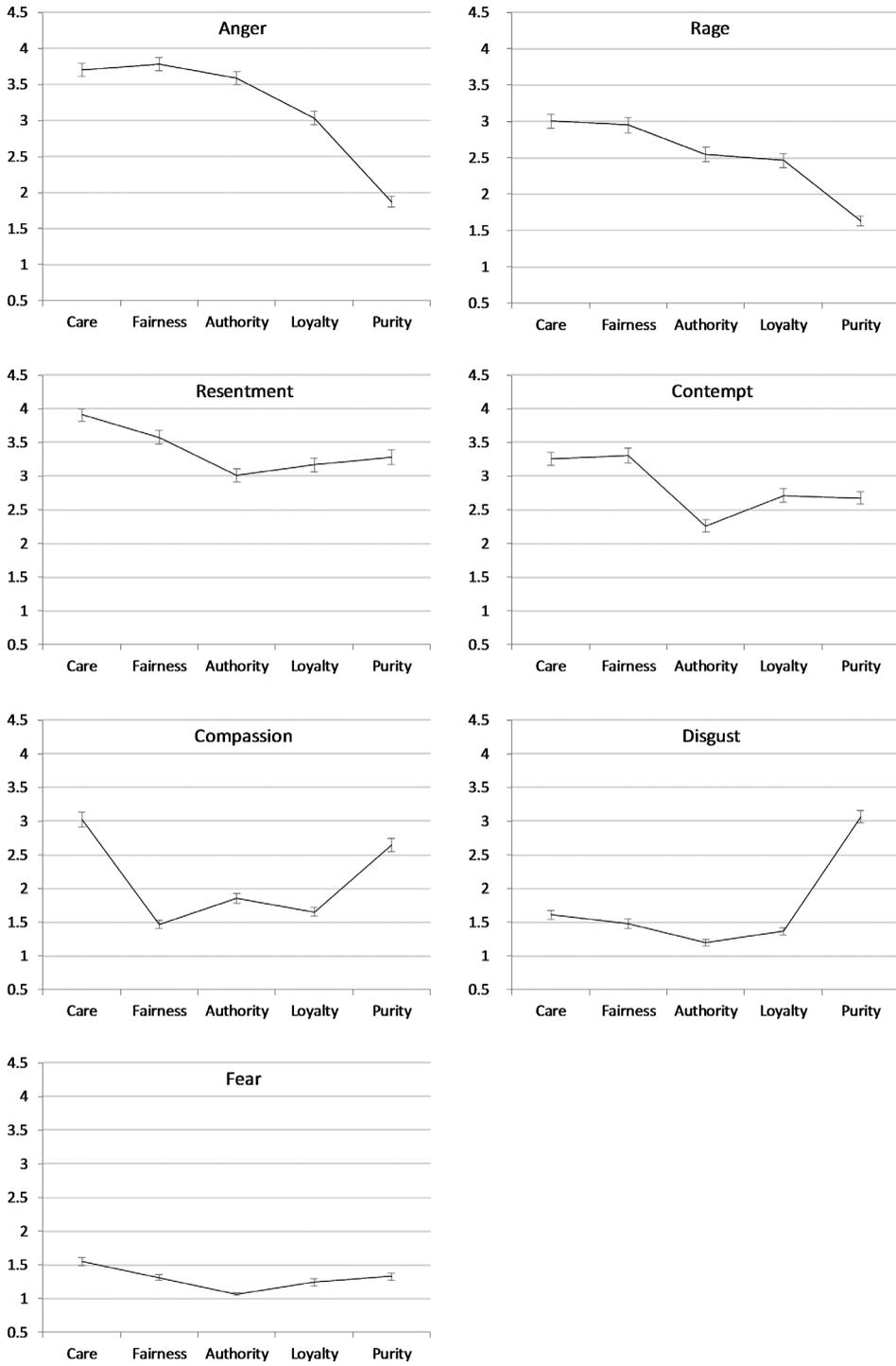


Figure 1. Emotional reactions to violations of care, fairness, authority, loyalty and purity.

Table 1. Descriptive statistics for emotional reactions to moral violations.

	Care			Fairness			Authority			Loyalty			Purity		
	M (SD)	95%CI	M (SD)	95%CI	M (SD)	95%CI	M (SD)	95%CI							
Anger	3.70 ^a (1.21)	[3.53; 3.88]	3.78 ^a (1.27)	[3.59; 3.97]	3.59 ^a (1.22)	[3.41; 3.77]	3.03 ^b (1.30)	[2.84; 3.22]	1.87 ^c (.99)	[1.73; 2.02]					
Rage	3.01 ^a (1.30)	[2.82; 3.20]	2.95 ^a (1.44)	[2.74; 3.16]	2.54 ^b (1.34)	[2.35; 2.74]	2.46 ^b (1.28)	[2.27; 2.65]	1.63 ^c (.93)	[1.50; 1.77]					
Compassion	3.02 ^a (1.42)	[2.82; 3.23]	1.46 ^c (.80)	[1.34; 1.58]	1.85 ^b (.96)	[1.71; 1.99]	1.65 ^{bc} (.93)	[1.52; 1.79]	2.65 ^a (1.28)	[2.46; 2.83]					
Fear	1.55 ^a (.76)	[1.44; 1.66]	1.31 ^b (.57)	[1.23; 1.40]	1.07 ^c (.26)	[1.03; 1.10]	1.24 ^b (.69)	[1.14; 1.35]	1.33 ^b (.72)	[1.23; 1.44]					
Disgust	1.61 ^b (.91)	[1.48; 1.75]	1.48 ^{bc} (.94)	[1.34; 1.62]	1.20 ^d (.65)	[1.11; 1.30]	1.36 ^c (.74)	[1.26; 1.47]	3.07 ^a (1.25)	[2.88; 3.25]					
Contempt	3.25 ^a (1.32)	[3.06; 3.44]	3.30 ^a (1.49)	[3.09; 3.52]	2.26 ^c (1.27)	[2.08; 2.45]	2.71 ^b (1.35)	[2.52; 2.91]	2.67 ^b (1.24)	[2.49; 2.86]					
Resentment	3.91 ^a (1.22)	[3.73; 4.09]	3.58 ^b (1.37)	[3.38; 3.78]	3.01 ^c (1.35)	[2.82; 3.21]	3.17 ^c (1.38)	[2.96; 3.37]	3.28 ^{bc} (1.42)	[3.07; 3.49]					

Note: Based on post hoc comparisons with Bonferroni-correction, superscript abbreviations (a–d) indicate significant differences between the types of moral violation for each emotion. $p < .05$.

Table 2. Effect sizes.

	Contempt	Resentment	Anger	Rage	Compassion	Disgust	Fear
c-f	-0.04	0.26	-0.06	0.04	1.36	0.14	0.36
f-a	0.75	0.41	0.15	0.29	-0.44	0.35	0.56
a-l	-0.35	-0.11	0.44	0.06	0.21	-0.23	-0.34
l-p	0.03	-0.08	1.01	0.74	-0.89	-1.66	-0.12

Note: Effect sizes (Cohen's *d*) were conducted for differences between violations of care (c), fairness (f), authority (a), loyalty (l) and purity (p).

Table 3. Multilevel analysis of moral foundations (level 1) and individual differences (level 2) on emotions.

	Anger	Rage	Compassion	Disgust	Resentment	Contempt	Fear
Level 1 (within)							
Care	.49***	.39***	.10*	-.47***	.17***	.14***	.11**
Fairness	.53***	.40***	-.35***	-.50***	.09**	.18***	-.02
Authority	.46***	.28***	-.25***	-.59***	-.07*	-.13***	-.15***
Loyalty	.32***	.25***	-.30***	-.53***	-.03	.01	-.05
Level 2 (between)							
Age	.20*	.20*	.03	.05	.22**	.22**	-.06
Gender	-.07	-.07	-.07	.12	-.07	-.04	.03
MFQ Care	.13	.15	.22*	.13	-.02	.03	.03
MFQ Fairness	.19*	.15	.03	-.08	.17*	.03	.03
MFQ Authority	.24*	.22*	.13	.02	.21	.15	0.14
MFQ Loyalty	.10	.01	-.15	-.09	.09	.05	-.15
MFQ Purity	.12	.15	.32***	.64***	.18*	.26**	.68***

Notes: Standardised estimates are presented. Violations of Care, Fairness, Authority and Loyalty are dummy-coded; gender is coded with 0 = female and 1 = male; MFQ = Moral Foundation Questionnaire.

p* < .05; *p* < .01; ****p* < .001.

Participants responses to the MFQ revealed a rather liberal sample. Specifically, participants rated the individualising foundations care ($M = 4.65$, $SD = .77$) and fairness ($M = 4.80$, $SD = .68$) to be more important for their moral judgment than the binding foundations authority ($M = 2.96$, $SD = .81$), loyalty ($M = 3.27$, $SD = .79$) and purity ($M = 2.37$, $SD = 1.18$). These moral foundation ratings were similar to those of US-liberals but differed from US-conservatives who value authority, loyalty and purity as important as care and fairness (Graham et al., 2009).

To investigate whether individual differences in moral values influence the foundation-emotion links, we tested whether the emotion-foundation links are stable when controlling for MFQ-ratings. Following the procedure proposed by Nezlek (2001) for continuous covariates in repeated measures designs, we conducted a multilevel analysis using *Mplus*. We specified a model with moral foundations as predictors on the first level (within subjects) and individual differences as predictors on the second level (between subjects). The moral foundations care, fairness, authority and loyalty were dummy coded leaving purity as reference condition. Individual differences were age, gender and responses to the MFQ. Results are displayed in Table 3.

Individual differences in moral values assessed by the MFQ predicted emotional reactions significantly. Specifically, disgust was predicted by purity values only and compassion was predicted by care and purity values (see Table 3). These associations between individual values and emotions replicated the emotion-foundation links found in the preceding analyses. For all other emotions, however, associations with individual values differed from the emotion-foundation links previously reported.

Although these individual differences in moral values predicted emotional reactions to moral violations, the specific emotion–foundation links largely persisted. As in the preceding analysis, anger and rage were strongly elicited by all moral violations except for purity violations whereas the reverse held true for disgust (see Table 3). Thus, these morality–emotion links were stable when controlling for individual differences. As in the preceding analysis, the effects of moral violations on contempt, resentment and fear were comparably small. Thus, contempt and resentment were strong in all moral violation situations whereas fear was low. In contrast to the preceding analysis, compassion was stronger for care violations than for purity violations. Thus, when controlling for individual differences, compassion was strongest for violations of care as predicted by moral foundation theory. In other words, the extent to which purity violations elicited compassion depended on individual differences in moral values.

In line with participants' liberal values, participants' political orientation revealed a rather left-winged sample. Political parties in Germany can be placed on a left-right continuum with 'left' representing values of equality, peace and human rights and 'right' representing values of economic stability and maintaining law and order (Noelle-Neumann, 1998). The German population places the Left Party on the left end of this continuum, followed by the Green Party, the Social Democrats and the Christian Democrats respectively (Infratest, 2015). Most participants indicated they would vote for the Green Party (Bündnis 90/Die Grünen) (34.4%), with notably fewer votes for the Left Party (Die Linke) (16.4%), Social Democrats (SPD) (11.3%) and Christian Democrats (CDU) (10.8%). The remaining participants (27.1%) indicated that they would vote for a party other than these or they did not reveal their political orientation. Compared to representative opinion polls in Germany, the present sample reveals an overrepresentation of the Green and the Left Party and an underrepresentation of Christian and Social Democrats. Hence, participants who prefer left-winged parties were overrepresented.

To investigate whether individual differences in political orientation affect the foundation–emotion links, we conducted five (moral foundation) by five (voting intention) ANOVAs separately for each of the seven emotions. As shown in Table 4, the type of moral foundation affected each emotion whereas voting intention affected anger and rage only. The interactions of moral foundation by voting intention on emotional reactions, however, were non-significant. In other words, participants' emotional reactions to specific moral foundations were not associated with voting intentions. The specific foundation–emotion links were stable across groups with different political orientation.

In sum, emotional reactions depended on the type of moral violation. The specific foundation–emotion links, however, were only partially in line with moral foundation theory. Only disgust was clearly associated with the predicted foundation. Compassion was associated with care violations but also (though to a lesser degree) with purity violations. By contrast, anger and rage were elicited by all moral foundations except for purity violations. Contempt and resentment were strongly elicited in all conditions and fear was low in all conditions. These emotion–foundation links persisted for individuals with different values and different political orientation.

Table 4. ANOVAs of moral foundation and voting intention on emotional reactions.

DV	IV	df	F	p	η^2
Anger	foundation	4708	117.07	<.001	.40
	voting	4177	2.61	.037	.06
	foundation*voting	16,708	1.40	.133	.03
Rage	foundation	4712	52.76	<.001	.23
	voting	4178	3.76	.006	.08
	foundation*voting	16,712	1.41	.132	.03
Compassion	foundation	4712	73.05	<.001	.29
	voting	4178	1.35	.254	.03
	foundation*voting	16,712	1.59	.066	.03
Disgust	foundation	4712	147.77	<.001	.45
	voting	4178	1.04	.389	.02
	foundation*voting	16,712	1.27	.242	.03
Fear	foundation	4708	15.74	<.001	.08
	voting	4177	.50	.736	.01
	foundation*voting	16,708	1.00	.448	.02
Contempt	foundation	4712	25.68	<.001	.13
	voting	4178	1.30	.272	.03
	foundation*voting	16,712	1.53	.086	.03
Resentment	foundation	4712	14.45	<.001	.08
	voting	4178	.85	.495	.02
	foundation*voting	16,712	1.55	.087	.03

Discussion

In the present study, the full range of emotional reactions to moral foundations as predicted by moral foundation theory (Haidt & Joseph, 2004, 2008) was investigated. This allows to expand the interesting but restricted picture that has been drawn by previous research.

Overall, this picture is more complex than previous research suggests. For instance, anger was not solely associated with the moral principle of fairness—a link that has been variously affirmed (e.g. Cronin, Reysen, & Branscombe, 2012; Kals & Russell, 2001; Krehbiel & Cropanzano, 2000; Montada & Schneider, 1989; Weiss, Suckow, & Cropanzano, 1999)—nor with the autonomy ethic (i.e. care and fairness) as proposed by the CAD-triad hypothesis (Rozin et al., 1999). Rather, anger was elicited by all foundations including care, authority and loyalty violations, which clearly differ from typical fairness violations (Clifford et al., 2015). Interestingly, anger was reduced for violations of purity. This attenuation of anger for purity violations might be due to ascriptions of intentionality. Whereas care, fairness, authority and loyalty violations might be attributed to intentional processes, purity violations might be ascribed to processes that people cannot fully control (like sexual orientation). In line with this, intention is highly important for the evaluation of harm violations but not so much for violations of purity (Young & Saxe, 2011). As anger (but not disgust) is highly contingent on intention (Russell & Giner-Sorolla, 2011) this might explain the low levels of anger for purity violations. Taken together, anger in the present study was not solely associated with fairness violations but rather with intentional immoral behaviour in general.

Contempt differed from anger in that these feelings were intense across all moral violations including purity violations. Thus, the unique link between contempt and the community ethic (i.e. authority and loyalty [Rozin et al., 1999]) was not replicated. These contradictory results can likely be led back to different response formats. In Rozin et al.'s study, participants could only select one emotional reaction and in that case they preferred contempt for community violations. However, when given the more realistic option of responding with multiple emotional reactions they reported contempt for all forms of moral

violations. This unspecific use of contempt is compatible with the finding that contempt but not anger is elicited by incompetence (Hutcherson & Gross, 2011). Thus, contempt seems to be a rather unspecific emotional reaction, which indicates general feelings of disapproval.

Disgust, by contrast, was highly specific. Disgust differed from the other emotions in that it was elicited by purity violations only. This supports research suggesting that only core disgust cues elicit disgust (Royzman, Atansov, Landy, Parks, & Gepty, 2014), but is incompatible with the notion that disgust is a response to moral violations per se (Hutcherson & Gross, 2011). Bringing these findings together produces a picture of disgust not as an inherently moral emotion but rather as a by-product that occurs when morally relevant situations contain core disgust cues like bodily liquids. Hence, disgust can play a role in moral judgment but only for a limited set of situations.

An interesting companion of disgust was compassion as both emotions were strongly elicited by purity violations. It seems that people can feel pity for others although (or because) they are disgusted by their actions. These feelings of compassion might shape moral judgments in typical moral disgust situations. This potential role of compassion in disgusting situations should be addressed by future research.

Taken together, the present findings suggest that the violation of one moral principle elicits a mixture of different emotions. These emotions vary in their degree of moral specificity. That is, disgust and compassion are highly specific in that these emotions are associated to one or two moral foundations only, anger and rage are less specific in that they are intense in all conditions except for purity and contempt and resentment are rather unspecific in that they are intense for all moral violation situations.

Moral Foundations

These results have important implications for moral foundation theory. Moral foundation theory states that each moral foundation matches one emotional system. The rationale behind this claim is that we intuitively condemn certain behaviours because these behaviours elicit a specific emotion. The present results indicate that a person might condemn harm because they feel compassion for the victim or they might condemn purity violations because they experience disgust. However, condemnation of fairness, loyalty and authority violations cannot be explained by a unique emotional response as violations of these moral principles elicited unspecific emotions. Rather, there seem to be two sets of moral foundations: One set consists of moral principles, which are rooted in specific emotional systems (i.e. care–compassion, purity–disgust) and the other set consists of moral principles, which elicit unspecific emotional reactions (i.e. fairness, authority, loyalty). Thus, the rationale that moral foundations are rooted in unique emotional systems appears only to be true for a limited set of situations. This implies modification of the theory.

One modification could be based on the claim that moral foundations represent different types of harm (Gray, Waytz, & Young, 2012). This claim was not supported by the present research. Harm typically elicits compassion (e.g. Batson et al., 2007; Landmann & Hess, 2016). However, only violations of care and disgust elicited compassion. If violations of fairness, authority and loyalty would constitute types of harm as well, these situations should have elicited comparable degrees of compassion as well, which was not the case. Thus, moral foundations are not just different types of harm.

The present research offers another modification of moral foundation theory. Morality might be rooted in three (not five) moral foundations that coincide with emotional systems. These foundations are others' suffering, intentional norm violations and purity violations. Whereas others' suffering elicits compassion, intentional norm violations elicit anger and purity violations elicits disgust. This model of morality–emotion links is compatible with the finding that harm elicits compassion (Batson et al., 2007; Landmann & Hess, 2016), that intention affects evaluations of harm more than evaluations of purity (Young & Saxe, 2011) and that intention affects anger more than disgust (Russell & Giner-Sorolla, 2011). This modification would explain why care violations elicited anger and compassion (care violations contain others' suffering as well as an intentional norm violation) and it would explain why purity violations elicited only little anger (purity violations are not necessarily intentional). Thus, if moral foundations are rooted in emotional systems then others' suffering, intentional norm violations and purity violations are promising candidates.

Limitations

These conclusions, however, are limited by the methodology of the present research. Emotions were assessed via self-report, which is susceptible to social desirability and controlled (rather than intuitive) processes. We choose this response format because it is at this point the only method to differentiate between the specific emotions proposed by moral foundation theory. For instance, skin conductance indicates whether someone responds emotionally. However, whether heightened galvanic skin response results from anger or joy cannot be determined. In other words, the quality of the emotions cannot be assessed by this method. Facial Electromyography (EMG) is a more precise indicator for emotions but still not precise enough for the hypothesis proposed by moral foundation theory. Facial EMG can distinguish between anger and disgust and potentially between anger and contempt (Rozin et al., 1999) but not between contempt and resentment or between anger and rage. Thus, the present findings provide one important component in research on moral emotions that future research can complement with more objective measures.

Besides these methodological issues, the generalisability of the present findings might be limited. The present emotion–foundation links persisted for individuals with different values and different political orientation. Hence, within the range of values and political orientation of the present sample, the findings were highly stable. However, the present sample revealed overall liberal values. Strong conservatives, who value authority, loyalty and purity as much as care and fairness were not represented. Thus, it remains open whether the present findings can be transferred to populations for which authority, loyalty and purity are dominant moral foundations.

Conclusion

Considering this, future research should investigate whether the present findings can be replicated with more objective measures and for strongly conservative individuals. Another task for future research is to shed light on the role of subjective appraisals. Specifically, we speculate that appraisals of harm, intentionality and purity violations account for the present findings. Future studies can test whether these appraisals can in fact explain the specific emotional reactions to moral foundations. Also, the role of individual evaluations

of morality might be interesting. Although the MFV were rated as immoral in pre-tests (Clifford et al., 2015), individual and cultural differences in these moral judgments might influence the results. Investigating these individual evaluations can further enhance to understand why humans react emotionally to moral transgressions.

In sum, this research sheds light on the question how morality and emotions are related. We found specific links between moral violations and emotions. These links, however, are only partly in line with moral foundation theory. Instead, they offer a new perspective on morality and emotion: Others' suffering (compassion), intentional norm violations (anger) and purity violations (disgust) might be the three facets of morality that are each based in emotional systems. These emotional systems might explain why we evaluate a situation as right or wrong and why we act accordingly.

Note

1. Hypotheses about compassion, anger and disgust can be found in both papers by Haidt and Joseph (2004, 2008) whereas predictions for resentment (Haidt & Joseph, 2004) and rage (Haidt & Joseph, 2008) were presented separately. In addition to the depicted emotions, predictions about positive emotions like awe and about emotional reactions of first-parties like guilt were made (Haidt & Joseph, 2004, 2008). However, as the present paper focuses on observing norm violations, only negative third-party emotions were investigated.

Disclosure statement

The authors declare that there are no potential conflicts of interest with respect to the research, authorship and/or publication of this article.

Funding

This research was supported by a grant from the Heinrich-Böll-Stiftung to the first author.

References

- Batson, C. D., Kennedy, C. L., Nord, L. A., Stocks, E. L., Fleming, D. A., Marzette, C. M., ... Zenger, T. (2007). Anger at unfairness: Is it moral outrage? *European Journal of Social Psychology, 37*, 1272–1285. doi:10.1002/ejsp.434
- Cameron, C. D., Lindquist, K. A., & Gray, K. (2015). A constructionist review of morality and emotions: No evidence for specific links between moral content and discrete emotions. *Personality and Social Psychology Review, 19*, 371–394. doi:10.1177/1088868314566683
- Cannon, P.R., Schnall, S., & White, M. (2011). Transgressions and expressions affective facial muscle activity predicts moral judgments. *Social Psychological and Personality Science, 2*, 325–331. doi:10.1177/1948550610390525
- Clifford, S., Iyengar, V., Cabeza, R., & Sinnott-Armstrong, W. (2015). Moral foundations vignettes: A standardized stimulus database of scenarios based on moral foundations theory. *Behavior Research Methods, 47*, 1178–1198. doi:10.3758/s13428-014-0551-2
- Cronin, T., Reysen, S., & Branscombe, N.R. (2012). Wal-Mart's conscientious objectors: Perceived illegitimacy, moral anger, and retaliatory consumer behavior. *Basic and Applied Social Psychology, 34*, 322–335. doi:10.1080/01973533.2012.693347
- Franks, A. S., & Scherr, K. C. (2015). Using moral foundations to predict voting behavior: Regression models from the 2012 US presidential election. *Analyses of Social Issues and Public Policy, 15*, 213–232. doi:10.1111/asap.12074

- Graham, J., Haidt, J., & Nosek, B.A. (2009). Liberals and conservatives rely on different sets of moral foundations. *Journal of Personality and Social Psychology*, 96, 1029–1046. doi:10.1037/a0015141
- Graham, J., Nosek, B. A., Haidt, J., Iyer, R., Koleva, S., & Ditto, P. H. (2011). Mapping the moral domain. *Journal of Personality and Social Psychology*, 101, 366–385. doi:10.1037/a0021847
- Graham, J., Haidt, J., Koleva, S., Motyl, M., Iyer, R., Wojcik, S., & Ditto, P. H. (2013). Moral foundations theory: The pragmatic validity of moral pluralism. *Advances in Experimental Social Psychology*, 47, 55–130. doi:10.1016/B978-0-12-407236-7.00002-4
- Gray, K., Waytz, A., & Young, L. (2012). The moral dyad: A fundamental template unifying moral judgment. *Psychological Inquiry*, 23, 206–215. doi:10.1080/1047840X.2012.686247
- Greene, J.D. (2015). The rise of moral cognition. *Cognition*, 135, 39–42. doi:10.1016/j.cognition.2014.11.018
- Haidt, J. (2001). The emotional dog and its rational tail: A social intuitionist approach to moral judgment. *Psychological Review*, 108, 814–834. doi:10.1037/0033-295X.108.4.814
- Haidt, J. (2007). The new synthesis in moral psychology. *Science*, 316, 998–1002. doi:10.1126/science.1137651
- Haidt, J., & Graham, J. (2007). When morality opposes justice: Conservatives have moral intuitions that liberals may not recognize. *Social Justice Research*, 20, 98–116. doi:10.1007/s11211-007-0034-z
- Haidt, J., & Joseph, C. (2004). Intuitive ethics: How innately prepared intuitions generate culturally variable virtues. *Daedalus*, 133, 55–66. doi:10.1162/0011526042365555
- Haidt, J., & Joseph, C. (2008). The moral mind: How five sets of innate intuitions guide the development of many culture-specific virtues, and perhaps even modules. In P. Carruthers, S. Laurence, & S. Stich (Eds.), *The Innate Mind, Volume 3: Foundations and the Future* (pp. 367–392). Oxford: Oxford University Press.
- Hofmann, W., Wisneski, D. C., Brandt, M. J., & Skitka, L. J. (2014). Morality in everyday life. *Science*, 345, 1340–1343. doi:10.1126/science.1251560
- Hutcherson, C. A., & Gross, J. J. (2011). The moral emotions: A social–functionalist account of anger, disgust, and contempt. *Journal of Personality and Social Psychology*, 100, 719–737. doi:10.1037/a0022408
- Infratest. (2015). Die Positionierung der politischen Parteien im Links-Rechts-Kontinuum [Placement of German Parties on a Left-Right Continuum]. Retrieved from https://www.infratest-dimap.de/uploads/media/LinksRechts_Nov2015_01.pdf
- Kals, E., & Russell, Y. (2001). Individual conceptions of justice and their potential for explaining proenvironmental decision making. *Social Justice Research*, 14, 367–385. doi:10.1023/A:1014698528132
- Krehbiel, P.J., & Cropanzano, R. (2000). Procedural justice, outcome favorability and emotion. *Social Justice Research*, 13, 339–360. doi:10.1023/A:1007670909889
- Landmann, H., & Hess, U. (2016). What elicits third-party anger? *The effects of moral violation and others' outcome on anger and compassion*. *Cognition & Emotion*. Advance online publication. doi:10.1080/02699931.2016.1194258
- Montada, L., & Schneider, A. (1989). Justice and emotional reactions to the disadvantaged. *Social Justice Research*, 3, 313–344. doi:10.1007/BF01048081
- Nezlek, J. B. (2001). Multilevel random coefficient analyses of event- and interval-contingent data in social and personality psychology research. *Personality and Social Psychology Bulletin*, 27, 771–785. doi:10.1177/0146167201277001
- Noelle-Neumann, E. (1998). A shift from the right to the left as an indicator of value change: A battle for the climate of opinion. *International Journal of Public Opinion Research*, 10, 317–334. doi:10.1093/ijpor/10.4.317
- Prinz, J. (2006). The emotional basis of moral judgments. *Philosophical Explorations*, 9, 29–43. doi:10.1080/13869790500492466
- Royzman, E., Atanasov, P., Landy, J. F., Parks, A., & Gepty, A. (2014). CAD or MAD? Anger (not disgust) as the predominant response to pathogen-free violations of the divinity code. *Emotion*, 14, 892–907. doi:10.1037/a0036829

- Rozin, P., Lowery, L., Imada, S., & Haidt, J. (1999). The CAD triad hypothesis: A mapping between three moral emotions (contempt, anger, disgust) and three moral ethics (community, autonomy, divinity). *Journal of Personality and Social Psychology*, 76, 574–586. doi:10.1037/0022-3514.76.4.574
- Russell, P.S., & Giner-Sorolla, R. (2011). Moral anger, but not moral disgust, responds to intentionality. *Emotion*, 11, 233–240. doi:10.1037/a0022598
- Shweder, R., Much, N., Mahapatra, M., & Park, L. (1997). The ‘Big Three’ of morality (Autonomy, Community, Divinity) and the ‘Big Three’ explanations of suffering. In P. Rozin (Ed.), *Morality and Health* (pp. 119–169). New York, NY: Routledge.
- Weiss, H.M., Suckow, K., & Cropanzano, R. (1999). Effects of justice conditions on discrete emotions. *Journal of Applied Psychology*, 84, 786–794. doi:10.1037/0021-9010.84.5.786
- Young, L., & Saxe, R. (2011). When ignorance is no excuse: Different roles for intent across moral domains. *Cognition*, 120, 202–214. doi:10.1016/j.cognition.2011.04.005

Appendix 1. Moral Foundation Vignettes

Vignette (Clifford et al., 2015)	Moral Foundation
You see a boy placing a thumbtack sticking up on the chair of another student	Care
You see a woman commenting out loud about how fat another woman looks in her jeans	Care
You see a runner taking a shortcut on the course during the marathon in order to win	Fairness
You see a judge taking on a criminal case although he is friends with the defendant	Fairness
You see a girl repeatedly interrupting her teacher as he explains a new concept	Authority
You see a staff member talking loudly and interrupting the mayor’s speech to the public	Authority
You see a man leaving his family business to go work for their main competitor	Loyalty
You see the German Ambassador joking in the US about the stupidity of Germans*	Loyalty
You see a man searching through the trash to find women’s discarded underwear	Purity
You see a homosexual in a gay bar offering sex to anyone who buys him a drink	Purity

*This vignette was adapted for the German sample.