


Clarifying Gender Differences in Moral Dilemma Judgments: The Complementary Roles of Harm Aversion and Action Aversion

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Abstract

Moral dilemmas entail situations where decisions consistent with deontological principles (following moral rules) conflict with decisions consistent with utilitarian principles (maximizing overall outcomes). Past work employing process dissociation (PD) clarified that gender differences in utilitarianism are modest, but women are substantially more deontological than men. However, deontological judgments confound two motivations: harm aversion and action aversion. The current work presents a mega-analysis of eight studies ($N = 1,965$) using PD to assess utilitarian and deontological response tendencies both when deontology entails inaction and when it requires action, to assess the independent contributions of harm aversion and action aversion. Results replicate and clarify past findings: Women scored higher than men on deontological tendencies, and this difference was enhanced when the deontological choice required refraining from harmful action rather than acting to prevent harm. That is, gender differences in deontological inclinations are caused by both harm aversion and action aversion.

Keywords

moral dilemmas, moral judgment, gender differences

Imagine that enemy soldiers have taken over your village, intent on killing all remaining civilians. You and the townspeople hide in a cellar while soldiers search nearby—but an orphan baby is about to wail. You could cover her mouth to block the sound, but doing so means she will suffocate—but removing your hand means her crying will summon the soldiers, who will kill everyone. Should you place your hand over the baby's mouth? This crying baby dilemma exemplifies a general class of dilemmas where actions violate moral rules (e.g., killing an infant) but maximize overall well-being (e.g., preventing a massacre). Researchers have identified various factors that impact people's responses to such moral dilemmas, but one of the most robust and reliable predictors is gender: Women are typically much less willing to cause harm to maximize overall outcomes than are men (e.g., Arutyunova, Alexandrov, & Hauser, 2016; Fumagalli et al., 2011).

A recent meta-analysis employing process dissociation (PD; Conway & Gawronski, 2013) suggested that this pattern primarily reflects gender differences in aversion to causing harm; gender differences in maximizing outcomes are very modest (Friesdorf, Conway, & Gawronski, 2015). However, this pattern could also reflect gender differences in general aversion to performing any action rather than aversion to causing harm specifically. In the current work, we clarify previous findings using a new dilemma battery that distinguishes aversion to causing harm from aversion to engaging in any action, as well as the tendency to maximize outcomes, in moral dilemma

judgments (adapted from Gawronski, Conway, Armstrong, Friesdorf, & Hütter, 2016).

Moral dilemmas were originally crafted by philosophers as thought experiments to distinguish finer points of normative ethical theory (Foot, 1967; Thomson, 1986). More recently, however, theorists have largely described them as illustrative of the conflict between two distinct moral principles (e.g., Greene, 2007): *Utilitarianism*, where actions are judged as moral to the degree that they produce the best overall outcomes (utility) across all parties (Mill, 1861/1998) versus *deontology*, where actions are judged as moral to the degree that they adhere to universal moral principles (e.g., treat each individual with fundamental dignity, Kant, 1785/1959). Traditionally, researchers have assessed dilemma responses by examining how willing people are to endorse harm that maximizes overall outcomes, such as killing a baby to prevent a massacre (e.g., Amit & Greene, 2012; Bartels, 2008). Decisions to avoid causing immediate harm (allowing greater harm to proceed) are

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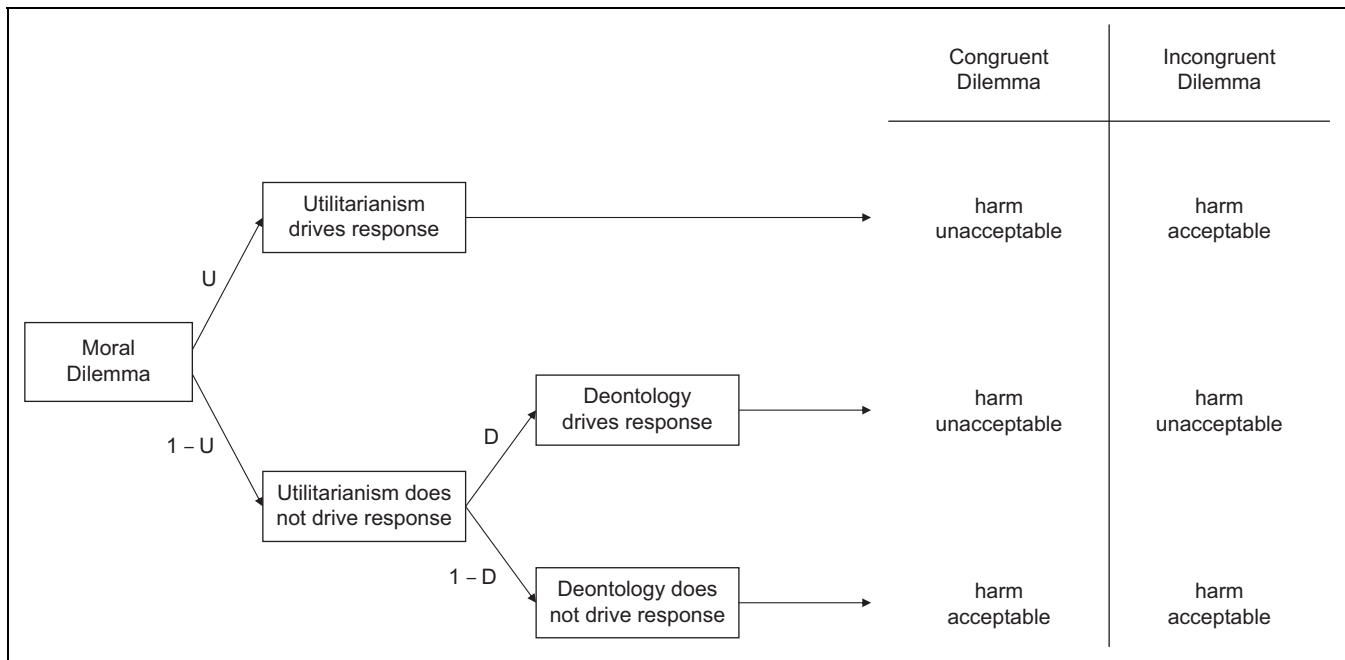


Figure 1. Processing tree illustrating the underlying components leading to judgments that harmful action is either acceptable or unacceptable in congruent and incongruent proscription moral dilemmas. The paths from left to right depict the three cases that (1) utilitarianism drives the response, (2) deontology drives the response, and (3) neither utilitarianism nor deontology drives the response. The columns on the right depict the potential cases that lead to harm acceptance and harm rejection on congruent and incongruent dilemmas, respectively. Copyright © 2013 by the American Psychological Association (APA). Reproduced with permission. The official citation that should be used in referencing this material is Conway and Gawronski (2013). The use of APA information does not imply endorsement by APA.

said to be consistent with deontology, whereas decisions to cause immediate harm (thereby maximizing overall outcomes) are said to be consistent with utilitarianism (Greene, 2007; cf. Kahane, 2015; Mikhail, 2007).¹

Gender differences in conventional dilemmas are clear: Many researchers have documented that men are more willing than women to cause such outcome-maximizing harm (e.g., Bartels & Pizzaro, 2011; Fumagalli et al., 2011). Originally, researchers interpreted such results as evidence that men are “more utilitarian” than women, suggesting they focus more on maximizing outcomes. However, such findings are equally consistent with the interpretation that women are “more deontological” than men, suggesting they experience stronger aversion to causing harm. This interpretational ambiguity arises because traditional dilemmas employ a unidimensional measure that treats deontological decisions as the diametric opposite of utilitarian ones—that is, deontological and utilitarian responses are not independent.

To overcome the nonindependence issue, Conway and Gawronski (2013) adapted Jacoby’s (1991) PD procedure to independently quantify utilitarian and deontological response inclinations underpinning traditional dilemma judgments. PD entails assessing responses to both *incongruent* dilemmas that pit deontology against utilitarianism (consistent with classic, high-conflict moral dilemmas; Koenigs et al., 2007) and *congruent* versions of each dilemma where deontology and utilitarianism lead to the same judgment. By inserting responses across both variations into a processing tree (see Figure 1) and

algebraically combining them, PD allows for estimation of the deontological and utilitarian inclinations underpinning traditional relative dilemma judgments. Conway and Gawronski demonstrated that deontological inclinations appear particularly influenced by affective considerations (e.g., correlate uniquely with empathic concern), whereas utilitarian inclinations appear particularly influenced by cognitive evaluations of outcomes (e.g., correlate uniquely with need for cognition). Moreover, the two parameters did not significantly correlate and evinced unique responses to manipulations, suggesting true independence.

Friesdorf, Conway, and Gawronski (2015) then employed PD to clarify the nature of gender differences in traditional dilemma judgments. In a meta-analysis of 40 data sets, they found that men scored only slightly higher than women on the utilitarian parameter ($d = .10$), whereas women scored substantially higher than men on the deontology parameter ($d = .57$). Moreover, the parameters correlated meta-analytically with one another only slightly ($r = .10$). These findings clarified that the gender differences in traditional, relative dilemma judgments are driven primarily by women’s greater aversion to harming others rather than by men’s supposed superior concern for maximizing outcomes. In other words, both men and women care about maximizing outcomes, but women care more than men do about avoiding causing harm.

Yet, even this conclusion remains suspect, due to a second confound common to nearly all moral dilemma research; moral dilemmas confound utilitarian/deontological decisions with

Table 1. Four Versions of a Sample Dilemma.

Action Causes Immediate Harm		Action Prevents Immediate Harm	
Incongruent	Congruent	Incongruent	Congruent
You are the head doctor in a health clinic overrun by patients with a deadly virus. You just received a shipment of drugs that can cure the disease, but the drugs have their own severe side effects. If you administer the drugs to your patients, a small number will die from the side effects, but most will live. If you do not, most will die from the virus.	You are the head doctor in a health clinic overrun by patients with the latest flu virus. You just received a shipment of drugs that can cure the disease, but the drugs have their own severe side effects. If you administer the drugs to your patients, a small number will die from the side effects, but most will live. If you do not, most will continue to suffer from the effects of the virus.	You are the head doctor in a health clinic overrun by patients with a deadly virus. You just received a shipment of drugs that can cure the disease, but the drugs have their own severe side effects. Your patients are slated to receive the drugs later today unless you intervene. If they receive the drugs, a small number of patients will die from the side effects, but most will live. If not, most will die from the virus.	You are the head doctor in a health clinic overrun by patients with the latest flu virus. You just received a shipment of drugs that can cure the disease, but the drugs have their own severe side effects. Your patients are slated to receive the drugs later today unless you intervene. If they receive the drugs, a small number of patients will die from the side effects, but most will live. If not, most will continue to suffer from the effects of the virus.
Is it appropriate for you to administer the drug in order to cure the disease, even though some will die from the side effects?	Is it appropriate for you to administer the drug in order to cure the disease, even though some will die from the side effects?	Is it appropriate for you to intervene in order to prevent the deadly side effects, even though most of your patient will die from the disease?	Is it appropriate for you to intervene in order to prevent the deadly side effects, even though most of your patient will suffer from the disease?

action/inaction. Consider the crying baby dilemma presented above. The decision to save the townspeople (consistent with utilitarian inclinations) requires acting to kill the infant. Conversely, the decision to avoid harming the infant regardless of consequences (consistent with deontology) requires passively allowing events to unfold. Similar active/passive dynamics pertain to nearly all existing dilemmas—for example, the famous trolley and footbridge dilemmas likewise offer a decision between actively intervening to produce positive outcomes versus passively allowing natural events to unfold (Greene et al., 2001).

Addressing the role of action aversion in moral judgment is important because people typically believe that acting to cause harm is more immoral than passively allowing harm to occur (Haidt & Baron, 1996; Spranca, Minsk, & Baron, 1991). Labeled “the doing/allowing distinction” or “the omission bias,” this distinction is an important principle that influences moral judgments, and is called upon to justify judgments (Cushman, Young, & Hauser, 2006). Yet typical dilemma research conflates the omission bias in terms of refusing to directly cause harm with the possibility that participants simply wish to refrain from any action, whether or not doing so entails causing harm.

Circumstantial evidence suggests that such general tendencies to engage in or refrain from engaging in action (regardless of harm) impact dilemma decision-making. For example, people higher in fatalism, who believe that individuals should refrain from intervening in ongoing activities in order to allow fate to unfold, tend to reject causing outcome-maximizing harm (Gold, Colman, & Pulford, 2014). Conversely, people higher in testosterone, who tend to act impulsively rather than remain passive (Andrew & Rogers, 1972), are more likely to

intervene and cause outcome-maximizing harm (Carney & Mason, 2010). Notably, men tend to be higher than women in testosterone (Southern, Tochimoto, Carmody, & Isurugi, 1965). Therefore, the findings of Friesdorf and colleagues may reflect gender differences in action aversion rather than genuine differences in harm aversion.

In order to address this issue, we developed two parallel sets of moral dilemmas that deconfound action/inaction from commission of harm (see also Crone & Laham, 2017; Gawronski, Armstrong, Conway, Friesdorf, & Hütter, 2017). In one such set, the dilemmas which pit utilitarian principles against deontological principles require commission of harmful action in order to make a decision consistent with utilitarianism, whereas in the other set, these dilemmas require acting in order to avoid harm, consistent with deontology (see Table 1; the full dilemma set can be found in Online Supplementary Material). Moreover, each of these variants includes both congruent and incongruent versions, as in Conway and Gawronski (2013). Thus, these new dilemmas allow us to account for the role of action aversion by calculating independent utilitarian and deontological parameters both for cases where acting causes harm and for cases where acting prevents harm.

By examining gender differences in responses to dilemmas in which action causes harm and dilemmas in which action prevents harm, it is possible to clarify whether the gender differences documented by Friesdorf and colleagues (2015) and others reflect genuine harm aversion, or whether these differences reflect gender differences in mere aversion to acting. We predict that gender differences in action aversion will account for a significant portion of gender differences in moral judgments. Nonetheless, given how robust the gender differences reported by Friesdorf and colleagues were, we

Table 2. Overview of Sample Source, Sample Size, Age, and Proportions of Gender and Ethnicity in Each Sample.

Study Number	Sample Source	<i>n</i>	Age		Gender (%)		Ethnic Identity by (%)						
			<i>M</i>	<i>SD</i>	Women	Men	Caucasian	Asian	Black	Hispanic/Latino	American Indian/Alaska Native	Hawaiian/Pacific Islander	Other or Unspecified
1	Online	292	33.89	11.95	42.1	57.9	80.8	10.3	5.5	5.1	1.0	0.0	0.3
2	Online	287	33.76	12.73	40.3	59.7	74.0	11.8	7.6	8.3	2.4	0.0	1.0
3	Online	296	32.94	11.41	38.0	62.0	81.5	9.1	5.7	4.4	0.7	0.7	0.3
4	College	100	19.43	2.41	65.0	35.0	45.0	52.0	3.0	0.0	0.0	0.0	5.0
5	College	115	22.08	3.76	75.7	24.3	31.3	60.0	5.2	0.9	0.0	0.0	5.2
6	Online	290	33.76	11.32	48.3	51.7	78.1	8.2	7.5	6.8	0.0	1.4	0.3
7	Online	292	33.71	11.52	45.5	54.5	78.8	8.2	7.2	7.5	2.4	0.3	0.7
8	Online	293	32.69	11.17	55.9	44.1	78.0	9.8	9.5	7.5	2.4	0.0	0.0
Mega-analysis	Combined	1,965	32.08	11.76	41.5	58.5	68.4	21.2	6.4	5.1	1.1	0.3	1.6

Note. Ethnic identification sums to over 100% because participants selected each ethnicity with which they identified.

predict replicating their findings even accounting for gender differences in action aversion. Specifically, we predict that even when accounting for action aversion, women will still be more harm averse than men.

Method

We obtained the largest sample possible by combining data from eight separate data sets, each part of a broader project designed to investigate a three-factor model of moral judgment (deontology, utilitarianism, and inaction). Participants indicated their gender and responded to either the dilemma battery in which action causes immediate harm or the battery in which action prevents immediate harm (adapted from Gawronski et al., 2016).

Participants

We collected data from eight studies: six collected via Amazon's Mechanical Turk (www.mturk.com) and two collected in lab. We began with a sample of 2,253 participants, but excluded 211 participants who failed to complete the entire study, 71 who failed a simple attention check (which consisted of a short distractor paragraph with instructions to provide a specific answer on a single item mood report; see Oppenheimer, Meyvis, & Davidenko, 2009), 2 who did not report gender, and 4 who scored the maximum values on the utilitarian parameter, thereby causing a division-by-zero-error for calculating other parameters.² This yielded a final total of 1,965 participants, of whom 41.5% were women and 58.5% were men. Mean age was ~ 32 , and most participants identified as Caucasian or Asian. We present details regarding sample sizes, demographics, and ethnic identification in Table 2. We combined these eight studies into a single mega-analysis in order to ensure sufficient power to detect small effects, such as gender differences in utilitarian tendencies (Friesdorf et al., 2015), as some of the individual studies were too small to reliably detect three-way

interactions (i.e., had fewer than ~ 50 participants per between-subjects cell; Simmons, Nelson, & Simonsohn, 2011). With nearly 2,000 participants, we did not conduct formal a priori power analyses, but we did examine post hoc power for two primary effects of interest (using G*Power; Faul, Erdfelder, Lang, & Buchner, 2007). Due to a small effect size, observed power for the three-way interaction between gender, dilemma framing, and parameter was $\sim 70\%$ (based on an effect size $f = .045$, α error probability = .05, $N = 1,965$). However, observed power for the anticipated two-interaction between gender and parameter that would replicate past work was $\sim 100\%$ (based on an effect size $f = .132$, α error probability = .05, $N = 1,965$).

Procedure

In each study, participants began by reporting their age, gender, and ethnic identity. Next, they responded to a series of 10 moral dilemmas, each with one congruent and one incongruent version, presented in a fixed random order. Participants viewed either versions of dilemmas where the deontological response requires inaction (action causes immediate harm) or versions where the deontological response requires action (action prevents immediate harm; adapted from Gawronski et al., 2016). Hence, congruence varied within subjects, and action/inaction varied between subjects.

Seven of the studies also included a mind-set manipulation: two studies involved a cognitive load manipulation, two varied the salience of the proposed harm, and three employed instructional primes to encourage rule-based, outcome-based, or action-based responding. The eighth study employed an individual difference design. As participants were randomly assigned to mind-set condition regardless of gender, we collapsed data across all mind-set manipulation conditions in all studies, to focus on gender differences in responses to action avoiding versus harm avoiding dilemmas regardless of other factors (in line with Friesdorf et al., 2015).

Table 3. Descriptive Statistics, Confidence Intervals, and Effect Sizes for Mega-Analytic Gender Effects for Each Type of Framing.

Parameter	Action Framing							Inaction Framing						
	Women			Men			<i>d</i>	Women			Men			<i>d</i>
	<i>M</i>	<i>SD</i>	95% CI	<i>M</i>	<i>SD</i>	95% CI		<i>M</i>	<i>SD</i>	95% CI	<i>M</i>	<i>SD</i>	95% CI	
Deontology parameter	0.61	0.27	[.59, .64]	0.54	0.27	[.52, .57]	.27	0.69	0.24	[.67, .72]	0.58	0.26	[.55, .60]	.45
Utilitarian parameter	0.33	0.24	[.31, .35]	0.33	0.24	[.31, .35]	.03	0.34	0.23	[.32, .36]	0.35	0.25	[.33, .37]	.04

Note. Action framing refers to the condition where deontology requires action, inaction framing refers to the condition where deontology requires inaction. *d* refers to the Cohen's *d* for the difference between women and men. CI = confidence interval.

Materials and Measures

Each dilemma described a particular action that would lead to a particular outcome. Participants indicated whether the described action was *appropriate* or *not appropriate* (in line with Greene et al., 2001; Conway & Gawronski, 2013). One dilemma battery described actions that caused harm to achieve a certain outcome, paralleling the original PD battery (Conway & Gawronski, 2013). In this battery, incongruent dilemmas correspond to traditional, high-conflict dilemmas (Koenigs et al., 2007): acting to cause harm (a deontological violation) maximized overall outcomes (consistent with utilitarianism). For congruent dilemmas, causing harm does not maximize overall outcomes, and hence acting violates both utilitarian and deontological principles.

The other dilemma battery contained identical wording, except action now prevented immediate harm to achieve a certain outcome. For incongruent dilemmas in this battery, acting would save an individual at a cost of reduced overall outcomes; for congruent dilemmas, acting would both save an individual and maximize overall outcomes, so acting was consistent with both deontology and utilitarianism. Following Conway and Gawronski (2013), we assessed the number of times participants accepted or rejected action across both congruent and incongruent dilemmas. By applying these results to a processing tree (see Figure 1) and following the six steps outlined by Conway and Gawronski, we algebraically combined these scores to derive two PD parameters in each condition.

In the condition where acting causes immediate harm, the deontology parameter reflects the degree to which participants reject inflicting direct harm, regardless of outcomes (i.e., rejecting harm across both congruent and incongruent dilemmas), whereas the utilitarian parameter reflects the degree to which participants maximize outcomes by selectively accepting harm on incongruent dilemmas (when harm maximizes outcomes) but rejecting harm on congruent dilemmas (when harm does not maximize outcomes). These parameters correspond to the deontology and utilitarian parameters derived by Conway and Gawronski. In the condition where acting prevents immediate harm, the deontology parameter reflects consistently acting to prevent immediate harm in all conditions regardless of overall outcomes, whereas the utilitarian parameter again reflects a pattern of maximizing overall outcomes by acting only when preventing immediate harm will not imperil many others (congruent dilemmas), and rejecting action that prevents

immediate harm when such actions will result in widespread suffering.

Thus, for each study, we derived deontology and utilitarian parameters both in the classic condition where action causes immediate harm and in the new condition where acting prevents immediate harm. We then examined how these parameters varied across gender and action framing. We anticipated replicating the pattern obtained by Friesdorf and colleagues that women score substantially higher than men on the deontology parameter, whereas gender differences in utilitarianism will be slight to nonexistent, when acting involves inflicting direct harm. However, we anticipated that gender differences in deontology would be significantly reduced (i.e., women's scores on the *D* parameter would be lower, more similar to men's) when acting prevents immediate harm. In other words, we anticipated that women would be both more harm averse and more action averse than men.

Results

We examined whether gender interacted with dilemma action framing to predict each parameter via a 2 (parameter: utilitarian vs. deontology) \times 2 (gender: women vs. men) \times 2 (framing: action causes vs. prevents immediate harm) mixed-factorial analysis of variance, where parameter varied within subjects, and gender and framing varied between subjects. We first conducted this analysis on the entire pooled sample of data (i.e., a mega-analysis) and then on each study independently. Note that the PD calculations result in different scales for each parameter, thereby rendering any main effects of parameter theoretically meaningless. Accordingly, we standardized the parameters before analysis (consistent with Conway & Gawronski, 2013) and do not report tests of the main effect of parameter. Importantly, all effects described below hold using unstandardized parameters instead.

We present descriptive statistics and effect sizes for the mega-analysis in Table 3. This analysis revealed a main effect of gender, $F(1, 1961) = 26.49, p < .001, \eta_p^2 = .013$, indicating that women scored higher than men across both parameters and across framing condition. More importantly, this main effect was qualified by a significant two-way interaction between gender and parameter, $F(1, 1961) = 33.86, p < .001, \eta_p^2 = .017$. Replicating past findings, women scored significantly higher than men on deontological inclinations, $F(1, 1961) =$

Table 4. Within-Subjects Interaction Effects on Standardized Parameter Estimates.

Study	<i>n</i>	Manipulation	Parameter × Gender Interaction			Parameter × Framing Interaction			Parameter × Gender × Framing Interaction		
			<i>F</i>	<i>p</i>	η_p^2	<i>F</i>	<i>p</i>	η_p^2	<i>F</i>	<i>p</i>	η_p^2
1	292	None	13.26	.000	.044	0.27	.604	.001	1.51	.220	.005
2	288	Cognitive load	9.17	.003	.031	2.13	.146	.007	1.46	.228	.005
3	297	Salience of harm	16.20	.000	.053	0.54	.462	.002	0.00	.977	.000
4	100	Cognitive load	2.21	.140	.023	0.00	.964	.000	4.07	.046	.041
5	100	Salience of harm	3.23	.075	.028	1.85	.176	.016	0.36	.549	.003
6	292	<i>U</i> validation	7.21	.008	.000	0.06	.815	.000	0.29	.593	.001
7	292	<i>D</i> validation	3.63	.058	.012	1.88	.172	.006	3.79	.053	.013
8	295	<i>I</i> validation	2.97	.086	.010	1.48	.225	.005	0.94	.334	.003
Total	1,971	Combined data	33.86	.000	.017	6.15	.013	.003	3.87	.049	.002

Note. Deontology and utilitarianism are treated here as within-subjects factors predicted by between-subjects factors: gender and framing. Boldface value indicates a significant effect.

60.54, $p < .001$, $\eta_p^2 = .030$, which indicates that the gender difference accounted for $\sim 3\%$ of the variance (accounting for other variance in the model). As predicted, no significant gender difference in utilitarian inclinations emerged, $F(1, 1965) = 0.10$, $p = .753$, $\eta_p^2 < .001$. Note that these effects held across both sets of dilemmas.

Next, we examined the impact of dilemma framing: whether action causes or prevents immediate harm. The mega-analysis revealed a significant main effect of framing, $F(1, 1961) = 15.43$, $p < .001$, $\eta_p^2 = .008$, such that overall parameter scores were higher on traditional PD dilemmas where acting causes immediate harm. More importantly, the Framing × Parameter interaction was significant, $F(1, 1961) = 6.15$, $p = .013$, $\eta_p^2 = .003$. Post hoc analysis of this finding indicates that framing significantly impacted deontological inclinations, $F(1, 1961) = 21.24$, $p < .001$, $\eta_p^2 = .011$. The deontology parameter was higher when action caused immediate harm than when action prevented immediate harm. Conversely, there was no significant effect of framing on utilitarian inclinations, $F(1, 1965) = 1.511$, $p = .219$, $\eta_p^2 = .001$. The effect size indicates that framing accounted for $\sim 1\%$ of the unique variance in deontological inclinations.

We then examined the Gender × Framing interactions separately for each parameter. For the utilitarian parameter, the Gender × Framing interaction was not significant, $F(1, 1965) = 0.45$, $p = .502$, $\eta_p^2 < .001$. The absence of a significant effect in such a large sample may be confidently interpreted as supporting the null hypothesis (Cohen, 1992), adding support to Friesdorf and colleagues' claim that gender differences in utilitarian inclinations are weak.

Conversely, for the deontology parameter, the Gender × Framing (between subjects) interaction was significant, $F(1, 1961) = 3.92$, $p = .048$, $\eta_p^2 = .002$. This interaction suggested that when acting caused immediate harm, women, $M_{\text{Inaction-Action}} = 0.08$, $t(1,963) = 18.58$, $SE = .02$, $p < .001$, 95% confidence interval (CI) [.04, .12], scored substantially higher than men, $M_{\text{Inaction-Action}} = 0.03$, $t(1,963) = 4.15$, $SE = .02$, $p = .042$, 95% CI [.001, .06]. Indeed, the gender effect size dropped from $d = .45$ when the deontological option

was consistent with both harm and action aversion to $d = .27$ when deontological option required action in order to avoid harm. Nonetheless, gender differences in deontological inclinations remained significant across both dilemma frames: *D* = inaction: $M_{\text{Women-Men}} = 0.12$, $t(1,963) = 48.41$, $SE = .02$, $p < .001$, 95% CI [.08, .15]; *D* = action: $M_{\text{Women-Men}} = 0.07$, $t(1,963) = 15.56$, $SE = .02$, $p < .001$, 95% CI [.04, .10].

Moreover, the mega-analytic three-way interaction between parameter, gender, and framing was significant, $F(1, 1961) = 3.87$, $p = .049$, $\eta_p^2 = .002$. This interaction emerges because the two-way interaction (Gender × Framing) pattern was significant for the deontology but not utilitarian parameter. Although this interaction term was significant for the overall mega-analysis, not all effects emerged as significant within each individual study.

We also present results for each individual study in Tables 4 (within-subjects effects), 5 (between-subjects effects on deontology), and 6 (between-subjects effects on utilitarianism). For the deontology parameter, main effect of gender reached significance in six of the eight studies, and main effect of framing reached significance in two of the eight studies (see Table 4). Although significant in the well-powered mega-analysis, the Gender × Framing interaction for the deontology parameter only reached significance in one of the eight individual, lower powered studies. For the utilitarian parameter (see Table 5), no single study revealed significant main effects of Gender or Framing or a Gender × Framing interaction. The Parameter × Gender interaction showing that women scored higher on the deontology parameter than men, but did not differ on the utilitarian parameter, reached significance in four of eight studies, and approached significance in three more (see Table 6). The Parameter × Framing interaction did not reach significance in any single study but was significant in the mega-analysis, indicating that scores on the deontology parameter were higher when action caused immediate harm, whereas scores on the utilitarian parameter did not differ depending on framing. Finally, the parameter by Framing × Gender interaction, showing that the Gender × Framing interaction is observed only on the deontological parameter and not on the utilitarian parameter,

Table 5. Between-Subjects Effects of Gender, Framing, and Their Interaction on the Deontology Parameter.

Study	<i>n</i>	Manipulation	Gender Main Effect			Framing Main Effect (<i>D</i> = Action vs. <i>D</i> = Inaction)			Gender × Framing Interaction		
			<i>F</i>	<i>p</i>	η_p^2	<i>F</i>	<i>p</i>	η_p^2	<i>F</i>	<i>p</i>	η_p^2
1	292	None	18.16	.000	.059	2.25	.135	.008	0.29	.592	.001
2	288	Cognitive load	9.20	.003	.031	1.07	.302	.004	1.03	.310	.004
3	297	Salience of harm	20.36	.000	.065	3.54	.061	.012	0.34	.558	.001
4	100	Cognitive load	1.15	.285	.012	0.93	.337	.010	2.97	.088	.030
5	100	Salience of harm	0.34	.559	.003	0.44	.509	.004	0.16	.690	.001
6	292	<i>U</i> validation	6.12	.014	.021	8.37	.004	.028	1.29	.257	.004
7	292	<i>D</i> validation	14.87	.000	.049	2.05	.153	.007	0.83	.363	.003
8	295	<i>I</i> validation	9.06	.003	.030	5.79	.017	.020	1.37	.243	.005
Total	1,971	Combined data	60.54	.000	.030	21.24	.000	.011	3.92	.048	.002

Note. *D* = action refers to the condition where deontology requires action; *D* = inaction refers to the condition where deontology requires inaction. Boldface value indicates a significant effect.

Table 6. Between-Subjects Effects of Gender, Framing, and Their Interaction on the Utilitarian Parameter.

Study	<i>n</i>	Manipulation	Gender Main Effect			Framing Main Effect (<i>D</i> = Action vs. <i>D</i> = Inaction)			Gender × Framing Interaction		
			<i>F</i>	<i>p</i>	η_p^2	<i>F</i>	<i>p</i>	η_p^2	<i>F</i>	<i>p</i>	η_p^2
1	292	None	1.08	.301	.004	0.52	.473	.002	1.51	.220	.005
2	288	Cognitive load	0.74	.391	.003	0.43	.510	.002	0.36	.547	.001
3	297	Salience of harm	1.02	.314	.003	0.97	.325	.003	0.22	.638	.001
4	100	Cognitive load	0.64	.426	.007	0.81	.371	.008	0.67	.414	.007
5	100	Salience of harm	3.33	.071	.029	1.35	.249	.012	0.16	.688	.001
6	292	<i>U</i> validation	1.27	.261	.004	9.98	.002	.034	0.01	.167	.683
7	292	<i>D</i> validation	1.59	.209	.005	0.16	.690	.001	2.76	.098	.009
8	295	<i>I</i> validation	0.09	.759	.000	0.17	.685	.001	0.01	.906	.000
Total	1,971	Combined data	0.10	.753	.000	1.49	.222	.001	0.45	.502	.000

Note. *D* = action refers to the condition where deontology requires action; *D* = inaction refers to the condition where deontology requires inaction.

reached significance in one study, and approached significance in a second study. Overall, the most consistent findings were the main effect of gender on the deontology parameter and the Gender × Parameter interaction, as well as the absence of significant gender differences in the utilitarian parameter.

Finally, we examined gender differences in each dilemma individually to ensure that our results were not driven by any one dilemma or a specific subset of dilemmas. We were unable to compute parameters for individual dilemmas, as PD requires examining patterns of responses across dilemmas. Instead, we performed a series of *t* tests in order to examine whether patterns in the mean proportion of actions judged acceptable for men and women fit predictions for each individual dilemma. For inaction framing dilemmas where action causes immediate harm, harm aversion motivates inaction and concern for outcomes motivates action. Therefore, if women are more harm averse than men, women should reject action more often than men, reflected in lower scores for both incongruent and congruent variants. This effect should reverse for action framing dilemmas where action prevents immediate harm: Women should accept action more often than men, reflected in higher scores, for both incongruent and congruent variants.

This analysis revealed that 29 of 40 dilemmas, demonstrated either a significant or a marginal gender difference in line with

predictions, whereas gender differences in 11 dilemmas did not reach significance (see Table 7). No dilemmas revealed significant gender differences in the direction opposite our predictions, indicating no evidence that any of the dilemmas violated the expected pattern.³

Discussion

A mega-analysis on eight data sets replicated and clarified previously documented gender differences in moral dilemma responses. For dilemmas where action causes immediate harm (i.e., acting requires overcoming both action aversion and harm aversion), women scored substantially higher than men on deontological inclinations ($d = .45$), but similar to men on utilitarian inclinations ($d = .04$). Moreover, this pattern largely held for dilemmas where action prevents immediate harm (i.e., acting requires overcoming action aversion but is motivated by harm aversion)—although the effect size for gender differences in the deontology parameter in such dilemmas was smaller ($d = .27$). Gender differences in the utilitarian parameter when action prevents immediate harm remained similarly small ($d = .03$). The difference in the deontology parameter for women in the two dilemma conditions indicates that some of the variance in gender differences in moral

Table 7. Means and Standard Deviations for Accepting Action in Each Dilemma \times Gender, Where in Action Framing, Action Saves Someone, Risking Greater Harm to Others (Incongruent Dilemmas), or Not Risking Greater Harm (Congruent Dilemmas), and for Inaction Framing, Action Causes Harm That Either Maximizes Outcomes (Incongruent Dilemmas) or Does Not (Congruent Dilemmas).

Dilemma Number	Dilemma Name	Gender	Action Framing				Inaction Framing			
			Incongruent Dilemmas		Congruent Dilemmas		Incongruent Dilemmas		Congruent Dilemmas	
			M	SD	M	SD	M	SD	M	SD
1	Time machine	Women	.336	0.473	.657*	0.475	.562 [†]	0.497	.153*	0.360
		Men	.352	0.478	.569*	0.496	.624 [†]	0.485	.244*	0.430
2	Hard times	Women	.865*	0.342	.942 [†]	0.235	.045*	0.207	.019*	0.136
		Men	.800*	0.400	.909 [†]	0.287	.118*	0.323	.083*	0.276
3	Vaccine policy	Women	.237	0.426	.646	0.479	.868	0.339	.518	0.500
		Men	.251	0.434	.615	0.487	.868	0.339	.567	0.496
4	Animal research	Women	.361*	0.481	.786*	0.140	.586*	0.493	.144*	0.351
		Men	.248*	0.432	.720*	0.450	.758*	0.429	.276*	0.447
5	Architect	Women	.555	0.498	.786	0.410	.242*	0.429	.089*	0.286
		Men	.566	0.496	.805	0.396	.350*	0.477	.134*	0.341
6	Crying baby	Women	.401*	0.492	.687*	0.464	.640*	0.480	.461*	0.499
		Men	.280*	0.450	.624*	0.485	.777*	0.416	.551*	0.498
7	Border crossing	Women	.127	0.334	.570*	0.496	.795*	0.404	.285*	0.452
		Men	.099	0.299	.496*	0.500	.891*	0.313	.408*	0.492
8	Nanotech	Women	.504 [†]	0.501	.852	0.355	.400*	0.490	.087 [†]	0.282
		Men	.448 [†]	0.498	.831	0.375	.537*	0.499	.120 [†]	0.325
9	Drug lord	Women	.435 [†]	0.496	.692*	0.462	.529*	0.500	.174*	0.380
		Men	.374 [†]	0.484	.631*	0.483	.622*	0.485	.292*	0.455
10	Crane accident	Women	.211	0.409	.741	0.439	.753*	0.432	.113*	0.317
		Men	.202	0.402	.699	0.459	.807*	0.395	.189*	0.392

Note. [†] $p < .10$. * $p < .05$.

judgment was driven by higher action aversion among women than men, in addition to harm aversion.

These findings largely replicated the meta-analytic pattern documented by Friesdorf and colleagues (2015) who found gender differences of $d = .57$ for deontology and $d = .10$ for utilitarianism. Note that these papers used different dilemma batteries, indicating that gender effects generalize across dilemma stimuli. These findings also replicate the gender differences documented by other researchers (e.g., Arutyunova et al., 2016; Fumagalli et al., 2011) who argued that men appear more utilitarian than women on relative judgments where utilitarianism and deontology are treated as direct opposites. However, our findings clarify those of Friesdorf and colleagues by suggesting that women score higher than men on deontology in previous research because of a relative aversion to action as well as a relative aversion to harm. That is, women are more sensitive to the doing/allowing distinction than men, in addition to being more sensitive to harm.

These findings also corroborate previous work demonstrating that people are particularly uncomfortable with actively causing harm (Cushman et al., 2006; Haidt & Baron, 1996; Spranca et al., 1991). Participants were less willing to act when action causes immediate harm than when action prevented equivalent immediate harm, consistent with the omission bias. This finding suggests that people view causing immediate harm as more egregious than passively allowing the same degree of

harm to occur. The fact that gender differences were stronger when acting entailed causing immediate harm is consistent with the finding that women are more averse to causing harm than men, whereas women and men exhibit similar concern for overall outcomes.

There are several plausible and not mutually exclusive reasons why these gender differences may emerge. First, cultural forces and social expectations may be important in that gender-stereotyped divisions of labor have traditionally resulted in the assignment of gender roles where men are disproportionately incentivized for roles that entail active and agentic behaviors, and women are generally guided toward roles that entail passive, caring, and conciliatory behaviors (Wood & Eagly, 2012). Broadly speaking, perceivers view women as less agentic than men (Diekmann & Eagly, 2000), which can engender pressure for women to conform to social roles by refraining from assertive behavior (Eagly & Wood, 1999). There are often very real costs to women who violate gender role expectations (Eagly & Karau, 2002). Experiencing a lifetime of such social pressures may guide women (relative to men) toward decision-making that prioritizes caution over leaping into action, and particular caution when the action in question will cause harm—despite women and men valuing the outcomes of such actions to a similar degree.

Evolutionary strategies and physiological differences may also play a role. Some theorists have argued that deontological

moral decisions reflect an adaptive strategy to demonstrate trustworthiness as a social interaction partner (Everett, Pizarro, & Crockett, 2016). Likewise, utilitarian decisions may also reflect an adaptive strategy, insofar as they convey competence and logical processing, and people prefer utilitarian decision makers for leadership roles (Rom, Weiss, & Conway, 2016; Uhlmann, Zhu, & Tannenbaum, 2013). Insofar as evolutionary pressures disproportionately rewarded men for active and agentic behavior that could elevate their social status, whereas tending to social relationships was particularly effective for women (Buss & Schmitt, 2011), such evolutionary pressures may have led women to prioritize deontological over utilitarian decisions, whereas men prioritize the opposite pattern (Sacco, Brown, Lustgraaf, & Hugenberg, 2016). Note that people appear aware of how others will react to their judgments (Rom & Conway, 2018), corroborating the possibility of greater perceived social pressure on women than men to refrain from causing immediate harm.

Evolutionary pressures may manifest through the proximal mechanism of physiological differences that impact psychological experience. For example, women and men differ radically in testosterone levels, a hormone associated with both general behavioral activation (Andrew & Rogers, 1972) and increased willingness to commit harm on sacrificial moral dilemmas (Carney & Mason, 2010). Moreover, a host of research indicates that compared to men, women score higher on empathic concern (Eisenberg & Lennon, 1983), experience stronger emotional responses (e.g., Fischer & Manstead, 2000), and find emotion-laden messages more persuasive (Meyer & Tormala, 2010)—factors that appear uniquely associated with the deontological parameter (Conway & Gawronski, 2013). Even when committing extreme moral violations, women appear more likely than men to experience aversion to causing immediate harm: Female serial killers typically use poison or other indirect killing methods, whereas male serial killers are more likely to employ knives or other means of direct physical damage (Scott, 2008). Such physiological and psychological differences derived from ancient pressures may guide women (relative to men) toward decision-making that prioritizes caution over leaping into action, particularly when action will cause harm—despite women and men similarly valuing the outcomes of action.

Returning to the crying baby dilemma from the Introduction section, these results clarify why women are typically less likely than men to accept harming the baby to save the village. Harming the baby entails acting to cause harm—both of which women are more averse to than men—although women and men equally value the lives of the villagers. Thus, gender differences in moral dilemma responses reflect aversion to causing harm specifically, above and beyond gender differences in general aversion to performing any action.

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Supplemental Material

The supplemental material is available in the online version of the article.

Notes

1. For consistency with the rest of the field (e.g., Greene, 2007), we refer to dilemma judgments as “utilitarian” or “deontological” judgments, even though the way scientists employ these terms glosses over important differences in varieties of philosophical thought within each camp, and judgments need not reflect commitment to the philosophical positions they are said to align with. Technically, judgments might be better described as simply accepting or rejecting actions that cause or prevent immediate harm, with downstream consequences that may or may not allow greater harm to proceed. Greene (2007) argues that refusing to cause harm (allowing greater harm to proceed) is consistent with deontological ethics insofar as such a decision is easier to justify on deontological than utilitarian grounds, whereas causing or allowing harm to occur in service of overall outcomes is consistent with utilitarian ethics insofar as such a decision is easier to justify on utilitarian than deontological grounds. This argument is trickier for dilemmas where actions prevent immediate harm (inaction framing), as doing so accords with Kant’s (1785/1959) notion of imperfect duties, which are less obligatory than perfect duties such as avoiding causing harm. Despite these concerns, we retain this terminology in order to retain consistency with past work in this area (e.g., Conway & Gawronski, 2013).
2. As a function of the algebra used to calculate the deontology parameter, a score of 1 on the utilitarian parameter results in a denominator of 0, which makes calculation of the deontology parameter impossible (for details, see Conway & Gawronski, 2013). As such cases are rare, we removed them from the sample, following the recommendations of Conway and Gawronski.
3. One dilemma, vaccine policy, failed to reveal expected gender differences for any of its four incarnations, but no dilemmas revealed significant effects in unexpected directions. Despite this minor variation, we retained all dilemmas in the final analysis, as dilemmas were designed and selected based on a priori theoretical considerations rather than empirical results, and some degree of variability is to be expected.

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