Which appraisals are foundational to moral judgment?

Harm, injustice, and beyond

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Abstract

Harm-centric accounts of judgments of moral wrongdoing argue that moral judgments are fundamentally based on appraisals of harm. However, past research has failed to operationally discriminate harm appraisals from appraisals related to injustice. Four studies carefully discriminated harm qua pain/suffering from injustice, alongside appraisals related to impurity, authority, and disloyalty. Appraisals of injustice outperformed appraisals of harm as independent predictors of the judged wrongness of recalled offenses (Study 1). Studies 2a, 2b and 3 extended these findings using a diverse range of wrongful acts and two different cultural samples—the United States and Greece. In addition to the strong relevance of injustice appraisals, these latter studies uncovered substantial contributions of impurity and authority appraisals. The results inform debates on moral pluralism and the foundations of moral cognition.

Keywords: moral judgment, harm, injustice, moral foundations theory, moral pluralism

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Introduction

Perceptions of harm are important for moral judgments. But is perceived pain or suffering the fundamental input driving our judgments of moral wrongdoing? "Harm-centric" approaches to moral cognition posit that when people judge any act to be morally wrong, it is because they perceive the act to cause harm. On this view, harm constitutes a foundational, organizing template by which all immoral actions are conceptualised (Gray & Schein, 2012; Gray, Schein, & Ward, 2014; Gray, Waytz, & Young, 2012; Schein & Gray, 2015, 2018). By contrast, some have defended a deflationary view of harm, claiming that perceptions of harm cannot be sufficient for judgments of wrongdoing because people often find harmful acts acceptable (Fiske & Rai, 2014; Piazza & Sousa, 2016; Piazza, Sousa, & Holbrook, 2013; Sousa & Piazza, 2014; Sousa, Holbrook, & Piazza, 2009). When malevolent criminals are jailed, when a country attacks another country in self-defence, and when scientists subject animals to painful medical tests to test a vaccine, individuals are made to suffer. Yet, for many of us, these represent instances of acceptable harmful acts. Thus, appraisals beyond the causation of pain/suffering must be shaping our judgments of wrongdoing. This argument obtains even with a somewhat broader definition of harm as welfare reduction, which is not necessarily tied to pain/suffering as a psychological state, or with a more restricted definition of harm as the *intentional* causation of pain/suffering.

One increasingly popular harm-centric perspective is that of Gray and colleagues. This group of researchers sometimes characterize harm simply in terms of the causation of pain/suffering (e.g., "judgments of harm require seeing a mind capable of suffering"; Schein & Gray, 2015, p. 3), yet other times they define harm more specifically as the intentional causation of pain/suffering: "harm involves the perception of two interacting minds, one

mind (an agent) intentionally causing suffering to another mind (a patient)" (Schein & Gray, 2015, p. 3). However, intentionality is not sufficient to elevate the causation of pain/suffering to the level of wrongdoing, as the example of punishment makes clear: people often think of punishment as deserved and therefore not wrongdoing.

The deflationary perspective on harm posits that if a harmful act is appraised as involving injustice, then it is judged to be morally wrong (for a detailed discussion, see Sousa & Piazza, 2014; also Baumard, 2016). On this view, the appraisal that a harmful act involves injustice *is* the appraisal that the actor did not consider the balance of interests involved when causing pain/suffering. Such an appraisal *prototypically* entails a belief that the actor acted from selfish motives: the actor either prioritised his/her own interests over that of others (e.g., when one steals from another person), or he/she preferentially prioritised the interests of another when fair treatment is expected (e.g., when a father gives preferential treatment to one of his children over another simply because he likes one more). Thus, on this view, appraisals of injustice are generally linked to appraisals of selfishness.

Although deflationary theories claim that harm perception is insufficient for moral judgments of wrongdoing, they are neutral on whether perceptions of harm and/or injustice are necessary for such judgments. By contrast, pluralistic approaches to moral judgment, such as Shweder, Much, Mahapatra, and Park's (1997) "big three" ethical codes and Graham et al.'s (2013) Moral Foundations Theory (MFT), argue that harm and injustice are not the only inputs to our judgments of wrongdoing. For example, Haidt (2007, 2012) has claimed that socially "binding" concerns related to respect for authority, loyalty to one's ingroup (family, country, etc.), and the purity or sanctity of the body, constitute distinct foundational sources of moral judgment.

Here, we report studies that shed new light on these debates concerning which appraisals are foundational to moral judgments of wrongdoing by addressing some

methodological issues and limitations with previous research. First, we attempted to improve upon past operational definitions of harm. Schein and Gray (2015), for example, reported seven studies purportedly showing the foundational role of harm in moral judgment by using terms like "harm," "harmful," or related synonyms (e.g., "cruel") to operationalize the relevant concept of harm. However, these ordinary terms for harm are polysemous and often imply wrongdoing or even injustice. Indeed, this conflation of harm and wrongdoing can be observed in Schein and Gray's Study 1, which scored prototypically unjust acts, such as murder, stealing, and adultery, as forms of "harm." It remains unclear whether their results show that the relevant notion of harm, related to the causation of pain/suffering, is playing the key role in participants' judgments. Second, although deflationary theorists have made detailed theoretical arguments for their position (e.g., Sousa & Piazza, 2014), the evidence they have provided is mostly based on the reanalysis of other researchers' data (see, e.g., Piazza & Sousa, 2016). Moreover, they have not directly probed the role of injustice, which includes the perception of selfishness, in judgments of wrongdoing, nor have they systematically assessed its role across a diversity of transgressions beyond harmful transgressions.

Finally, although research by Graham et al. (2009) have arguably shown that many people do find concerns relating to impurity, disloyalty, and disrespect for authority to be relevant to their moral considerations, the validity of pluralistic approaches rests on demonstrating that each appraisal dimension contributes uniquely to judgments of wrongdoing, and that each dimension is not perceived to be reducible to any other; for example, that the notion of impurity is not reducible to harm, as some have argued (Gray & Keeney, 2015). The present research design uniquely allowed us to measure the relevance of multiple appraisals for moral judgments across a wide range of moral transgressions that are representative of different moral foundations. We were therefore able to investigate the extent

to which particular appraisals are consistently relevant for moral judgments across a diverse range of content, versus having a restricted relevance. This approach provided a novel way of addressing prominent debates on moral monism and pluralism.

Overview of Studies and Hypotheses

We hypothesized that when care is taken to tease apart appraisals of causing pain/suffering and appraisals of injustice, the latter would provide a more extensive foundation for moral judgments. We also hypothesized, based on pluralistic theories, that other appraisal dimensions beyond harm and injustice (e.g., impurity) would make independent contributions to judgments of wrongdoing. In Study 1, American participants recalled an autobiographical experience of wrongdoing, rated its wrongfulness, and made ten appraisals of the action. To allow an even broader test of moral pluralism, in the remaining studies, American (Studies 2a–2b) and Greek participants (Study 3) were presented ten transgressions related to Graham et al.'s (2013) five moral foundations. As in Study 1, participants judged their wrongness and appraised them. All collected measures and conditions are reported. Full materials (.qsf files) and anonymised data sets for Studies 1–3 are available at https://osf.io/g7dpn/.

Study 1

In Study 1, we employed a recall paradigm that drew upon naturalistic perceptions of wrongdoing. The methodology was a revised version of that employed by Schein and Gray (2015, Study 1). Participants were asked to report a real instance of wrongdoing from their lives and rate its wrongness, rather than abstractly "list an act that is morally wrong". Finally, for each reported act, participants were asked whether a series of ten appraisals would apply to the act and the applicability of each was measured on Likert scales (Schein and Gray's participants had to chose one of five appraisals: "harmful, unfair, disloyal, disobedient, and gross"). Appraisals of harm were measured in terms of causing pain/suffering and welfare

reduction ("The action caused someone pain"; "The action negatively affected the wellbeing of someone"), separate from injustice ("The action was unjust"; "unfair"; "selfish"). We also included appraisals of impurity, disrespect for authority, and group disloyalty, to connect to MFT (Graham et al., 2013). Finally, we included one appraisal, "dishonest" (also related to injustice), that is important in the literature on moral character (e.g., Brambilla & Leach, 2014; Goodwin, Piazza, & Rozin, 2014).

Method

Participants. We aimed to collect 160 adult participants on Amazon Mechanical Turk, restricting participation to those located in the United States and those who passed a Captcha question; 160 falls within the sample size range required to determine whether a correlation coefficient at $r = .20-.25$ differs from zero with Type I error rate α (two-tailed) = .05 and Type II error rate $\beta = .20$ (Hulley, Cummings, Browner, Grady, & Newman, 2013). One hundred and sixty-one workers completed the study and were paid $0.50; five failed to provide any transgression or wrote nonsense (e.g., "gf"). One person failed to answer the wrongness probe. These participants were removed leaving $N = 155$ (85 male, 70 female; $M_{age} = 35.74$ years, $SD = 11.65$; 85% White/Caucasian, 7% Asian, 6% Black/African American, 2% Hispanic/Latino).

Materials and procedures. After providing consent, participants were instructed: "We would like you to think about an action that you recently witnessed or heard about where someone did something wrong. This could be a minor offence or something major." They were given a large text box to describe the action. They were prompted to spend some time writing, and, to structure their response, were asked: "What was the person's relationship to you? What did they do? What was wrong about it?" The mean writing time was 2 minutes and 18 seconds ($SD = 209.83$). Next, on a separate page, participants rated the wrongness of the action on a 1-7 scale (1 = *Not at all wrong* to 7 = *Extremely wrong*). Then

they appraised the action on ten dimensions, "to what extent do the following descriptions apply to the action you wrote about?" (1 = *Not at all* to 7 = *Extremely*). The ten dimensions were: "The action…was unjust, selfish, unfair, dishonest, impure, made me feel nauseous (grossed out), was disrespectful toward an authority, involved someone being disloyal to their group, negatively affected the wellbeing of someone, caused someone pain." Finally, in all studies, participants answered basic demographic questions, were debriefed, and paid.

Data reduction and analysis plan. We adopted a conceptual-empirical data reduction strategy that aggregated the items *unjust, selfish, unfair* and *dishonest* (Cronbach's $\alpha = .85$) into a single injustice index, aggregated the items *pain* and *negatively affected wellbeing* ($\alpha = .80$) into a harm index, and aggregated the items *impure* and *nauseous (grossed out)* ($\alpha = .68$) into an impurity index. The single items related to authority (*disrespectful*) and group loyalty (*disloyalty*) were each treated separately. The same appraisal indices were used in all four studies (see Supplementary Materials for index reliabilities and exploratory factor analysis results).

In all four studies, we ran a linear regression on wrongness judgments using the appraisal indices (*harm, injustice, impurity, disrespectful, disloyalty*) as simultaneous predictors. In Studies 2a-3, as a secondary analytical strategy, we also conducted a mixed linear analysis of the five-factor model for each study, to control for variability in the repeated judgments of participants across ten scenarios and to take all five appraisals into account in a single analysis. See Supplementary Materials for additional analyses, and discussion, with the item "unjust" removed from the injustice index (as per the request of a reviewer).

Results and Discussion

Reported wrongdoing. We first coded participants' qualitative responses ($N = 155$) to understand the diversity of moral content, and to determine whether some responses were

unscorable. The first author coded the responses, and the fourth author coded them independently using the categories developed by the first author (Cohen's κ = .725). This two-rater procedure led to two original categories being dropped or merged with the others. Transgression categories are presented in Figure S1 in Supplementary Materials. There was quite a diversity of transgressions reported (14 categories total); for 12% of responses the nature of the transgression was unclear or unscorable.

Appraisal ratings. The mean scores, and standard errors, for our five appraisal dimensions can be seen in Figure S2 in Supplementary Materials. Note that while mean appraisal ratings offer some insight into the perceived relevance of each appraisal within a scenario, these ratings cannot answer the question of which appraisals contributed to variance in the wrongness ratings.

Main analysis. Details regarding the distribution properties (skew, kurtosis) of the wrongness ratings and each predictor within the regression model can be found in Supplementary Materials (see Table S5 for distribution properties for all studies). Of the 138 scorable offenses, the mean wrongness rating was 5.81 (SD = 1.28). The five-factor model explained a significant amount of variance in participants' wrongness ratings, R^2 = .59, $F(5,133)$ = 38.46, $p < .001$. Injustice appraisals contributed the most predictive value, β = .48, $t(133)$ = 6.43, $p < .001$, 95% CI [.303, .573] followed by harm appraisals, β = .29, $t(133)$ = 4.08, $p < .001$, 95% CI [.098, .282]. None of the other appraisals contributed significantly to wrongness judgments, βs < .13, ps > .11 (95% CIs contained 0). Thus, when we operationalized the concept of harm carefully (with terms related to pain/suffering and reduced welfare), we found that injustice provided a much stronger foundation for immorality. This was shown using a transgression recall paradigm that produced a large diversity of moral content (see Figure S1).

In Study 1, we found little evidence for moral pluralism. However, certain immoral acts related to impurity, disrespect for authority, and group disloyalty (e.g., incest, betraying one's country) may be uncommon, and thus may rarely appear in people's recollections of wrongdoing as prompted in Study 1. Thus, to deliberately cover the five foundations of morality articulated within MFT, Studies 2a and 2b presented participants with scenarios designed to evaluate wrongness judgments across five moral foundations, as theorized by Graham et al. (2013), thus, providing a wider test of moral pluralism.

Studies 2a–2b

Studies 2a and 2b differed mainly in one aspect: Study 2a asked how "wrong" was each action, while Study 2b asked how "morally wrong" was each action. Study 2b used "morally" to address measurement commensurability with Schein and Gray (2015; see e.g., Study 1), while Study 2a is consistent with the MFT approach, which avoids using the term "morally" in assessing judgments of wrongdoing within the Moral Foundations Questionnaire (see Graham et al., 2009, Study 1).

Method

Participants. We recruited two new samples of MTurk workers based in the United States, and analysed data from all individuals who completed the study and passed the Captcha question. Participants were paid $1.00. We aimed to recruit a minimum of 200 participants in each study. In Study 2a, 231 individuals started the survey, and 206 completed it (124 male, 82 female; M_{age} = 34.87 years, SD = 11.20; 78% White, 11% Asian, 7% Black, 4% Hispanic or other). In Study 2b, 272 individual started the survey, and 251 completed it (141 male, 110 female; M_{age} = 35.52 years, SD = 12.28; 76% White, 10% Black, 7% Asian, 7% Hispanic or other). Study 2a ran 16–22 April, 2016; Study 2b ran 9–18 June, 2018.

Materials and procedures. The procedure was nearly identical for both studies. Participants provided informed consent and then completed ten transgression blocks (two

actions for each foundation) presented in a randomized order. Each scenario described a unique, female actor who engaged in a transgressive action (see Table 1). The scenarios were derived from Graham et al. (2009) but were modified to clarify the motive of the actor. This allowed transgressive aspects of the actions to be made explicit, and discouraged participants from thinking that the actors may have had good reasons for engaging in the acts (e.g., in the dog scenario, inferences of self-defense were pre-empted by specifying that the kicking was motivated by dislike). For each scenario block in Study 2a, participants judged whether it was wrong or NOT wrong for the actor to have engaged in the act. If they selected "wrong", they were then asked to rate how wrong (1 = *Not wrong at all* to 7 = *Extremely wrong*). The "NOT wrong" responses were scored (1). In Study 2b, the first step of this process was eliminated and participants simply rated how "morally wrong" was the action using the same 1–7 scale. Participants then rated the act on the ten appraisal dimensions from Study 1, on the same 1–7 scale.

Table 1. Transgression scenarios used in Studies 2a, 2b and 3.

Category	Scenario
Harm	(H1) *Abby kicks a dog in the head, hard, because she doesn't like it.* (H2) *Cindy makes cruel remarks to an overweight person about their appearance because she doesn't like them.*
Unfairness	(F1) *Robin only hires people of her race in her company because she prefers working with people of her own race.* (F2) *Even though Maria has some free time, Maria does not help her friend move into a new apartment after her friend had helped her move the month before.*
Group Disloyalty	(L1) *Nicola breaks off all communication with her immediate and extended family for one year simply because she had a heated argument with them.* (L2) *Fiona burns her country's flag in private (nobody else sees her) because she doesn't like her country.*
Authority	(A1) *Clare curses her parents to their face simply because she is angry with them.* (A2) *Jen makes a disrespectful hand gesture to her boss in a group meeting because she doesn't like her boss.*
Impurity/Degradation	(P1) *Lisa cooks and eats her dog after it dies of natural causes because she wanted to see what it tastes like.* (P2) *Julia has consensual sex with her biological brother who she has known all her life. They are both adults, desire each other, performed the act in private, and used contraceptives.*

Results and Discussion

Wrongness and appraisal ratings. Figure 1 depicts the wrongness ratings for the ten transgression scenarios for Studies 2a–2b. There was a great deal of variation across the scenarios in the mean levels of judged wrongdoing (Study 2a: range = 2.50 [L1] to 6.47 [H1]; Study 2b: range = 3.81 [L1] to 6.65 [H1]). Though the means were slightly higher in Study 2b, perhaps due to the elimination of the initial binary probe, the pattern of means was consistent across studies. Mean ratings, and standard errors, of the five appraisal indices as a function of scenario can be found in Figures S3–S4 in Supplementary Materials.
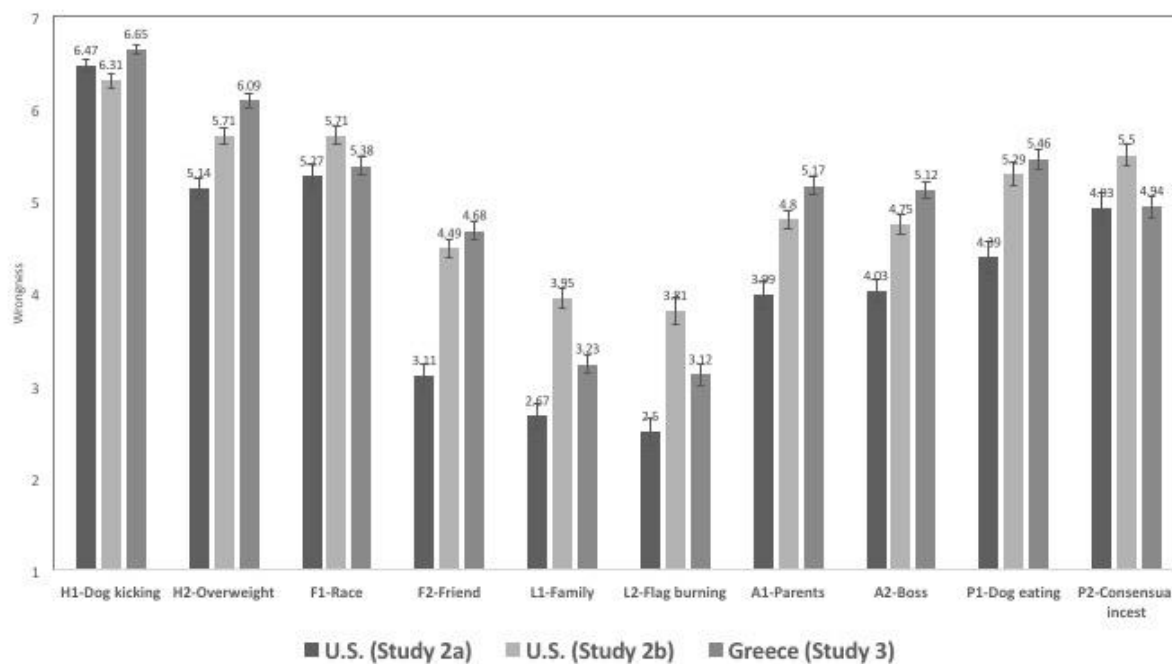
Fig. 1. Mean wrongness ratings and standard errors (±1 S.E.) for the ten transgression scenarios used in Studies 2a–2b (American sample) and Study 3 (Greek sample).

Main analysis. Tables 2–3 show the results of the full regression model for the ten scenarios, along with collinearity statistics (multicollinearity was not an issue except in one instance, flag burning, for both studies, predominantly for the injustice and impurity indices).

In Study 2a, the injustice index was a significant predictor of wrongdoing for nine out of ten scenarios (β range = .15-.64), consensual incest being the exception. By contrast, the harm index was a significant predictor for only the two harm scenarios and one of the fairness scenarios (friend). The results for Study 2b were quite similar. The injustice index significantly predicted wrongdoing in all scenarios (β range = .29-.65). The harm index significantly predicted wrongdoing in seven out of ten scenarios, though it was a negative predictor in one of those seven (flag burning), and, with the exception of the harm scenarios, it was a weaker predictor than injustice. These findings show that injustice appraisals were foundational across moral diversity, whereas harm appraisals were much less foundational, though not insubstantial.

Table 2. Appraisals predicting judgments of wrongdoing from Study 2a (American sample without using "morally").

Scenario	Appraisals	Model			R^2	Tolerance	VIF
		β	t	95% CI			
Harm 1 – *Dog kicking*					.60		
	Injustice index	**.15**	2.13*	[.009, .230]		.43	2.32
	Harm index	**.55**	10.56***	[.625, .913]		.75	1.34
	Impurity index	**.27**	4.34***	[.085, .226]		.54	1.86
	Disrespectful to authority	-.07	-0.99	[-.088, .029]		.47	2.14
	Disloyal to group	-.04	-0.51	[-.079, .046]		.40	2.51
Harm 2 – *Overweight*					.50		
	Injustice index	**.33**	3.80***	[.184, .581]		.34	2.92
	Harm index	**.41**	6.37***	[.372, .706]		.61	1.64
	Impurity index	**.16**	2.29*	[.021, .278]		.49	2.03
	Disrespectful to authority	**-.17**	-2.34*	[-.269, -.023]		.51	1.97
	Disloyal to group	.01	0.17	[-.114, .136]		.46	2.19
Fairness 1 – *Race*					.59		
	Injustice index	**.64**	9.32***	[.739, 1.135]		.44	2.29
	Harm index	.13	1.86	[-.010, .347]		.44	2.25
	Impurity index	.06	0.97	[-.064, .189]		.52	1.91
	Disrespectful to authority	-.04	-0.67	[-.156, .077]		.57	1.76
	Disloyal to group	.04	0.64	[-.072, .140]		.61	1.64
Fairness 2 – *Friend*					.47		
	Injustice index	**.43**	5.71***	[.364, .747]		.46	2.16
	Harm index	**.17**	2.42*	[.034, .341]		.52	1.94
	Impurity index	**.21**	2.67**	[.068, .451]		.42	2.38

	Disrespectful to authority	-.10	-1.50	[-.303, .041]	.53	1.89
	Disloyal to group	.05	0.75	[-.080, .179]	.57	1.76
Loyalty 1 – *Family*				.43		
	Injustice index	**.37**	3.77**	[.223, .751]	.31	3.28
	Harm index	.09	1.22	[-.075, .318]	.51	1.94
	Impurity index	.13	1.87	[-.011, .398]	.57	1.75
	Disrespectful to authority	.02	0.32	[-.122, .169]	.60	1.65
	Disloyal to group	**.17**	2.09*	[.011, .346]	.45	2.22
Loyalty 2 – *Flag burning*				.60		
	Injustice index	**.36**	3.40**	[.180, .679]	.18	5.53
	Harm index	-.09	-1.25	[-.305, .069]	.37	2.71
	Impurity index	**.38**	4.12***	[.246, .696]	.24	4.24
	Disrespectful to authority	.00	0.00	[-.131, .131]	.45	2.24
	Disloyal to group	**.20**	2.82**	[.061, .342]	.39	2.53
Authority 1 – *Parents*				.44		
	Injustice index	**.32**	3.52**	[.177, .627]	.34	2.91
	Harm index	.12	1.72	[-.024, .357]	.57	1.75
	Impurity index	**.18**	2.26*	[.027, .398]	.47	2.13
	Disrespectful to authority	**.25**	4.37***	[.197, .521]	.84	1.19
	Disloyal to group	.01	0.15	[-.147, .171]	.47	2.15
Authority 2 – *Boss*				.40		
	Injustice index	**.32**	3.34**	[.149, .580]	.33	3.04
	Harm index	.12	1.59	[-.029, .275]	.56	1.77
	Impurity index	.11	1.37	[-.056, .307]	.48	2.10
	Disrespectful to authority	**.18**	3.15**	[.100, .435]	.90	1.11
	Disloyal to group	.12	1.51	[-.034, .261]	.51	1.96

Purity 1 – *Dog eating*				.62		
	Injustice index	**.34**	4.32***	[.243, .652]	.30	3.35
	Harm index	-.11	-1.96	[-.375, .001]	.58	1.73
	Impurity index	**.58**	10.55***	[.665, .971]	.62	1.62
	Disrespectful to authority	.01	0.18	[-.180, .216]	.32	3.11
	Disloyal to group	-.02	-0.27	[-.221, .167]	.29	3.45
Purity 2 – *Consensual incest*				.58		
	Injustice index	.06	0.62	[-.157, .300]	.26	3.78
	Harm index	.07	0.89	[-.098, .258]	.33	3.03
	Impurity index	**.66**	11.43***	[.719, 1.019]	.64	1.55
	Disrespectful to authority	.04	0.57	[-.109, .197]	.46	2.20
	Disloyal to group	.02	0.30	[-.121, .165]	.46	2.17

Note. * $p < .05$. ** $p < .01$. *** $p < .001$. Betas in bold are significant at $p < .05$. R^2 given for full model. *Ns* = 202-206.

Table 3. Appraisals predicting judgments of wrongdoing from Study 2b (American sample using "morally").

Scenario	Appraisals	Model			R^2	Tolerance	VIF
		β	t	95% CI			
Harm 1 – *Dog kicking*					.56		
	Injustice index	**.41**	5.79***	[.267, .542]		.36	2.74
	Harm index	**.43**	7.93***	[.414, .687]		.62	1.61
	Impurity index	.07	1.16	[-.040, .156]		.44	2.25
	Disrespectful to authority	-.07	-1.12	[-.100, .027]		.47	2.12
	Disloyal to group	-.01	-0.19	[-.080, .066]		.38	2.60
Harm 2 – *Overweight*					.56		
	Injustice index	**.43**	5.93***	[.266, .532]		.35	2.89
	Harm index	**.42**	7.83***	[.321, .537]		.63	1.59
	Impurity index	.11	1.63	[-.017, .178]		.37	2.70
	Disrespectful to authority	-.04	-0.68	[-.101, .049]		.52	1.92
	Disloyal to group	-.12	-1.74	[-.171, .010]		.36	2.82
Fairness 1 – *Race*					.56		
	Injustice index	**.47**	6.90***	[.394, .708]		.40	2.53
	Harm index	**.26**	4.08***	[.140, .403]		.46	2.17
	Impurity index	.09	1.45	[-.026, .173]		.49	2.06
	Disrespectful to authority	-.01	-0.19	[-.085, .070]		.58	1.74
	Disloyal to group	.08	1.48	[-.019, .132]		.60	1.67
Fairness 2 – *Friend*					.61		
	Injustice index	**.39**	5.93***	[.304, .606]		.37	2.69
	Harm index	**.19**	2.83**	[.057, .320]		.36	2.75
	Impurity index	**.30**	4.09***	[.135, .387]		.31	3.23

	Disrespectful to authority	.02	0.24	[-.088, .112]		.43	2.30
	Disloyal to group	.01	0.15	[-.092, .108]		.55	1.82
Loyalty 1 – *Family*					.69		
	Injustice index	**.48**	6.34***	[.358, .681]		.23	4.39
	Harm index	**.11**	2.19*	[.013, .247]		.49	2.04
	Impurity index	**.31**	4.95***	[.171, .397]		.34	2.94
	Disrespectful to authority	-.06	-1.27	[-.138, .030]		.55	1.81
	Disloyal to group	.08	1.54	[-.022, .181]		.49	2.03
Loyalty 2 – *Flag burning*					.79		
	Injustice index	**.65**	8.49***	[.561, .900]		.15	6.75
	Harm index	**-.18**	-2.89**	[-.313, -.059]		.22	4.56
	Impurity index	**.37**	5.27***	[.252, .553]		.18	5.61
	Disrespectful to authority	.01	0.14	[-.081, .094]		.50	1.99
	Disloyal to group	**.08**	2.01*	[.002, .170]		.51	1.95
Authority 1 – *Parents*					.53		
	Injustice index	**.33**	3.89***	[.162, .494]		.27	3.66
	Harm index	.12	1.88	[-.006, .261]		.46	2.17
	Impurity index	**.28**	3.81***	[.119, .374]		.36	2.81
	Disrespectful to authority	**.15**	2.82**	[.046, .260]		.67	1.49
	Disloyal to group	-.02	-0.32	[-.126, .091]		.45	2.25
Authority 2 – *Boss*					.57		
	Injustice index	**.54**	6.70***	[.392, .721]		.27	3.69
	Harm index	**.17**	2.72**	[.045, .281]		.46	2.18
	Impurity index	-.05	-0.71	[-.176, .083]		.34	2.96
	Disrespectful to authority	.08	1.72	[-.013, .196]		.73	1.36
	Disloyal to group	**.14**	2.43*	[.025, .234]		.54	1.85

Purity 1 – *Dog eating*				.64		
	Injustice index	**.45**	5.75***	[.285, .581]	.25	4.08
	Harm index	.03	0.38	[-.097, .144]	.34	2.95
	Impurity index	**.49**	9.37***	[.462, .707]	.55	1.83
	Disrespectful to authority	**-.13**	-2.08*	[-.234, -.007]	.36	2.80
	Disloyal to group	.00	0.05	[-.111, .118]	.32	3.08
Purity 2 – *Consensual incest*				.64		
	Injustice index	**.29**	3.48**	[.122, .441]	.21	4.83
	Harm index	-.01	-0.10	[-.131, .118]	.29	3.39
	Impurity index	**.59**	11.88***	[.530, .741]	.60	1.67
	Disrespectful to authority	-.09	-1.67	[-.160, .013]	.55	1.81
	Disloyal to group	.05	0.88	[-.056, .147]	.39	2.59

Note. * $p < .05$. ** $p < .01$. *** $p < .001$. Betas in bold are significant at $p < .05$. R^2 given for full model. Ns = 249–251.

Consistent with moral pluralism, we observed domain-specific contributions from domain-relevant appraisals for nearly every moral foundation. In Study 2a, appraisals of group disloyalty contributed significantly to moral judgments of group disloyalty for both disloyalty scenarios (one in Study 2b), and appraisals of disrespect for authority contributed selectively to judgments of the authority scenarios (one in Study 2b). Appraisals of impurity were significant predictors for both purity scenarios, but also had a wider contribution to other domains of action, including both harm scenarios, one of the fairness scenarios (friend), one of the disloyalty scenarios (flag burning), and one of the authority scenarios (parents); in Study 2b, impurity appraisals predicted wrongdoing judgments for six scenarios, including both purity scenarios.

Mixed linear model. To determine which of the appraisals impacted participants' wrongness judgments across the ten scenarios, data for each study were analyzed with a linear mixed model fit with Satterthwaite approximation. The model was specified to predict wrongness judgments from the fixed effects, our five appraisal indices, and the random effects (intercepts) of Participant and Scenario. The results of the analysis converged with the results of the regressions. In Study 2a, the injustice index had the largest individual contribution overall, $B = .472$ (SE $= .031$), $t(1939) = 15.01$, $p < .001$, 95% CI [.411, .533], followed closely by the purity index, $B = .394$ (SE $= .024$), $t(1680) = 16.53$, $p < .001$, 95% CI [.347, .441], then the harm index, $B = .160$ (SE $= .026$), $t(1742) = 6.22$, $p < .001$, 95% CI [.110, .210]. The contributions made by authority and disloyalty did not reach statistical significance, $B = .036$ (SE $= .020$), $t(1822) = 1.75$, $p = .080$, 95% CI [-.003,.075], $B = .017$ (SE $= .021$), $t(1962) = 0.83$, $p = .405$, 95% CI [-.024, .058], respectively. The results for Study 2b were quite similar to Study 2a: the injustice index had the largest individual contribution overall, $B = .449$ (SE $= .025$), $t(2457) = 17.98$, $p < .001$, 95% CI [.400, .498], followed closely by the purity index, $B = .319$ (SE $= .018$), $t(2094) = 18.06$, $p < .001$, 95% CI

[.284, .354], then the harm index, B = .131 (SE = .019), $t(2234) = 7.00$, $p < .001$, 95% CI [.094, .168]. The contributions made by authority, B = -0.002 (SE = 0.014), $t(2295) = -0.16$, $p = .873$, 95% CI [-.029, .025], and disloyalty, B = -.019 (SE = .015), $t(2441) = -1.29$, $p = .196$, 95% CI [-.048, .010], did not reach statistically significant levels.

Study 3

In Study 3, we sought to extend our findings to a different cultural context, Greece, which traditionally places great emphasis on familial bonds and parental discipline (Rosenthal, Bell, Demetriou, & Efklides, 1989), as an initial test of whether our claims about the extensive role of injustice, and moral pluralism, are culturally bounded.

Method

Participants. Our aim was to recruit at least 200 participants living in Greece. We obtained permission from the ethics committee at Aristotle University of Thessaloniki to circulate a web link to the study within a psychology classroom and a Facebook page that many students from the university frequent. This strategy led to a total 434 students who completed the entire survey (many others started but did not complete the survey). Among those that reached the end of the survey, twenty provided partial moral judgment responses at an unacceptable level (over three missing data points) or no demographic data. Thus, 414 participants were retained (113 males, 301 females; $M_{age} = 20.69$ years, $SD = 2.90$). Ninety-six percent of participants reported a Greek nationality, 99% White/Caucasian.

Materials and procedures. The materials and procedures were identical to Study 2a. To obtain a Greek version, the fourth author first translated the English materials to Greek. This Greek version was then back translated by a second person proficient in Greek and English (see https://osf.io/g7dpn/).

Results and Discussion

Wrongness and appraisal ratings. Direct statistical comparisons of the two culturally distinct samples were deemed inappropriate and therefore not carried out. Relative to the U.S. sample from Study 2a, Greek participants had higher wrongness ratings for most of the transgressions, but this was less true compared to American sample 2b, which at times had the highest wrongness ratings (see Figure 1). Like the U.S. sample, there was a great deal of variation between scenarios (means ranged from 3.12 [L2] to 6.65 [H1]). Mean appraisal ratings can be found in Supplementary Figure S5.

Main analysis. We used the analysis strategy of Studies 2a–2b. Table 4 shows the results of these analyses, along with collinearity statistics (there were no instances of multicollinearity). Quite similar to Studies 2a–2b, the injustice index was a significant predictor for all ten scenarios (β range = .27–.48), highlighting its foundational role. By contrast, the harm index was a significant predictor of wrongdoing for only five of ten scenarios—the two harm scenarios, one fairness (race), loyalty (family), and authority (parents) (β range = .13-.25). We observed again evidence of moral pluralism. Disrespect-for-authority appraisals were a significant predictor of wrongness for seven of ten scenarios, including both authority scenarios, and the impurity index significantly contributed to wrongness judgments for seven scenarios, including both purity scenarios. However, group-disloyalty appraisals had a small negative contribution to two scenarios (dog kicking, flag burning).

Table 4. Appraisals predicting judgments of wrongdoing from Study 3 (Greek sample).

Scenario	Appraisals	Model			R^2	Tolerance	VIF
		β	t	95% CI			
Harm 1 – *Dog kicking*					.30		
	Injustice index	**.28**	4.76***	[.157, .378]		.50	1.98
	Harm index	**.21**	4.21***	[.153, .421]		.75	1.34
	Impurity index	**.11**	2.12*	[.005, .125]		.63	1.57
	Disrespectful to authority	**.17**	3.26**	[.039, .159]		.67	1.50
	Disloyal to group	**-.10**	-2.00*	[-.090, -.001]		.71	1.41
Harm 2 – *Overweight*					.42		
	Injustice index	**.33**	6.01***	[.255, .503]		.50	1.98
	Harm index	**.25**	5.27***	[.221, .485]		.64	1.55
	Impurity index	.10	1.80	[-.007, .166]		.52	1.94
	Disrespectful to authority	**.16**	3.50**	[.055, .194]		.71	1.40
	Disloyal to group	-.05	-0.95	[-.112, .039]		.61	1.64
Fairness 1 – *Race*					.47		
	Injustice index	**.40**	6.69***	[.441, .808]		.39	2.59
	Harm index	**.13**	2.57*	[.045, .339]		.53	1.89
	Impurity index	**.15**	2.95**	[.055, .275]		.52	1.91
	Disrespectful to authority	**.13**	2.48*	[.030, .261]		.53	1.90
	Disloyal to group	-.00	-0.10	[-.092, .083]		.69	1.45
Fairness 2 – *Friend*					.41		
	Injustice index	**.44**	8.04***	[.483, .795]		.50	2.00
	Harm index	.09	1.78	[-.012, .257]		.58	1.72
	Impurity index	**.13**	2.54*	[.035, .274]		.59	1.69

Disrespectful to authority	.09	1.89	[-.004, .178]		.67	1.49
Disloyal to group	.00	0.05	[-.096, .101]		.67	1.49
Loyalty 1 – *Family*				.39		
Injustice index	**.39**	6.18***	[.458, .885]		.40	2.50
Harm index	**.18**	3.78***	[.148, .470]		.68	1.47
Impurity index	.08	1.57	[-.034, .304]		.55	1.82
Disrespectful to authority	.08	1.43	[-.034, .214]		.52	1.91
Disloyal to group	.01	0.14	[-.113, .130]		.61	1.64
Loyalty 2 – *Flag burning*				.54		
Injustice index	**.48**	8.07***	[.483, .794]		.33	3.04
Harm index	.07	1.62	[-.020, .213]		.58	1.73
Impurity index	**.21**	3.70***	[.131, .429]		.36	2.81
Disrespectful to authority	**.13**	2.87**	[.051, .270]		.54	1.85
Disloyal to group	**-.09**	-2.09*	[-.208, -.007]		.57	1.75
Authority 1 – *Parents*				.40		
Injustice index	**.34**	5.81***	[.304, .616]		.45	2.20
Harm index	**.15**	3.12**	[.093, .406]		.65	1.53
Impurity index	**.14**	2.62**	[.039, .270]		.53	1.88
Disrespectful to authority	**.19**	3.80***	[.108, .340]		.64	1.55
Disloyal to group	-.07	-1.36	[-.160, .029]		.66	1.52
Authority 2 – *Boss*				.40		
Injustice index	**.45**	7.78***	[.450, .755]		.46	2.17
Harm index	.03	0.71	[-.071, .151]		.68	1.48
Impurity index	.04	0.82	[-.075, .182]		.62	1.61
Disrespectful to authority	**.26**	5.36***	[.213, .460]		.68	1.47
Disloyal to group	-.07	-1.41	[-.165, .027]		.65	1.53

Purity 1 – *Dog eating*				.48		
Injustice index	**.33**	5.78***	[.268, .544]		.41	2.41
Harm index	-.03	-0.61	[-.122, .064]		.80	1.23
Impurity index	**.41**	8.69***	[.428, .678]		.58	1.71
Disrespectful to authority	.06	1.27	[-.042, .193]		.50	2.01
Disloyal to group	-.01	-0.17	[-.098, .082]		.62	1.62
Purity 2 – *Consensual incest*				.55		
Injustice index	**.27**	4.67***	[.211, .519]		.35	2.86
Harm index	.07	1.54	[-.021, .179]		.56	1.79
Impurity index	**.42**	8.85***	[.412, .648]		.51	1.96
Disrespectful to authority	**.15**	3.22**	[.072, .297]		.52	1.94
Disloyal to group	-.06	-1.33	[-.160, .031]		.57	1.76

Note. * $p < .05$. ** $p < .01$. *** $p < .001$. Betas in bold are significant at $p < .05$. R^2 given for full model. *N*s = 400–408.

Mixed linear model. Similar to Studies 2a–2b, injustice made the greatest contribution to wrongness judgments across domains, B = .538 (SE = .024), $t(4022) = 22.08$, $p < .001$, 95% CI [.491, .585], followed by impurity, B = .288 (SE = .019), $t(3568) = 15.10$, $p < .001$, 95% CI [.251, .325]. Yet differently, authority appraisals made a substantive independent contribution, B = .147 (SE = .017), $t(4051) = 8.75$, $p < .001$, 95% CI [.114, .180], which was even greater than the contribution made by the harm index, B = .103 (SE = .018), $t(3140) = 5.59$, $p < .001$, 95% CI [.068, .138]. Like Studies 2a–2b, group disloyalty did not substantially contribute to wrongness judgments across content, B = -.022 (SE = .014), $t(4044) = -1.55$, $p = .122$, 95% CI [-.049, .005].

Thus, once again we observed evidence for a pluralistic account of moral judgment. While appraisals of injustice served as a ubiquitous foundation for wrongdoing in the Greek sample, there was substantial evidence as well for individual contributions made by other dimensions, including appraisals of harm, impurity, and disrespect for authority.

General Discussion

Across four studies incorporating two different methodologies and two different nationalities (American, Greek), we found that injustice appraisals provided a conceptual foundation for judgments of moral wrongdoing that was unmatched by harm appraisals. Furthermore, we found evidence for moral pluralism. Study 1 focused on offenses grounded in participants' real experiences, which produced a diverse range of content, with stealing, deception, killing, and rudeness as the most common transgressions (see Figure S1). Despite this moral diversity, injustice and harm were the only dimensions that independently predicted ratings of wrongness. Studies 2a–2b and 3 adopted an experimenter-driven methodology to ensure a wider coverage of content, and sampled from the U.S. (Studies 2a–2b) and Greece (Study 3). For both cultural samples, we found that injustice appraisals contributed significant, independent variance to all, or all but one, of the transgressions,

highlighting its extensive, foundational role. Appraisals of harm contributed substantially to several transgressions, for both samples, but this contribution was much narrower than that of injustice appraisals. Critically for debates regarding moral pluralism, we found that several other appraisals—those related to appraisals of impurity (all three studies) and disrespect towards authority (for the Greek sample)—contributed to judgments of wrongdoing across diverse content.

When taken together, our findings provide substantial support for the role of injustice as a comprehensive foundation for moral judgment, certainly stronger and more far-reaching than appraisals of harm. Furthermore, our findings support a pluralistic view of moral judgment. Not only did appraisals distinct from harm and injustice predict moral judgments in sensible ways, at least one appraisal dimension (impurity) made a more extensive, independent contribution to moral judgments than monistic theories would predict (e.g., Gray & Keeney, 2015). The present findings advance an understanding of which appraisals are central to moral judgments of wrongdoing and which contribute more narrowly. While past research on the deflationary theory of harm has indicated that appraisals of injustice are essential to viewing a harmful action as transgressive (Piazza & Sousa, 2016; Piazza et al., 2013; Sousa et al., 2009), no research to date has shown injustice appraisals to be important to *all sorts of* wrongdoing, beyond those involving harm. Our methodological approach also advances work on the topic of moral pluralism, not because we find strong evidence of different "domains" of moral evaluation, but instead because we demonstrate that several distinctive appraisals are implicated in a range of moral judgments.

One important limitation is that the methodologies employed here were not ideal for conducting principal component analyses because all ten appraisals were negatively valenced. While two-factor structures were found across the three studies, the two components were difficult to interpret due to multiple cross-loadings (see Supplementary

Materials for details). Future studies should put effort into developing alternative methodologies that are better suited for testing the conceptual boundaries between morally-relevant appraisals – for example, factor-analytic strategies that use semantic similarity-dissimilarity ratings (e.g., rate the similarity of these statements: "causing someone pain", "being disloyal to a group", etc.). Second, we measured rather than manipulated appraisals, limiting the causal conclusions we can draw. Finally, we measured moral wrongdoing without probing additional criteria, such as authority independence or generalizability, that could more clearly differentiate normative evaluations related to moral versus conventional transgressions (see Turiel, 1983).

Why did we find evidence for moral pluralism when some recent findings have found otherwise? The answer may have to do with divergent operationalizations of harm. Many studies that have challenged the moral relevance of appraisals such as unfairness, impurity, and disloyalty by pitting these dimensions against harm (see e.g., Gray et al., 2014; Schein & Gray, 2015) have unduly operationalized harm with words like "harmful" and "cruel" – which express not only harm qua pain/suffering but also the *unjust* causation of pain/suffering, thereby favouring terminologically the relationship between harm and immorality. Thus, we operationalized harm by using expressions related to pain and wellbeing that more unambiguously expressed the intended concept. Yet this still leaves open the empirical possibility that many transgressions are considered immoral partly because they are perceived as involving the (intentional) causation of suffering or welfare reduction. Indeed, in our studies, appraisals of pain/welfare reduction did contribute to wrongness judgments across a range of immoral content. Nevertheless, our findings do not support the monistic argument that harm appraisals is the foundation of all immorality, as in many cases other appraisal dimensions surpassed the contribution made by harm appraisals and/or harm appraisals did not contribute much at all.

Conclusion

Four studies showcased the foundational role of injustice for morality, beyond the role played by harm, and simultaneously revealed support for moral pluralism. Not all harmful actions are considered transgressive, and our findings indicate that harm is not the foundation of all moral wrongdoing.

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Supplementary Materials to
Appraisals Foundational to Moral Judgment

Exploratory Factor Analysis for Study 1

We first explored the relationship between the ten appraisals by conducting a principal component analysis with Oblimax rotation. This analysis produced a two-factor solution with the first factor (eigenvalue = 4.95) comprised of *unjust, selfish, unfair, impure, dishonest, disrespectful,* and *disloyal* (loadings > .50), and the second factor (eigenvalue = 1.12) comprised of *pain, negatively affected wellbeing,* and *nauseous* (loadings > .50). However, the items *impure, unfair, unjust,* and *selfish* also cross-loaded with the second factor above .50 (principal axis factoring arrived at a very similar conclusion though with fewer cross-loading items). Clearly there is a great deal of empirical overlap between the appraisals, and this should be expected given that all ten appraisals are negatively valenced and each potentially represent different ways of being immoral. Thus, we adopted a conceptual-empirical data reduction strategy.

Arguably, the items *unjust, unfair, selfish,* and *dishonest* are highly related at a conceptual level, as each refer to appraisals that a person did not consider the balance of interests involved. Empirically, these four items were highly interrelated (Cronbach's α = .85), and there was no improvement when removing any single item. Thus, we averaged the four items into a single injustice index. Since the items *pain* and *negatively affected wellbeing* are highly conceptually related, were intended as our measure of perceived harm, and empirically were interrelated (α = .80), they were averaged into a harm index. The items *impure* and *nauseous (grossed out)* were intended as measures of the moral foundation Purity/Degradation (see Graham et al., 2009; Gray & Keeney, 2015; Russell & Piazza, 2015), had just satisfactory reliability (α = .68) and were averaged into an impurity index. The single items related to the moral foundations of Authority (*disrespectful*) and Group Loyalty (*disloyalty*) were each treated separately.

Internal Reliabilities (Cronbach's αs) for Studies 2a-3

We found two-factor solutions in Study 2a for all ten scenarios, for nine of ten scenarios in Study 2b, and seven two-factor solutions and three single-factor solutions in Study 3, using the same factor-analytical methods as in Study 1. Cronbach's alphas for Studies 2a-3 reached satisfactory levels for all but a few items: Study 2a (injustice index = .763–.902, except H1 = .668; harm index = .767-.899; impurity index = .681-.805, only two items < .70), Study 2b (injustice index = .780–.918, except H1 = .679; harm index = .802–.929; impurity index = .726–.847, except H1 = .557, F1 = .678, and P1 = .679) and Study 3 (injustice = .731–.862; harm = .780–.866; impurity = .627–.813, four items < .70).

Figure S1.

Categories of transgressions reported in Study 1.
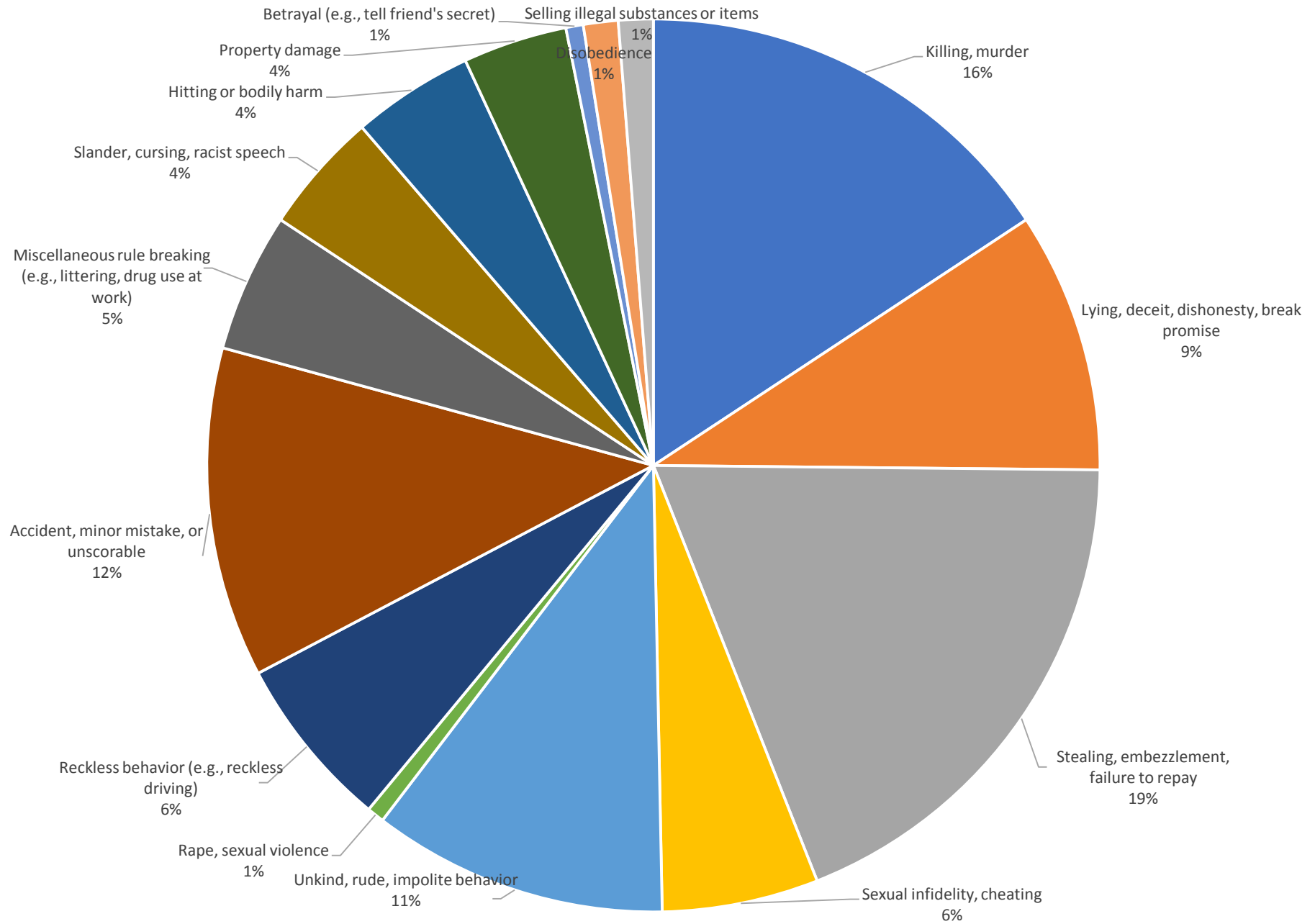
Figure S2

Appraisal ratings: Means and ±1 S. E. from Study 1.
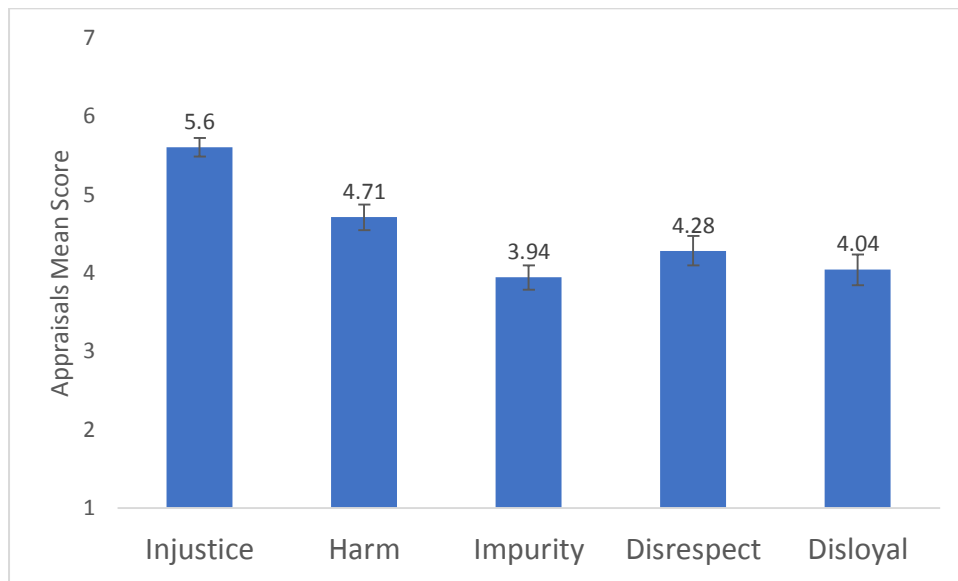
The use of line graphs for Figures S3-S5, rather than bar graphs, is to aid visualisation of appraisal profiles across content (scenarios). It is not meant to suggest continuity between scenarios.
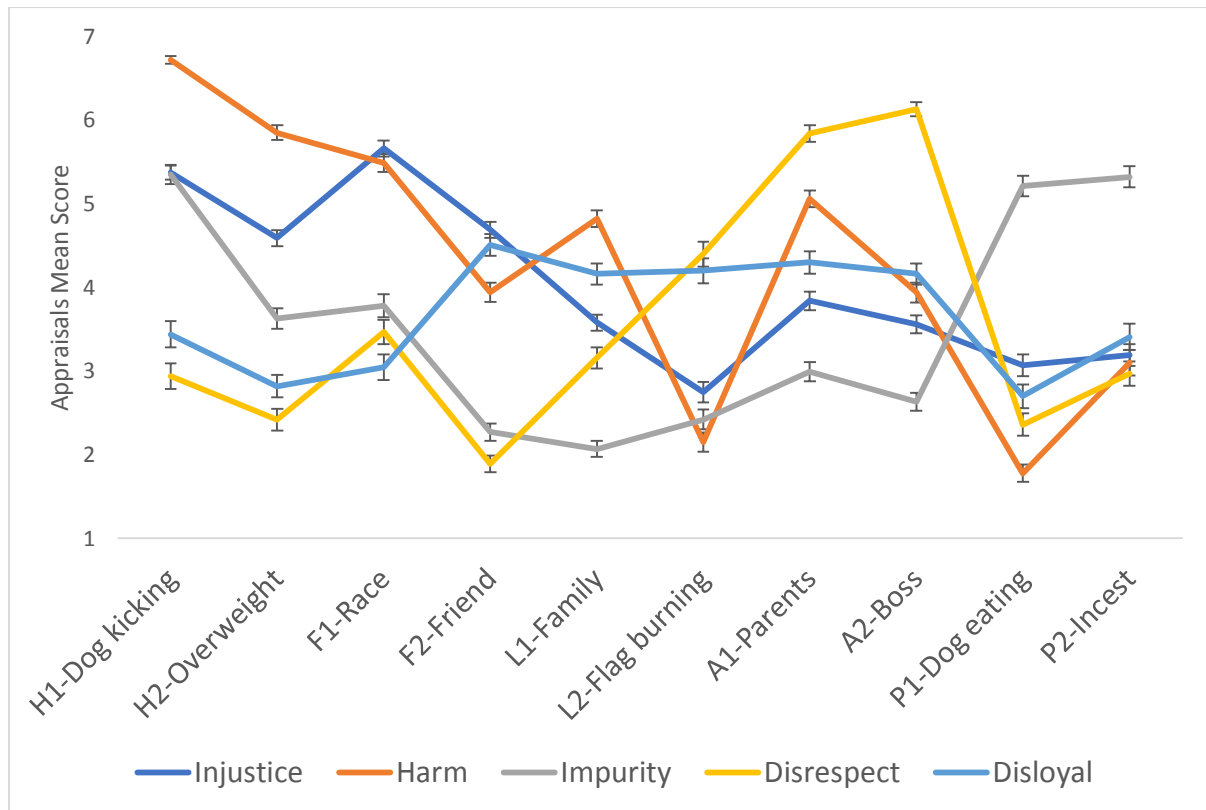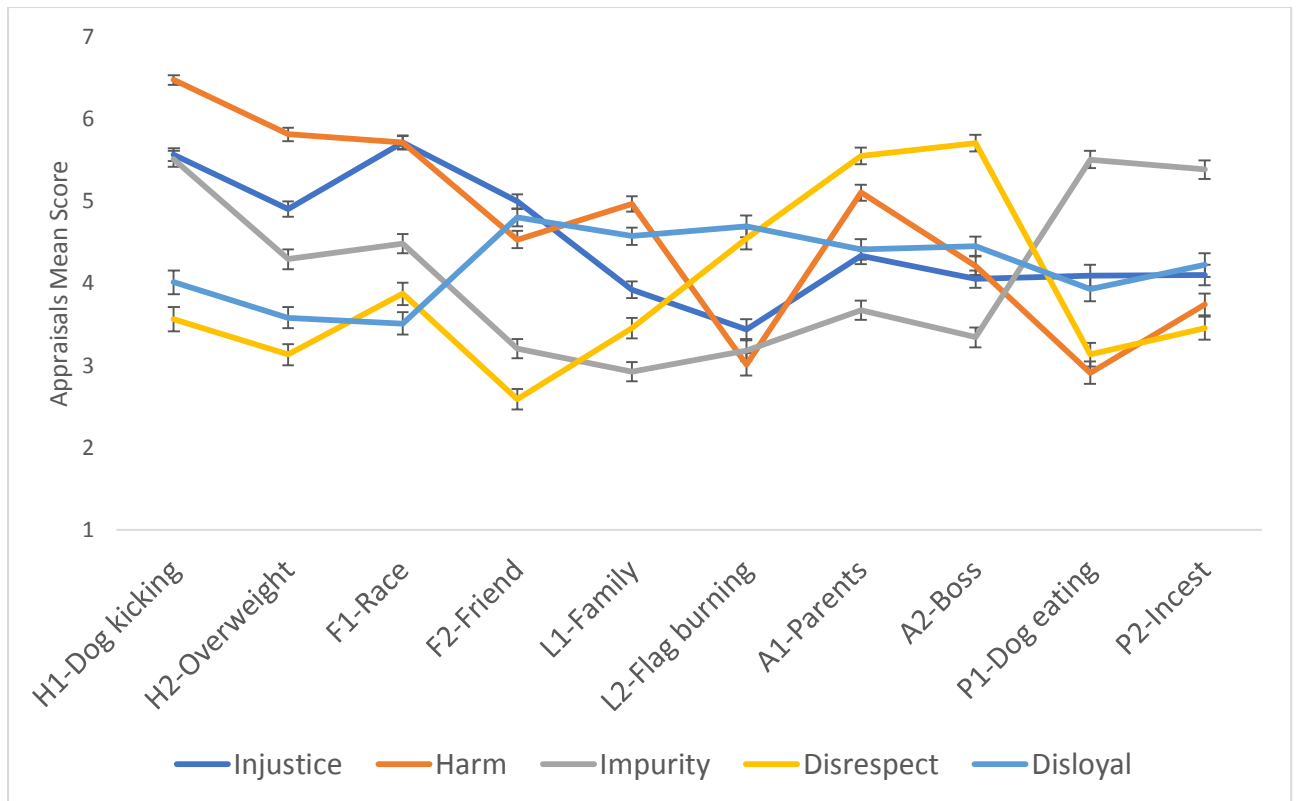
Figure S3

Appraisal ratings: Means and ±1 S. E. from Study 2a.

Figure S4

Appraisal ratings: Means and ±1 S. E. from Study 2b.

Figure S5

Appraisal ratings: Means and ±1 S. E. from Study 3.
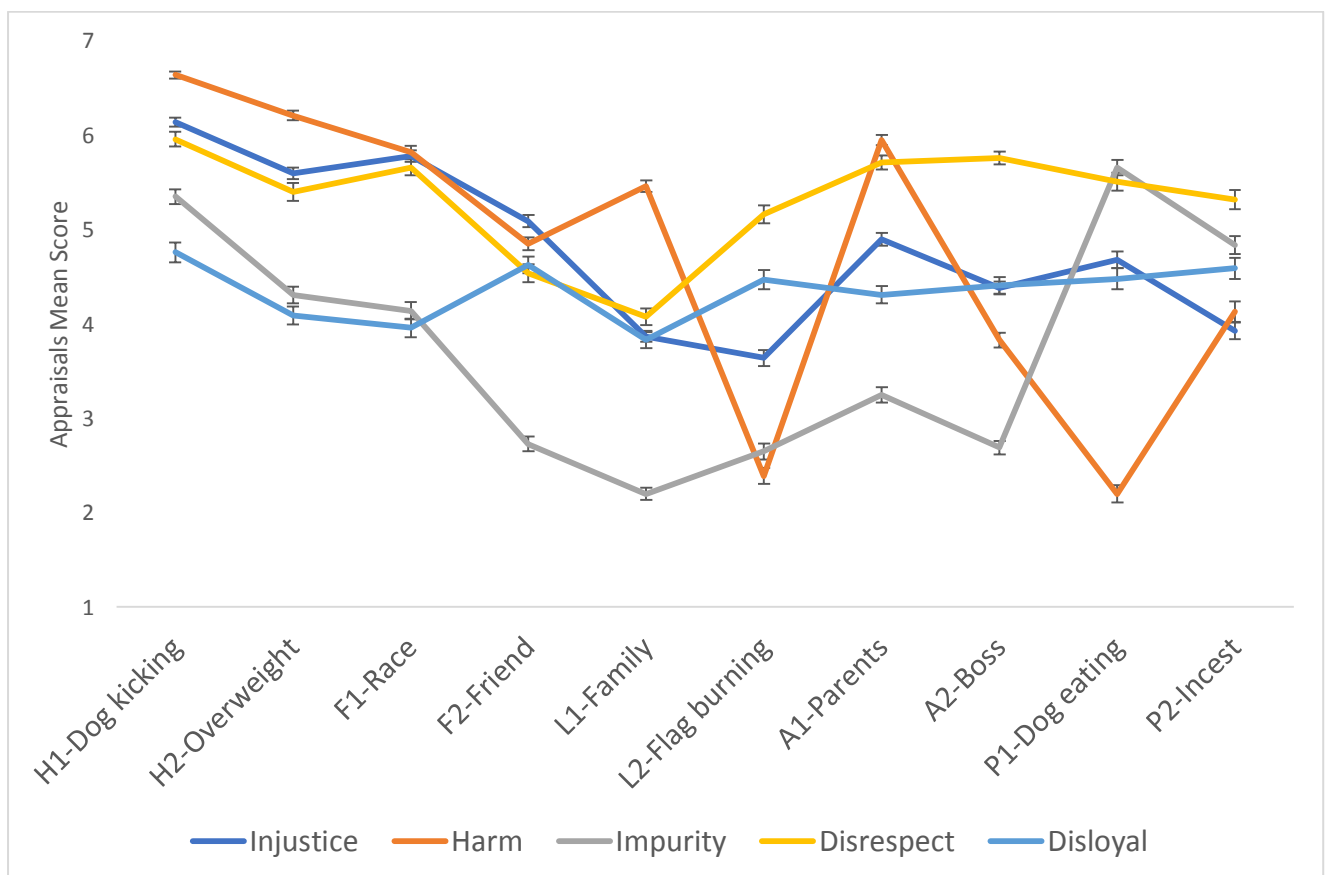
Political Orientation and Moral Judgment

In all four studies, political orientation was measured with a single item ("How would you describe your overall political orientation, regarding your position on social issues and economic issues"), ranging from 1 = Extremely liberal, 4 = Moderate or neutral, to 7 = Extremely conservative. In Study 1, political conservatism was unrelated to wrongness judgments, $r(138) = .07$, $p = .40$. In Study 2a, political conservatism was unrelated to wrongness judgments for most scenarios, with four exceptions: political conservatism was negatively related to wrongness judgments for H1 (kick dog), $r(200) = -.16$, $p = .021$, and F1 (racist hire), $r(202) = -.28$, $p < .001$, and positively related to wrongness judgments for L2 (flag burning), $r(204) = .29$, $p < .001$, and A1 (curse parents), $r(203) = .15$, $p = .030$ (all other rs $< .13$, ps $> .06$). In Study 2b, political conservatism was negatively related to level of wrongness judgments for H1 (kick dog), $r(248) = -.16$, $p = .013$, and positively related to judging wrong F2 (friend), $r(250) = .17$, $p = .008$, L1 (family), $r(248) = .26$, $p < .001$, L2 (flag burning), $r(248) = .35$, $p < .001$, A1 (parents), $r(248) = .20$, $p = .002$, A2, $r(250) = .16$, $p = .010$, and P2 (consensual incest), $r(249) = .22$, $p = .001$ (all other rs $< .11$, ps $> .099$). In Study 3, political conservatism was correlated negatively with wrongness ratings for H1 (kick dog), $r(402) = -.13$, $p = .008$, H2 (overweight), $r(399) = -.23$, $p < .001$, and F1 (race), $r(400) = -.27$, $p < .001$, and it was positively correlated with wrongness ratings for L2 (flag burning), $r(402) = .27$, $p < .001$, and P2 (consensual incest), $r(401) = .18$, $p < .001$ (all other rs $< .09$, ps $> .09$).

Mixed Linear Models with "Unjust" Removed from the Injustice Index

One potential rebuttal to our findings, raised by a reviewer, is that the injustice index had a predictive advantage over the other appraisal indices because one of its items (i.e., "unjust") has a close semantic mapping with the concept of wrongdoing. Indeed, in past theorising, two of the current authors proposed that injustice *implies* wrongdoing (see Sousa & Piazza, 2014). Crucially, however, wrongness does not imply injustice, as "wrong" may be used to refer to a variety of normative transgressions unrelated to injustice—for example, to claim that incest is wrong is not to claim that incest is unjust. Indeed, the mean "unjust"

ratings for the consensual incest scenario in Studies 2a, 2b and 3 were fairly low ($M = 3.42$, 4.24, 2.78, respectively), while the wrongness ratings were quite high ($M = 4.93$, 5.50, 4.94, respectively), which demonstrates their semantic dissociation. To address this criticism more systematically, we ran our regression analyses and mixed linear models a second time, for all four studies, removing the term "unjust" from the injustice index. The results were largely consistent with original results, though at times the overall explanatory power of each regression model (R^2) was slightly diminished (generally, .01-.02), along with the size of the beta weight for the injustice index within each model. Mixed linear models with "unjust" removed from the injustice index also indicated that injustice remained consistently more predictive of wrongness than harm, although it was surpassed by appraisals of impurity in Studies 2a and 2b (see below for details).

Study 2a. With the "unjust" item removed from the injustice index, the results were quite similar as before. The injustice, harm, and impurity indices all made independent contributions to wrongness ratings across scenarios at $p < .001$, yet this time impurity made the strongest contribution overall: injustice index, B = 0.346 (SE = 0.031), $t(1953) = 11.102$, $p < .001$, 95% CI [0.285, 0.407]; harm index, B = 0.213 (SE = 0.026), $t(1707) = 8.227$, $p < .001$, 95% CI [0.162, 0.264]; impurity index, B = 0.434 (SE = 0.024), $t(1662) = 18.050$, $p < .001$, 95% CI [0.387, 0.481]; disrespectful, B = -0.036 (SE = 0.021), $t(1814) = 1.708$, $p = .088$, 95% CI [-0.077, 0.005]; group disloyalty, B = 0.004 (SE = 0.021), $t(1971) = 1.821$, $p = .069$, 95% CI [-0.037, 0.045].

Study 2b. With the "unjust" item removed from the injustice index, as before, the injustice, harm, and impurity indices all made independent contributions to wrongness ratings across scenarios at $p < .001$, yet this time impurity made the strongest contribution overall: injustice index, B = 0.339 (SE = 0.024), $t(2427) = 13.980$, $p < .001$, 95% CI [0.292, 0.386]; harm index, B = 0.186 (SE = 0.019), $t(1854) = 9.896$, $p < .001$, 95% CI [0.149, 0.223];

impurity index, B = 0.356 (SE = 0.018), $t(1781) = 19.982$, $p < .001$, 95% CI [0.321, 0.391];

disrespectful, B = 0.000 (SE = 0.014), $t(1395) = -0.019$, $p = .985$, 95% CI [-0.027, 0.027];

group disloyalty, B = -0.004 (SE = 0.015), $t(1514) = -0.285$, $p = .776$, 95% CI [-0.033, 0.025].

Study 3. With the "unjust" item removed from the injustice index, the results were as before; the injustice, harm, and impurity indices all made independent contributions to wrongness ratings across scenarios at $p < .001$, with injustice making the largest contribution overall. In Study 3, disrespect for authority also made a sizeable contribution across scenarios at $p < .001$: injustice index, B = 0.461 (SE = 0.024), $t(3994) = 19.512$, $p < .001$, 95% CI [0.414, 0.508]; harm index, B = 0.138 (SE = 0.018), $t(2930) = 7.533$, $p < .001$, 95% CI [0.103, 0.173]; impurity index: B = 0.299 (SE = 0.020), $t(3524) = 15.321$, $p < .001$, 95% CI [0.260, 0.338]; disrespectful, B = 0.163 (SE = 0.017), $t(3992) = 9.555$, $p < .001$, 95% CI [0.130, 0.196]; group disloyalty, B = -0.021 (SE = 0.015), $t(3988) = -1.396$, $p = .163$, 95% CI [-0.050, 0.008].

Regressions without "Unjust" in the Injustice Index

Table S1. Appraisals predicting judgments of wrongdoing from Study 2a (American sample) with "unjust" removed from the Injustice index.

Appraisals	Model			R^2	Tolerance	VIF
	β	*t*	95% CI			
Recalled wrongdoing				.56		
Injustice index	**.41**	5.45***	[.235, .503]		.59	1.69
Harm index	**.30**	4.14***	[.104, .295]		.61	1.63
Impurity index	**.17**	2.11*	[.007, .295]		.53	1.89
Disrespectful to authority	.10	1.68	[-.011, .129]		.87	1.15
Disloyal to group	-.06	-0.91	[-.101, .037]		.82	1.21

Note. $N = 138$. Injustice index Cronbach's α = .80.

Table S2. Appraisals predicting judgments of wrongdoing from Study 2a (American sample) with "unjust" removed from the Injustice index.

Scenario	Appraisals	Model β	Model t	Model 95% CI	R^2	Tolerance	VIF
Harm 1 – *Dog kicking*					.59		
	Injustice index	.12	1.74	[-.011, .182]		.43	2.32
	Harm index	**.56**	10.90***	[.643, .927]		.77	1.30
	Impurity index	**.28**	4.53***	[.092, .233]		.54	1.84
	Disrespectful to authority	-.07	-1.04	[-.091, .028]		.46	2.20
	Disloyal to group	-.03	-0.37	[-.074, .051]		.40	2.49
Harm 2 – *Overweight*					.49		
	Injustice index	**.23**	2.80**	[.079, .454]		.37	2.65
	Harm index	**.46**	7.46***	[.447, .768]		.68	1.47
	Impurity index	**.21**	2.94**	[.062, .316]		.52	1.92
	Disrespectful to authority	**-.17**	-2.33*	[-.275, -.023]		.50	2.02
	Disloyal to group	.03	0.33	[-.106, .150]		.45	2.22
Fairness 1 – *Race*					.56		
	Injustice index	**.56**	8.05***	[.617, 1.016]		.46	2.20
	Harm index	**.20**	2.94**	[.088, .445]		.48	2.08
	Impurity index	.06	0.92	[-.064, .189]		.52	1.94
	Disrespectful to authority	-.04	-0.72	[-.156, .077]		.57	1.76
	Disloyal to group	.03	0.49	[-.072, .140]		.61	1.64
Fairness 2 – *Friend*					.47		
	Injustice index	**.40**	5.39***	[.331, .713]		.50	2.00
	Harm index	**.19**	2.59*	[.049, .356]		.52	1.92
	Impurity index	**.22**	2.74**	[.075, .460]		.42	2.37

Disrespectful to authority	-.10	-1.36	[-.294, .053]		.53	1.90
Disloyal to group	.07	1.08	[-.058, .199]		.58	1.71
Loyalty 1 – *Family*				.41		
Injustice index	**.24**	2.56*	[.080, .614]		.33	3.00
Harm index	.12	1.56	[-.042, .358]		.51	1.97
Impurity index	**.17**	2.39*	[.044, .452]		.59	1.69
Disrespectful to authority	.03	0.42	[-.117, .180]		.60	1.66
Disloyal to group	**.22**	2.76*	[.066, .397]		.48	2.09
Loyalty 2 – *Flag burning*				.59		
Injustice index	.18	1.74	[.180, .679]		.21	4.83
Harm index	-.05	-0.64	[-.305, .069]		.36	2.76
Impurity index	**.49**	5.50***	[.246, .696]		.26	3.80
Disrespectful to authority	.01	0.20	[-.131, .131]		.45	2.24
Disloyal to group	**.22**	3.14**	[.061, .342]		.40	2.52
Authority 1 – *Parents*				.43		
Injustice index	**.22**	2.61*	[.069, .495]		.40	2.51
Harm index	.14	1.96	[-.001, .384]		.58	1.73
Impurity index	**.22**	2.78**	[.076, .445]		.48	2.07
Disrespectful to authority	**.25**	4.30***	[.194, .523]		.84	1.19
Disloyal to group	.06	0.73	[-.099, .215]		.49	2.03
Authority 2 – *Boss*				.39		
Injustice index	**.26**	2.74**	[.079, .487]		.35	2.84
Harm index	.13	1.70	[-.021, .289]		.55	1.81
Impurity index	.14	1.74	[-.021, .340]		.49	2.04
Disrespectful to authority	**.19**	3.28**	[.113, .450]		.91	1.10
Disloyal to group	.14	1.84	[-.010, .284]		.52	1.91

Scenario	Appraisals	β	t	95% CI	R^2	Tolerance	VIF
Purity 1 – *Dog eating*					.61		
	Injustice index	**.24**	2.97**	[.104, .514]		.32	3.14
	Harm index	-.09	-1.61	[-.349, .035]		.58	1.73
	Impurity index	**.64**	11.82***	[.744, 1.041]		.68	1.47
	Disrespectful to authority	.03	0.37	[-.166, .243]		.32	3.17
	Disloyal to group	.01	0.17	[-.181, .215]		.29	3.42
Purity 2 – *Consensual incest*					.58		
	Injustice index	.00	0.03	[-.215, .223]		.29	3.41
	Harm index	.10	1.25	[-.064, .286]		.34	2.92
	Impurity index	**.66**	11.77***	[.731, 1.026]		.67	1.49
	Disrespectful to authority	.05	0.73	[-.097, .210]		.45	2.22
	Disloyal to group	.03	0.41	[-.114, .173]		.46	2.19

Note. * $p < .05$. ** $p < .01$. *** $p < .001$. Betas in bold are significant at $p < .05$. R^2 given for full model. *Ns* = 202-206.

Table S3. Appraisals predicting judgments of wrongdoing from Study 2b (American sample using "morally") with "unjust" removed from the Injustice index.

Scenario	Appraisals	Model			R^2	Tolerance	VIF
		β	t	95% CI			
Harm 1 – *Dog kicking*					.55		
	Injustice index	**.34**	5.11***	[.185, .416]		.42	2.41
	Harm index	**.48**	9.33***	[.489, .750]		.69	1.44
	Impurity index	.11	1.80	[-.008, .185]		.47	2.12

	Disrespectful to authority	-.08	-1.27	[-.107, .023]	.46	2.16
	Disloyal to group	-.01	-0.07	[-.076, .071]	.38	2.60
Harm 2 – *Overweight*				.54		
	Injustice index	**.32**	4.46***	[.160, .414]	.36	2.75
	Harm index	**.49**	9.46***	[.397, .605]	.71	1.40
	Impurity index	**.15**	2.04*	[.004, .204]	.37	2.71
	Disrespectful to authority	-.05	-0.73	[-.107, .049]	.52	1.94
	Disloyal to group	-.11	-1.45	[-.163, .025]	.35	2.84
Fairness 1 – *Race*				.54		
	Injustice index	**.42**	6.07***	[.322, .632]	.40	2.50
	Harm index	**.31**	4.99***	[.198, .455]	.50	2.01
	Impurity index	.09	1.36	[-.032, .175]	.47	2.14
	Disrespectful to authority	-.02	-0.32	[-.092, .066]	.58	1.73
	Disloyal to group	.07	1.31	[-.026, .128]	.60	1.68
Fairness 2 – *Friend*				.59		
	Injustice index	**.31**	5.08***	[.228, .517]	.44	2.30
	Harm index	**.23**	3.55**	[.104, .364]	.38	2.60
	Impurity index	**.31**	4.25***	[.148, .403]	.31	3.21
	Disrespectful to authority	.02	0.27	[-.088, .116]	.43	2.33
	Disloyal to group	.03	0.58	[-.071, .130]	.56	1.79
Loyalty 1 – *Family*				.67		
	Injustice index	**.37**	5.05***	[.248, .565]	.25	4.02
	Harm index	**.14**	2.64**	[.041, .280]	.49	2.03
	Impurity index	**.37**	6.04***	[.231, .455]	.36	2.74
	Disrespectful to authority	-.06	-1.27	[-.137, .035]	.55	1.81
	Disloyal to group	.10	1.54	[-.003, .206]	.49	2.03

Loyalty 2 – *Flag burning*					.77		
	Injustice index	**.65**	8.49***	[.561, .900]		.16	6.19
	Harm index	**-.18**	-2.89**	[-.284, -.011]		.21	4.72
	Impurity index	**.37**	5.27***	[.349, .659]		.19	5.30
	Disrespectful to authority	.01	0.14	[-.072, .113]		.50	2.00
	Disloyal to group	**.08**	2.01*	[.038, .214]		.53	1.90
Authority 1 – *Parents*					.52		
	Injustice index	**.24**	2.89**	[.076, .403]		.29	3.44
	Harm index	**.13**	2.02*	[.003, .274]		.46	2.17
	Impurity index	**.33**	4.43***	[.159, .414]		.36	2.74
	Disrespectful to authority	**.18**	3.31**	[.072, .285]		.69	1.45
	Disloyal to group	-.01	-0.08	[-.114, .106]		.44	2.26
Authority 2 – *Boss*					.55		
	Injustice index	**.44**	5.59***	[.286, .598]		.30	3.36
	Harm index	**.20**	3.27**	[.079, .317]		.47	2.12
	Impurity index	-.02	-0.26	[-.151, .116]		.33	2.99
	Disrespectful to authority	**.11**	2.25*	[.015, .227]		.75	1.33
	Disloyal to group	**.17**	2.90**	[.050, .262]		.55	1.81
Purity 1 – *Dog eating*					.63		
	Injustice index	**.39**	5.10***	[.238, .537]		.26	3.89
	Harm index	.05	0.71	[-.078, .165]		.34	2.90
	Impurity index	**.52**	10.30***	[.508, .748]		.59	1.70
	Disrespectful to authority	**-.15**	-2.30*	[-.251, -.019]		.34	2.83
	Disloyal to group	.02	0.35	[-.095, .136]		.33	3.06
Purity 2 – *Consensual incest*					.65		
	Injustice index	**.32**	4.06***	[.122, .463]		.23	4.36

Harm index	-.03	-0.38	[-.147, .099]	.30	3.37
Impurity index	**.60**	12.34***	[.538, .742]	.62	1.60
Disrespectful to authority	-.09	-1.80	[-.165, .007]	.55	1.81
Disloyal to group	.05	0.87	[-.056, .143]	.40	2.52

Note. * $p < .05$. ** $p < .01$. *** $p < .001$. Betas in bold are significant at $p < .05$. R^2 given for full model. $Ns = 249\text{-}251$.

Table S4. Appraisals predicting judgments of wrongdoing from Study 3 (Greek sample) with "unjust" removed from the Injustice index.

Scenario	Appraisals	Model β	t	95% CI	R^2	Tolerance	VIF
Harm 1 – *Dog kicking*					.29		
	Injustice index	**.20**	3.45**	[.072, .262]		.54	1.84
	Harm index	**.24**	4.95***	[.201, .466]		.78	1.28
	Impurity index	**.14**	2.58*	[.019, .140]		.64	1.56
	Disrespectful to authority	**.18**	3.55***	[.049, .170]		.67	1.49
	Disloyal to group	**-.09**	-1.73	[-.086, .005]		.70	1.43
Harm 2 – *Overweight*					.39		
	Injustice index	**.24**	4.44***	[.144, .372]		.55	1.82
	Harm index	**.29**	6.02***	[.272, .536]		.67	1.50
	Impurity index	**.12**	2.11*	[.007, .184]		.51	1.96
	Disrespectful to authority	**.18**	3.87***	[.069, .210]		.72	1.39
	Disloyal to group	-.03	-0.54	[-.098, .056]		.61	1.63
Fairness 1 – *Race*					.45		
	Injustice index	**.33**	5.64***	[.309, .640]		.42	2.40
	Harm index	**.17**	3.30**	[.099, .391]		.55	1.81
	Impurity index	**.16**	3.06**	[.062, .287]		.52	1.92
	Disrespectful to authority	**.16**	3.11**	[.067, .298]		.54	1.84
	Disloyal to group	-.01	-0.13	[-.096, .084]		.68	1.47
Fairness 2 – *Friend*					.38		
	Injustice index	**.37**	6.76***	[.378, .688]		.53	1.90
	Harm index	**.12**	2.34*	[.026, .298]		.59	1.69
	Impurity index	**.14**	2.63**	[.041, .286]		.59	1.70

	Disrespectful to authority	**.11**	2.25*	[.013, .198]		.67	1.48
	Disloyal to group	.02	0.47	[-.076, .124]		.68	1.47
Loyalty 1 – *Family*					.36		
	Injustice index	**.29**	4.72***	[.288, .700]		.43	2.31
	Harm index	**.21**	4.42***	[.202, .525]		.70	1.43
	Impurity index	**.12**	2.31*	[.029, .370]		.56	1.79
	Disrespectful to authority	**.11**	2.03*	[.004, .254]		.53	1.87
	Disloyal to group	.01	0.18	[-.113, .137]		.59	1.68
Loyalty 2 – *Flag burning*					.52		
	Injustice index	**.38**	6.50***	[.483, .794]		.36	2.74
	Harm index	.09	1.97	[.000, .239]		.58	1.72
	Impurity index	**.28**	4.89***	[.220, .516]		.38	2.64
	Disrespectful to authority	**.15**	3.23**	[.073, .298]		.54	1.85
	Disloyal to group	-.09	-1.94	[-.205, .002]		.57	1.75
Authority 1 – *Parents*					.38		
	Injustice index	**.28**	4.95***	[.220, .510]		.51	1.97
	Harm index	**.18**	3.80***	[.144, .455]		.68	1.47
	Impurity index	**.17**	3.20**	[.072, .302]		.55	1.82
	Disrespectful to authority	**.21**	4.18***	[.131, .363]		.65	1.53
	Disloyal to group	-.07	-1.46	[-.168, .025]		.65	1.54
Authority 2 – *Boss*					.38		
	Injustice index	**.40**	7.02***	[.373, .664]		.48	2.08
	Harm index	.06	1.15	[-.046, .177]		.69	1.46
	Impurity index	.05	0.88	[-.073, .190]		.61	1.63
	Disrespectful to authority	**.27**	5.60***	[.230, .479]		.68	1.46
	Disloyal to group	-.05	-1.01	[-.146, .047]		.66	1.51

Purity 1 – *Dog eating*					.48		
	Selfishness index	**.29**	5.23***	[.227, .501]		.44	2.28
	Harm index	.00	-0.02	[-.093, .091]		.84	1.19
	Impurity index	**.42**	8.66***	[.431, .685]		.58	1.73
	Disrespectful to authority	.08	1.58	[-.023, .211]		.50	1.98
	Disloyal to group	.00	-0.05	[-.093, .089]		.62	1.62
Purity 2 – *Consensual incest*					.55		
	Injustice index	**.28**	5.00***	[.222, .511]		.36	2.77
	Harm index	.08	1.78	[-.009, .185]		.59	1.70
	Impurity index	**.41**	8.64***	[.401, .637]		.50	1.98
	Disrespectful to authority	**.14**	3.02**	[.061, .286]		.51	1.97
	Disloyal to group	-.06	-1.34	[-.160, .030]		.57	1.75

Note. * $p < .05$. ** $p < .01$. *** $p < .001$. Betas in bold are significant at $p < .05$. R^2 given for full model. Ns = 400-408.

Table S5

Distribution properties (skew, kurtosis) for the outcome variable (wrongness ratings) and

predictors used within the regression analyses in Studies 1-3.

Study	Measure	Skew	Kurtosis
Study 1	Wrongness rating	-.918	.216
	Injustice index	-.916	.024
	Harm index	-.354	-1.181
	Impurity index	.137	-1.112
	Disrespect for authority	-.216	-1.433
	Disloyal to group	-.062	-1.536
Study 2a			
H1 – Dog kicking	Wrongness rating	-2.368	6.671
	Injustice index	-.596	-.128
	Harm index	-3.240	11.580
	Impurity index	-.799	-.387
	Disrespect for authority	.779	-.854
	Disloyal to group	.347	-1.278
H2 – Overweight	Wrongness rating	-.953	.686
	Injustice index	-.289	-.148
	Harm index	-1.016	.222
	Impurity index	.174	-.991
	Disrespect for authority	1.194	.240
	Disloyal to group	.719	-.672
F1 – Race	Wrongness rating	-1.152	.125
	Injustice index	-1.197	.945
	Harm index	-.932	.284
	Impurity index	.256	-1.053
	Disrespect for authority	.219	-1.232
	Disloyal to group	.689	-.949
F2 – Friend	Wrongness rating	.275	-.846
	Injustice index	-.436	-.208
	Harm index	-.028	-.719
	Impurity index	1.117	.525
	Disrespect for authority	1.761	2.464
	Disloyal to group	-.445	-.710
L1 – Family	Wrongness rating	.674	-.928
	Injustice index	.052	-.560
	Harm index	-.635	.282

	Impurity	1.373	1.439
	Disrespect for authority	.251	-1.126
	Disloyal to group	-.191	-.848
L2 – Flag burning	Wrongness rating	1.039	-.450
	Injustice index	.858	-.302
	Harm index	1.427	1.115
	Impurity index	1.066	.086
	Disrespect for authority	-.290	-1.206
	Disloyal to group	-.214	-1.256
A1 – Parents	Wrongness rating	-.135	-1.091
	Injustice index	.084	-.687
	Harm index	-.449	-.547
	Impurity index	.582	-.531
	Disrespect for authority	-1.135	.577
	Disloyal to group	-.302	-.930
A2 – Boss	Wrongness rating	-.130	-.678
	Injustice index	.123	-.619
	Harm index	-.016	-.881
	Impurity index	.947	.407
	Disrespect for authority	-1.397	1.392
	Disloyal to group	-.253	-.847
P1 – Dog eating	Wrongness rating	-.395	-1.476
	Injustice index	.637	-.805
	Harm index	2.131	3.876
	Impurity index	-.753	-.503
	Disrespect for authority	1.161	.083
	Disloyal to group	.848	-.657
P2 – Incest	Wrongness rating	-.794	-1.006
	Injustice index	.652	-.748
	Harm index	.600	-1.069
	Impurity index	-.929	-.189
	Disrespect for authority	.668	-.961
	Disloyal to group	.341	-1.348
Study 2b			
H1 – Dog kicking	Wrongness rating	-2.322	5.731
	Injustice index	-.922	.810
	Harm index	-2.265	5.542
	Impurity index	-1.071	.575
	Disrespect for authority	.228	-1.548
	Disloyal to group	-.058	-1.480

H2 – Overweight	Wrongness rating	-.977	.532
	Injustice index	-.655	-.052
	Harm index	-1.265	1.337
	Impurity index	-.291	1.016
	Disrespect for authority	.492	-1.109
	Disloyal to group	.144	-1.267
F1 – Race	Wrongness rating	-1.240	1.005
	Injustice index	-1.202	1.522
	Harm index	-1.261	1.186
	Impurity index	-.389	-.767
	Disrespect for authority	-.056	-1.345
	Disloyal to group	.215	-1.383
F2 – Friend	Wrongness rating	-.324	-.460
	Injustice index	-.656	-.034
	Harm index	-.394	-.719
	Impurity index	.370	-1.035
	Disrespect for authority	.916	-.568
	Disloyal to group	-.599	-.374
L1 – Family	Wrongness rating	-.024	-.826
	Injustice index	.062	-.787
	Harm index	-.703	.049
	Impurity	.672	-.707
	Disrespect for authority	.166	-1.237
	Disloyal to group	-.524	-.485
L2 – Flag burning	Wrongness rating	.076	-1.433
	Injustice index	.299	-1.173
	Harm index	.590	-1.152
	Impurity index	.444	-1.147
	Disrespect for authority	-.477	-1.001
	Disloyal to group	-.599	-1.017
A1 – Parents	Wrongness rating	-.437	-.510
	Injustice index	-.203	-.669
	Harm index	-.583	-.282
	Impurity index	.104	-1.053
	Disrespect for authority	-1.005	.308
	Disloyal to group	-.426	-.856
A2 – Boss	Wrongness rating	-.537	-.506
	Injustice index	-.116	-.878
	Harm index	-.258	-.937

	Impurity index	.339	-1.024
	Disrespect for authority	-1.340	1.148
	Disloyal to group	-.384	-.874
P1 – Dog eating	Wrongness rating	-.985	-.370
	Injustice index	-.136	-1.379
	Harm index	.681	-1.028
	Impurity index	-1.051	.283
	Disrespect for authority	.558	-1.227
	Disloyal to group	-.026	-1.541
P2 – Incest	Wrongness rating	-1.116	.026
	Injustice index	-.106	-1.236
	Harm index	.076	-1.374
	Impurity index	-1.040	.199
	Disrespect for authority	.267	-1.404
	Disloyal to group	-.227	-1.419
Study 3			
H1 – Dog kicking	Wrongness rating	-4.010	18.885
	Injustice index	-3.153	15.609
	Harm index	-.879	-.066
	Impurity index	-.786	-.410
	Disrespect for authority	-1.758	2.38
	Disloyal to group	-.574	-.877
H2 – Overweight	Wrongness rating	-2.189	4.609
	Injustice index	-1.039	1.029
	Harm index	-1.869	4.488
	Impurity index	-.213	-.958
	Disrespect for authority	-1.162	.320
	Disloyal to group	-.213	-.870
F1 – Race	Wrongness rating	-1.238	.247
	Injustice index	-1.286	1.460
	Harm index	-1.416	1.611
	Impurity index	-.120	-.982
	Disrespect for authority	-1.288	.733
	Disloyal to group	-.093	-1.078
F2 – Friend	Wrongness rating	-.800	-.314
	Injustice index	-.732	.385
	Harm index	-.488	-.053
	Impurity index	.679	-.312
	Disrespect for authority	-.468	-.859
	Disloyal to group	-.538	-.561

L1 – Family	Wrongness rating	.160	-1.454
	Injustice index	.145	-.083
	Harm index	-.859	.657
	Impurity	1.125	1.039
	Disrespect for authority	-.231	-.874
	Disloyal to group	-.116	-.734
L2 – Flag burning	Wrongness rating	.455	-1.401
	Injustice index	.201	-.978
	Harm index	1.133	.171
	Impurity index	.941	-.151
	Disrespect for authority	-.890	-.353
	Disloyal to group	-.385	-1.077
A1 – Parents	Wrongness rating	-1.119	.386
	Injustice index	-.281	-.528
	Harm index	-1.428	2.900
	Impurity index	.346	-.743
	Disrespect for authority	-1.419	1.708
	Disloyal to group	-.379	-.721
A2 – Boss	Wrongness rating	-1.076	.184
	Injustice index	-.301	-.284
	Harm index	-.094	-.802
	Impurity index	.565	-.293
	Disrespect for authority	-1.411	1.624
	Disloyal to group	-.365	-.699
P1 – Dog eating	Wrongness rating	-1.239	-.049
	Injustice index	-.364	-.863
	Harm index	1.452	.729
	Impurity index	-1.186	.511
	Disrespect for authority	-1.155	.189
	Disloyal to group	-.350	-1.293
P2 – Incest	Wrongness rating	-.773	-1.132
	Injustice index	.050	-1.039
	Harm index	-.141	-1.405
	Impurity index	-.559	-.937
	Disrespect for authority	-.998	-.294
	Disloyal to group	-.489	-1.263

Table S6. The table below shows Goodness of fit metrics for Studies 1-3 using Path Analysis: Constrained and Unconstrained models using all five predictors (Injustice, Harm, Impurity, Disrespectful, and Disloyalty) as predictors of Wrongness. Goodness of fit declines when predictors are constrained to be equal for all models, except Study 2a – A2 (Boss). All models $p < .001$. *Note.* Low goodness of fit should be expected of these models since they include all five predictors; as the regression and MLM analyses show, in just about every case only some of the predictors were significant predictors of wrongdoing.

	Constrained		Unconstrained	
	χ^2	CFI	χ^2	CFI
Study 1	217.27	.270	175.95	.404
Study 2a				
H1 – Dog kicking	547.23	.047	396.83	.309
H2 – Overweight	541.03	.101	465.32	.224
F1 – Race	504.11	.154	417.72	.297
F2 – Friend	457.52	.173	427.20	.222
L1 – Family	483.85	.171	474.87	.180
L2 – Flag burning	778.01	.173	749.76	.199
A1 – Parents	431.94	.199	423.75	.207
A2 – Boss	405.40	.194	401.44	.194
P1 – Dog eating	705.31	.105	594.83	.243
P2 – Incest	664.64	.129	586.30	.229
Study 2b				
H1 – Dog kicking	727.42	.063	569.51	.265
H2 – Overweight	720.83	.182	674.14	.232
F1 – Race	884.79	.194	847.79	.225
F2 – Friend	728.59	.192	690.41	.231
L1 – Family	757.97	.234	705.26	.285
L2 – Flag burning	1132.56	.216	1059.26	.265
A1 – Parents	696.65	.196	681.48	.209
A2 – Boss	646.76	.231	624.76	.253
P1 – Dog eating	957.48	.119	838.82	.226
P2 – Incest	900.20	.132	787.21	.239
Study 3				
H1 – Dog kicking	624.82	.126	574.19	.192

H2 – Overweight	720.83	.182	674.14	.232
F1 – Race	884.79	.194	847.79	.225
F2 – Friend	728.59	.192	690.41	.231
L1 – Family	836.05	.163	806.19	.189
L2 – Flag burning	1095.32	.182	1026.70	.231
A1 – Parents	749.94	.173	713.57	.209
A2 – Boss	688.56	.173	634.10	.235
P1 – Dog eating	803.50	.192	727.63	.266
P2 – Incest	998.39	.205	936.41	.252

References for Supplementary Materials

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