Moral Judgments, Gender, and Social Preferences: An Experimental Study

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Abstract:

We study questionnaire responses to moral dilemmas hypothetical situations in which sacrificing one life may save many other lives. We demonstrate gender differences in moral judgments: male participants are more supportive of the sacrifice than female participants. We investigate the importance of the previously studied source of the endorsement of the sacrfice: antisocial attitudes. First, we elicit the individual proneness to spiteful behavior using an incentivized experimental game. We demonstrate that spitefulness can be sizable but it is not associated with gender. Second, we find that gender is associated with moral judgments even when we account for individual differences in antisocial attitudes. Our results suggest that the performance of many institutions (related to the distribution of wealth or punishment, for instance) may be affected by the gender of the decision-makers.

Keywords:
Gender, moral dilemmas, moral judgments, spite, antisocial attitudes, experiment

JEL codes:
C91, D03, D63

Moral Judgments, Gender, and Social Preferences: An Experimental Study*

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Abstract

We study questionnaire responses to situations in which sacrificing one life may save many other lives. We demonstrate gender differences in moral judgments: men are more supportive of the sacrifice than women. We investigate a source of the endorsement of the sacrifice: anti-social preferences. First, we measure individual proneness to spiteful behavior, using an experimental game with monetary stakes. We demonstrate that spitefulness can be sizable – a fifth of our participants behave spitefully – but it is not associated with gender. Second, we find that gender is consistently associated with responses even when we account for individual differences in the propensity to spitefulness.

Keywords: Moral Dilemma; Moral Judgments; Experiment; Gender; Anti-social Preferences; Confounding Variable; Individual Difference.

JEL Classification: C91; D03; D63

1 Introduction

In our paper, we look at questionaire responses to moral dilemmas – situations in which inflicting harm on one person allows many others to escape suffering. Many examples illustrate this kind of dilemma. During social unrest, framing an innocent person may prevent

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dangerous riots. During war, wardens of prisoners-of-war camps may decide to kill inmates for minor transgressions to assert order.[1] While philosophers have analyzed such situations for centuries, in recent times, philosophers typically prescribe that people should take action that produces the best consequences. Furthermore, philosophers hold that the best consequences are best outcomes for everyone.[2] Consider, once again, whether it is right to frame an innocent man in order to prevent a dangerous riot. For this situation, most philosophers judge that it is right to prevent harm to many by framing an innocent person. A minority of philosophers prescribe that people should act according to principle of deontology; here acts are inherently good or bad, regardless of their consequences. The Ten Commandments (5th: the thou shalt not murder, 8th: thou shalt not bear false witness against thy neighbor), for instance, are founded in the deontological manner, so that certain actions are prohibited even if they may yield benefits to the society.

Bourget and Chalmers (2013) survey professional philosophers. Bourget and Chalmers determine philosophers' view of philosophical issues. For instance, most philosophers support consequentialism/utilitarianism over deontology (see Table 17 therein). Philosophers also support the utilitarian solution in the trolley problem (five straight ahead, one on side track, turn requires switching, what ought one do? Switch or don't switch?). Recently, decision-making researchers have started to describe how people choose in representative moral dilemmas. For that purpose, participants are asked to engage in thought experiments in which they respond to a description of a hypothetical situation like "Do you approve of framing an innocent man, not just a mere suspect, in order to prevent a dangerous riot?".[3] These natural and quick responses to questionnaires will reveal people's moral intuitions. When

[1]Perhaps one of the most tragic historical examples of such kind of dilemma is related to the Jewish ghettos in German-occupied Poland. In 1942, the Nazi administration demanded that the Jewish authorities ("the Judenrat") delivered certain quotas of people for "resettlement in the East" – which was an euphemism for deportation to a death camp – in exchange for a guarantee of safety for the remaining ghetto population. The demand lead Adam Czerniakow (1980-1942), head of the Warsaw ghetto Judenrat, to commit suicide. In his suicide note from June 1942, Czerniakow wrote to his wife: "They demand me to kill children of my nation with my own hands. I have nothing to do but to die. See http://www.diapozytyw.pl/en/site/ludzie/adam_czerniakow. Chaim Rumkowski (1877-1944), head of the Lodz ghetto Judenrat, took a different stance. In an infamous public speech from September 1942, he appealed to the ghetto dwellers: "A grievous blow has struck the ghetto. They are asking us to give up the best we possess – the children and the elderly. I never imagined I would be forced to deliver this sacrifice to the altar with my own hands. In my old age, I must stretch out my hands and beg. Brothers and sisters: Hand them over to me! Fathers and mothers: Give me your children!". See https://www.ushmm.org/wlc/en/article.php?ModuleId=10007282$.

[2]This school of thought is known as consequentialism. It says that the moral status of an action should be determined based on the outcome it produces; other features of the action, like the actor's intentions, and the circumstances in which they are undertaken, are irrelevant. Utilitarianism is a version of consequentalism. It combines consequential-ism with welfarism. Welfarism holds that the goodness of an outcome is a matter of the amount of individual well-being, counting everyone equally. Hence, utilitarianism is the view that an act is right if and only if it leads to the greatest total amount of well-being. See, for instance, Harsanyi (1976).

[3]Recently, some experimenters have investigated incentivized moral dilemmas in which people's decisions bear real material consequences. See Hsu, Anen, and Quartz (2008), Gold, Colman, and Pulford (2014) and Gold, Colman, and Pulford (2015). For instance, Gold, Colman, and Pulford (2014) look at a version of a moral dilemma in which the harm is a small economic loss. The authors find somewhat of a difference between actions and judgements, yet conclude that nothing definitive can be said about the scope and causes of observed difference. Regrettably, the authors look merely at a tiny number of scenarios. Furthermore, the authors do not report on measures of correlation between responses.

people make ethical judgments they may be informed by their instant feelings of agreement or disagreement (Haidt (2001), (2003)). A recent line of research on moral dilemmas investigates whether moral judgment is associated with gender, and how moral judgement is related to anti-social attitudes. A first set of papers concludes that there are gender differences in moral judgment; men are more prone to endorse the utilitarian solution in hypothetical moral dilemmas. The findings are reported in Petrinovich, O'Neill and Jorgensen (1993), Zamzov and Nichols (2009), Banerjee, Huebner, and Hauser (2010) and Buckwalter and Stich (2014), among others. In addition, Hsu, Anen, and Quartz (2008) report that men tend to favor the utilitarian solution in a real-world moral dilemma more than women: a choice of actual allocation of meals among poor African kids through a charity organization.[4] On the other hand, a replication study by Seyedsayamdost (2015), and studies of Gold et al. (2014, 2015) report no systematic gender difference in moral judgements. Interestingly, a large study by Hauser et al (2007) with over 2000 participants does find large and significant gender differences for each of the moral dilemma, and reports no gender differences only when comparing responses to paired scenarios. Another large study by Bourget and Chalmers (2014) finds a number of gender differences, including women being less likely to agree with the utilitarian solution in a moral dilemma.[5]

The second set of studies points to a – somewhat counterintuitive – conclusion that people with anti-social attitudes are prone to make utilitarian judgments. Koenigs et al (2007) conducted a study of brain-damaged patients with acquired sociopathy. These kind of emotional deficits are similar to those observed in psychopaths (Saver and Damassio (1991)). These kind of patients are found to display unusually high levels of endorsement of the utilitarian solution to moral dilemmas. In the same vein, Glenn et al (2010) report that psychopathic traits – measured using Levenson's Self-Report Psychopathy Scale – predict a stronger endorsement of utilitarian solutions across several moral dilemmas.

Finally, Bartels and Pizarro (2011) – in a study most closely related to ours – report gender difference in moral judgments as well (in a large set of moral dilemmas that we also employ herein). However, their report also highlights the importance of individual traits: there is a positive relation between endorsement of sacrifice-one-live-to-save-many-lives and measures of psychopathic personality (low empathy, callous affect, and thrill-seeking), Machiavellianism (cynical, emotionally detached from others, and manipulative), and perceived life meaninglessness (melancholic existential concerns). Furthermore, they find that men tend to score higher in all of those psychological questionnaires, and that the gender effect on moral judgments fades away when psychological traits are accounted for. Their finding, in turn, raises the question of whether the relationship between moral judgment and gender is spurious because the research failed to account for anti-social traits as a confounding factor.

In our paper, we ask a novel question, and investigate the interaction between moral judgments, gender, and other-regarding preferences in moral dilemmas. We elicit the propensity for other-damaging behavior (spitefulness) using an experimental game, and use our measure

[4]The task in the experiment was to distribute meals among poor African kids through a charity. Each child was given an initial endowment of twenty-four meals. The policy decision was either take away plenty from one child – fifteen meals – less then plenty from two children – thirteen meals or five meals. The caveat of the study is the very small sample size with only 26 participants, 17 women and 9 men.

[5]Adleberg et al. (2015) review studies reporting a variety of methodologies for tests of gender differences in philosophical judgements.

as a control when we explain gender difference in responses to a moral-dilemma questionnaire. Generally, a sacrifice of a life is other-damaging behavior. Hence, we have introduced a reasonable measure of other-damaging behavior; behavior that disposes payoff of an-other person.

Our task measures other-damaging behavior regardless of self-interest. We maintain that our monetary proxy indicates a general taste for a spiteful behavior. [6]

At the start of our project, we believed both that men are more spiteful than women and that -- contrary to what one would intuitively expect -- individuals who indicate greater spitefulness (who are immoral) might tend to commit fewer moral errors, in the utilitarian framework. Surprisingly, we find that men indicate greater endorsement of utilitarian solutions not because they possess characteristics that most would consider immoral. Our believe about other-damaging preference was supported by findings in Croson and Gneezy (2009) and Engel (2006). Croson and Gneezy review the literature on gender differences in other-regarding preferences; research from psychology suggests that women are more sensitive to social cues in determining appropriate behavior. Similarly, in a review of Dictator experiments, Engel (2006) reports that women give significantly more than men. In our game, other-damaging behavior leads to decisions that are payoff efficiency-decreasing and payoff inequality-increasing (a triple "bad"). An alternative to our spite game would be the standard Dictator in which other-damaging behavior increases the dictator's payoff, and is, by definition, payoff-efficiency neutral, yet inequality-increasing.

Our experiment is designed as follows: First, we elicit responses to fourteen hypothetical ethical dilemmas. In our paper, we maintain that our questionnaire describes situations that are genuine dilemma -- two possibilities neither of which is unambiguously acceptable. We find consistent and significant gender differences in responses to moral questions: men are found to be more prone than women to endorse the act of sacrificing one life to save other lives. Second, we investigate whether gender differences in moral judgments are robust to individual differences in anti-social preferences. We apply the tool set of experimental economics; we observe decisions in a game with monetary stakes to measure anti-social preferences. The decision maker is granted a flat payoff of 10 Euros, and – in addition – sets the payoff for another participant to any amount between 0 and 10 Euros. An amount lower than 10 Euros harms the other person and indicates preferences for spite.[7] Our game provides a simple and

[6] An alternative to the spite game is the envy game (Bartling et al. 2009), however, the envy game allows for enforcement of an egalitarian outcome, whereas our spite game allows for enforcement of an unequal allocation. We suspect that individuals who are spiteful are individuals who are envious as well.

We did not intend to measure social preference in Fisman et al.'s sense (*other* versus *other*, Fisman et al. 2007). One could – quite reasonably -- be interested in the relationship between trade-offs of monetary payments of others and trade-offs of lives of others (moral trade-offs). In our paper, we maintain that the questionnaires describe situations that are dilemma -- two possibilities neither of which is unambiguously acceptable.

[7] Charness and Grosskopf (2001) have conducted an experiment with games that are similar to our game; their games distinguish between a motivation to achieve the best for a pair of players or spitefulness. Charness and Grosskopf had been interested in the association between participants self-reported happiness and their concern for relative payoffs (see Lyubomirsky and Ross (1997) for a social-psychology study into the effect of happiness on the desire for social comparison). Charness and Grosskopf find little association; most participants disregarded relative payoffs and instead typically made choices resulting in higher social payoff.

Our objective is to classify participants into two types. For richer taxonomies of other-regarding behavior in the laboratory see Fisman, Kariv and Markovits (2007), Murphy, Ackermann, and Handgraaf (2011) and

direct way to classify participants in two types: those who engage in anti-social behavior and those who do not. Antisocial behavior is somewhat common in our setting – roughly one participant in five purposefully reduces the other participant's earnings.[8] We use this indicator variable as a control in regression analysis. We find that gender is associated with moral judgment even when we control for participants' spitefulness: men are found to be more prone than women to endorse the act of sacrificing one life to save many other lives.

2 Experimental Design

We conducted the sessions at the Experimental Economics Laboratory Paris (LEEP). There were 12 sessions, each with between 11 and 20 participants. From LEEP's database, we recruited participants who had completed LEEP's registration process. We stratified the sampling to ensure balance, with 99 female and 99 male participants. The participants' average age was 24. Most participants had previously taken part in an experiment at LEEP. Roughly four-fifths of our participants were still enrolled in university studies. For recruitment, we used the ORSEE software, Greiner (2004). For the sessions, we used the Regate software, Zeilinger (2000). We asked participants to complete two experimental tasks. Specifically, participants were asked to both play a game whose outcome determined the participant's monetary gains, and to answer a moral-intuition questionnaire consisting of 14 questions about 14 moral dilemmas. We accounted for potential order effects in two ways. In six sessions, participants first played the game and then completed the questionnaire. In the other six sessions, the order was reversed. Furthermore, we arranged the order of the presentation of the 14 dilemmas to ensure balance across sessions.[9]

At the beginning of each session, instructions were distributed and read aloud. Furthermore, participants were informed that additional instructions would be displayed on their computer screens later on. The instructions and questions, translated from French into English, are available as supplementary material in the appendix.

Kerschbamer (2015).

[8] Our estimate of the proportion of spiteful types echoes the findings by Levine (1998) and Charness, Masclet, and Villeval (2014). Levine estimates that about 20% of participants engage in spiteful behavior. Levine specifies a model in which players have a utility function that weights other player's payoff with a parameter α; positive values of α show altruism and negative values show spitefulness. In addition, players could tend to be more altruistic to an opponent who is more altruistic toward them. Levine looks at data from ultimatum (Roth et al. (1991), competitive auction (Roth et al (1991), centipede (McKelvey and Palfrey (1992)), and public goods contribution game (Isaac and Walker (1988)). Interestingly, Levine (p. 616) predicts behavior for our game accurately. Zizzo and Oswald (2001) use a similar game as well. They find a larger fraction of spiteful behavior; participants pay to 'burn' the money of the bigger earners. Their result suggests that one could manipulate the amount of spitefulness if the other player has a larger endowment than the decision-maker.

Dictator is well-suited for capturing pro-social behavior (sharing with others), but is silent on the reasons for not-sharing-with-others: both selfishness and other-damaging preferences predict to the same behavior. To tease apart selfishness from other-damaging preferences, we use the spite game.

[9] Petrinovich and O'Neill (1996), Alexander and Weinberg (2007), and Zamzow and Nichols (2009) show that the order of presentations affects moral responses.

2.1 Moral-Intuition Questionnaire

We elicit participants' responses to 14 hypothetical moral dilemmas. We are interested in quick, natural replies as we are not concerned with elicitation of explicit moral reasoning. We have drawn our 14 dilemmas from Bartels (2008).[10] Below we show a typical situation, called Trolley Dilemma, together with the kind of response we elicited.

The Trolley Dilemma:

> In the path of a runaway train car are five railway workmen who will surely be killed unless you, a bystander, do something. You are standing next to a larger stranger on a pedestrian walkway that arches over the tracks. Your body would be too light to stop the train, but if you push the stranger onto the tracks, killing him, his large body will stop the train.
>
> In this situation, would you push the man?
>
> Please, indicate your answer by ticking a box on the scale displayed below (the leftmost box corresponds to the strongest disagreement, the rightmost box corresponds to the highest agreement):
>
> NO ☐-2 ☐-1 ☐-1 ☐2 ☐YES

In the sessions, the dilemmas were presented one by one (see the instructions in the appendix; note that the Trolley-Dilemma situation above is referred to as Footbridge in the appendix).

Note that the integer -2 signifies the strongest disagreement of the sacrifice. The integer 2 signifies the strongest agreement. We refer to the integers as agreement points.

2.2 Experimental Game

Two players, A and B, play a simple game. Player A's payoff is 10 Euros. Player A chooses player B's payoff by picking an integer between 0 and 10 Euros. Player B makes no decision. In our sessions, pairs of participants were formed. Each participant made a decision as a Player A. A random draw at the end of each session determined participants' actual roles and actual payoffs. In addition, each participant received a show-up fee of 5 Euros.[11]

[10] Bartels drew his dilemmas from the psychology literature. The references for the dilemmas are: Submarine (Greene et al. 2001), Trespassers (Greene et al. 2001), Hostages (Greene et al. 2001), Bystander (Foot 1967), Life Raft (Regan 1983), Plane Crash (Marshall 1993, Greene et al. 2001), Prisoners of War (Baron 1992), Fumes (Thompson 1986), Spelunkers (http://news.bbc.co.uk/2/hi/uk_news/magazine/4954856.stm), Surgery (Foot 1967), Derailment (Unger 1996), Footbridge (Thompson 1985), and Baby (Alda et al. 1983, Greene et al. 2001).

[11] We used this procedure to collect data on each participant's game decision. Note that our procedure makes it plain that each participant's choice could affect another participant's payoff. Our procedure asks participants to make contingent choices before learning about their actual role in the game (Selten, 1967). An alternative procedure could have first let each participant know her role in the game ex ante, and then ask the participant to makes choices at her actual information set. The literature shows that both methods yield similar results with simple distributional games that involve very few contingent choices (for Dictator see Cason and Mui (1998) and for a Solidarity Game see Büchner et al. (2007). For a survey of further experimental evidence on the effect of the two methods see Charness and Brandts (2011).

Transferred Amount (in Euros)	0	1	2	3	4	5	6	7	8	9	10	Σ
Number of Choices by Females	0	1	0	1	1	7	2	1	8	4	74	99
Number of Choices by Males	0	1	0	1	1	11	0	1	1	2	81	99
Total Number of Choices	0	2	0	2	2	18	2	2	9	6	155	198

Table 1: Distribution of Transfers in the Experimental Game

3 Results

Let us first turn to participants' behavior in our incentivized game. Player A is asked to choose player B's payoff. We call this choice the transferred amount. Table 1 shows the distribution of transfers; by female participants, by male participants, and by the pooled sample.

Finding 1 (Frequency of Spiteful Choices)
Twenty-two percent of the participants chose a transfer less than the maximal transfer.

Support. Table 1, row 4 shows the overall frequency of transfers. Most participants (155) selected the maximal transfer, 10. A sizable fraction of the participants transferred lower amounts; the most frequent among those were 5 (18 participants), 8 (9 participants), and 9 (6 participants).

Finding 2 (No Gender Difference in Transferred Amounts)
We do not reject the null hypothesis that the distribution of transfers is equal for male participants and female participants.

Support. Table 1, row 2 shows the frequency of transfers by female participants. Table 1, row 3 shows the frequency for male participants. A Wilcoxon rank-sum test of no difference of the distributions shows $p = 0.347$.

Next, we turn to moral judgment. Table 2 shows the score for each of the 14 items of the moral-dilemma questionnaire. The panel to the left shows the statistics sorted by gender, the panel in the middle shows the statistics sorted by the transferred amount, and the panel to the right shows the statistics for pooled sample.

Note that the moral situations are different in various dimensions.[12] Now, the situations have something in common, and our questionnaire is designed to measure this common variable. The internal consistency of the questionnaire is very high; Cronbach's α is around 0.8 for the 14 situations (see the final row of Table 2)[13]. The high correlations between the response

[12]We thank a referee for pointing out that the moral situations are different in the dimensions (a) life at stake, (b) volunteer opportunity, and (c) responsibility.

[13]Tavakol and Dennick (2011) describe internal consistency as the extent to which all the items in a test measure the same concept. Internal consistency is connected to the inter-relatedness of the items within the test (see Tavakol and Dennick, page 53). Commonly, values of range from 0.70 to 0.95 are acceptable (see Tavakol and Dennick, page 54).

Type of Dilemma	Gender			Transferred Amount			Pooled
	FEMALE	MALE	p value	AMOUNT=10	AMOUNT<10	p value	
Observations	99	99		155	43		198
Submarine	-0.071	0.535	0.004^a	0.271	0.093	0.491	0.232
Trespassers	-1.222	-0.707	0.009^a	-0.981	-0.907	0.760	-0.965
Hostages	-0.606	-0.030	0.012^b	-0.342	-0.233	0.697	-0.318
Bystander	0.394	0.828	0.036^b	0.535	0.884	0.168	0.611
Life Raft	0.222	1.010	0.001^a	0.568	0.791	0.385	0.616
Plane Crash	-1.586	-1.404	0.198	-1.548	-1.302	0.150	-1.495
Prisoners of War	-0.010	0.202	0.350	0.077	0.163	0.757	0.096
Fumes	0.121	0.636	0.010^a	0.316	0.605	0.275	0.379
Spelunkers	-0.596	0.253	0.001^a	-0.213	-0.023	0.471	-0.172
Soldiers	0.222	0.485	0.243	0.316	0.488	0.528	0.354
Surgery	-1.818	-1.455	0.003^a	-1.697	-1.419	0.062	-1.636
Derailment	-0.222	0.061	0.188	-0.058	-0.163	0.688	-0.081
Footbridge	-1.606	-1.576	0.818	-1.594	-1.581	0.939	-1.591
Baby	-0.869	-0.172	0.001^a	-0.548	-0.419	0.619	-0.520
Overall	-0.546	-0.095	0.001^a	-0.350	-0.216	0.315	-0.321
Internal Consistency							
Cronbach's α	0.765	0.829	–	0.824	0.791	–	0.818

Table 2: Points of agreement for sacrifice in the moral-judgement questionnaire. Range of agreement points -2 (strongest disagreement), -1, 1, 2 (strongest agreement). p values from Wilcoxon rank-sum and two-sided t-tests. Superscript a denotes $p < 0.01$, and superscript b denotes $p < 0.05$.

to different situations show that the questionnaire is well suited for measuring a commonality – the degree of endorsement of the utilitarian solution. Note that the commonality does allow for reasonable discussion of moral principles – utilitarianism versus ontology. Furthermore, after partitioning the sample by gender and transferred amount, the high internal consistency of the questionnaire is upheld. In table 2 (final row), we now report Cronbach's α for male ($n = 99$) and female participants ($n = 99$), and for other-damaging participants ($n = 43$) and participants who are not other-damaging ($n = 155$). These results suggest that moral judgment is robust across fourteen situations in the four subgroups. Hence, we are justified to use the average score as a dependent variable in our regression analysis.

Finding 3 (Gender Difference in Moral Judgment)

We reject the null hypothesis that the distribution of moral intuitions is equal for men and women.

Support. Table 2, column 4 shows the p values of the test of no difference in the distribution of agreement points of female participants and male participants for each of the 14 situations. Male participants' declared support for the sacrifice differs from that of the female participants. In 9 out of 14 situations, the difference is significant at the 5% level with a t-test. Table 2, third to final row shows the p values of the test of no difference in

the distribution of overall scores of female and male participants. Male participants' average score is not equal to female participants' average score. The two-sided t-test shows a highly significant difference ($p < 0.001$).

Finding 4 (No Difference in Moral Judgment Between Spiteful and Non-Spiteful Players)

We do not reject the null hypothesis that the distribution of moral intuitions is equal for spiteful and non-spiteful players.

Support. Table 2, columns 5 and 6 show the scores of participants who act pro-socially as Player A in the experimental game (i.e., the transferred amount equals 10), and those who act anti-socially (by transferring less than 10). Among 14 items, we find no instance for which the difference in moral judgments between these two groups is significant at the 5% level, and one instance in which it is weakly significant at the 10% level. The p values from two-sided t-tests are shown in column 7. We conclude that the overall average scores are not statistically different at the conventional levels.

We found that the individual average score is a reliable measure of one's endorsement for utilitarian solution. Now, we explain the score's variation using regression models. The sets of explanatory variables include the two main characteristics of interest; gender and behavior in the game.

Table 3 shows 15 regression results. For 14 regressions, the dependent variable is a participant's points of agreement. Each of the 14 regressions corresponds to a situation. For the 15th regression, the dependent variable is participants' overall average points of agreement. The key explanatory variable is an indicator variable $1[MALE]$ that is 1 for males and 0 for females (β_3). The controls are $1[AMOUNT < 10]$, that is 1 if the participant chose to transfer less than 10 and 0 otherwise (β_1), $1[AMOUNT < 10] \times AMOUNT$ (β_2), and $1[GAME\ FIRST]$ if the game was followed by the questionnaire, and 0 otherwise (β_4).

Finding 5 (Gender Effect on Intuitions)

We find a gender effect in moral intuitions even when we control for the transferred amount.

Support. Table 3 shows the regression output for the 14 individual regressions in a separate panel. We present the estimated coefficients for the male indicator variable and the corresponding p value. In 8 out of 14 situations, the male indicator variable is significant at the 5% level. Table 3 also shows the overall regression in the panel to the lower right: the male indicator variable is highly significant at the 1% level.

In the average-points-of-agreement regression, the controls $[AMOUNT < 10]$ and $1[AMOUNT < 10] \times AMOUNT$ are individually and jointly insignificant. In the Plane Crash regression, the controls $[AMOUNT < 10]$ and $1[AMOUNT < 10] \times AMOUNT$ are individually and jointly significant.[14] In the other 13 individual regressions, the controls $[AMOUNT < 10]$

[14]The estimated marginal effect is $\hat{\beta}_1 + \hat{\beta}_2 \cdot AMOUNT = 1.499 + (-2.06) \cdot AMOUNT$. For instance, if

		est.	*p*	***est.***	*p*	***est.***	*p*	***est.***	*p*
Type of Dilemma		*Submarine*		*Trespassers*		*Hostages*		*Bystanders*	
Intercept	β_0	0.226	0.227	-1.252^a	0.000	-0.691^a	0.001	0.292	0.120
1[AMOUNT<10]	β_1	0.606	0.378	0.674	0.304	0.009	0.991	-0.177	0.797
___× AMOUNT	β_2	-0.121	0.260	-0.091	0.371	0.027	0.819	0.096	0.371
1[MALE]	β_3	0.585^a	0.005	0.501^b	0.012	0.592^b	0.011	0.486^b	0.021
1[GAME FIRST]	β_4	-0.532	0.011	0.019	0.925	0.080	0.725	-0.022	0.916
$H_0: \beta_1 = \beta_2 = 0$		—	0.477	—	0.580	—	0.806	—	0.194
R^2		0.081	—	0.040	—	0.035	—	0.039	—

Type Of Dilemma		*Life Raft*		*Plane Crash*		*Prisoners Of War*		*Fumes*	
Intercept	β_0	0.237	0.203	-1.685^a	0.000	-0.054	0.794	0.016	0.935
1[AMOUNT<10]	β_1	0.635	0.353	1.499^a	0.001	-0.075	0.922	0.625	0.385
___× AMOUNT	β_2	-0.055	0.606	-0.206^a	0.004	0.031	0.797	-0.047	0.675
1[MALE]	β_3	0.802^a	0.000	0.147	0.294	0.226	0.328	0.526	0.017
1[GAME FIRST]	β_4	-0.180	0.380	0.122	0.379	0.027	0.906	0.051	0.812
$H_0: \beta_1 = \beta_2 = 0$		—	0.410	—	0.012	—	0.897	—	0.388
R^2		0.083	—	0.064	—	0.006	—	0.038	—

Type Of Dilemma		*Spelunkers*		*Soldiers*		*Surgery*		*Derailment*	
Intercept	β_0	-0.776^a	0.000	0.298	0.145	-1.864^a	0.000	-0.311	0.110
1[AMOUNT<10]	β_1	0.276	0.692	-0.050	0.947	0.687^c	0.087	1.002	0.161
___× AMOUNT	β_2	0.001	0.996	0.042	0.719	-0.062	0.323	-0.181	0.105
1[MALE]	β_3	0.861^a	0.000	0.296	0.195	0.373^a	0.002	0.225	0.299
1[GAME FIRST]	β_4	0.230	0.272	-0.278	0.218	-0.056	0.643	0.276	0.197
$H_0: \beta_1 = \beta_2 = 0$		—	0.546	—	0.715	—	0.059	—	0.260
R^2		0.090	—	0.018	—	0.073	—	0.031	—

Type Of Dilemma		*Footbridge*		*Baby*				*Average Score over Dilemma*	
Intercept	β_0	-1.638^a	0.000	-0.991^a	0.000			-0.585^a	0.000
1[AMOUNT<10]	β_1	0.169	0.702	0.716	0.307			0.471	0.180
___× AMOUNT	β_2	-0.026	0.709	-0.086	0.432			-0.048	0.376
1[Male]	β_3	0.023	0.864	0.685^a	0.001			0.452^a	0.000
1[GAME FIRST]	β_4	0.067	0.614	0.172	0.412			-0.002	0.988
$H_0: \beta_1 = \beta_2 = 0$		—	0.928	—	0.535			—	0.247
R^2		0.002	—	0.063	—			0.099	—

Table 3: Regression results; Dependent variable is points of agreement, one for each of the 14 situations. For the model in the bottom right panel, the dependent variable is average points of agreement, across the 14 situations. Superscript a denotes $p < 0.01$, superscript b denotes $p < 0.05$, and superscript c denotes $p < 0.10$. $N = 198$.

and $1[AMOUNT < 10] \times AMOUNT$ are individually and jointly insignificant at the 5% level. In the supplementary material, we show results from an ordered probit regression. We find a gender effect in moral intuitions even when we control for the transferred amount as well. [15]

4 Conclusions

Our contribution is threefold. First, we conducted a questionnaire that allows us to measure consistently moral judgment in fourteen well-studied one-life-for-five-lives situations in which inflicting harm on one person allows many others to escape suffering. We demonstrated systematic gender differences in moral judgment: men are more supportive of the sacrifice than women. Second, we investigated a transfer game in which an advantaged player simply decides the payoff of the disadvantaged player while her payment is held constant. We find that a fifth of the participants transfer less than the maximum, and that men and women behave spitefully in equal proportion. Third, we combined our data on moral judgment with our data on transfer decisions. We find – robustly across several dilemmas, and highly significantly overall – that women approve of a sacrifice less than men even when we control for individual differences in social preferences in our regression analysis.

We elicited participants' moral judgment of an action, not the actual moral action. We emphasize that both aspects – judgment of an action and the action itself – are important. Consider, for instance, a question of judgment: "*Which* life-or-death decisions does our society want to make?". On the contrary, consider now the question: "*Who* do we want to make those decisions?". For instance, society may have to decide on *who* serves in our security forces that tackle terrorist incidences, and *in which way* do we want our forces to tackle those threats to our lives. We believe that more evidence is needed to understand the relationship between moral judgment of an action and actual moral behavior. Our paper is a step in this direction.

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a participant transfers 5 instead of 10, the predicted increase in agreement points is 0.469. If a participant transfers 9 instead of 10 the predicted decrease in agreement points is 0.355. The model predicts an increase in agreement points in 2/3 of the actual cases (transfers).

[15] In the Plane-Crash regression, the controls $[AMOUNT < 10]$ and $1[AMOUNT < 10] \times AMOUNT$ are individually and jointly significant. We argue above that our questionnaire measures a common moral variable. Hence, an explanation about differences between situations could be ad hoc, and capture natural sample variation. If were to explore peculiarities of this situation, one could argue that PLANE-CRASH is an extreme situation in which the utilitarian solution asks for killing of a child. It may be that most people are extremely averse to killing a child, and hence, our moral measure (the triple "bad") may very well be a good predictor for such extreme behavior. Note also while our results show that people are averse to killing a child, in this instance, women are not more averse than men (see Table 2, plane crash, average score for FEMALE -1.4 and for MALE -1.6). The result seems to contradict a stereotype; women supposedly have preference for caring for and protecting someone while they are growing (nurture).

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5 Appendix: Design and Instructions

In each session, participants were asked to answer a **standard questionnaire**. We used the questionaire to elicit demographic information. In addition, participants were required both to play an **experimental game** and to answer a **moral-intuition questionnaire**. Below we present the paper instructions (subsection 1), describe the instructions displayed on the participants' computer screens (subsection 2), and present the moral-intuition questionnaire (subsection 3). Sentences in brackets were not part of the instructions but rather descriptions of what happened.

5.1 Instructions On Paper

You are taking part in an experiment in which you can earn money. Your gains may depend on the decision made by another participant. Before we begin we would like you to answer a few standard questions concerning your age, education, profession, etc.. These questions will help us to get to learn something about your characteristics. Your identity and your monetary gains will remain confidential and anonymous.

[Participants filled out the standard questionnaire.]

Thank you for answering the questions.

What happens in the Session

The experiment consists of two separate parts. In **Part 1** your payment in the session will be determined. In **Part 2** you will be asked to answer questions that will allow us to learn more about you. Further instructions will be displayed on your screen before the beginning of each part.

Payment of your earnings

Your total payment will the payoff you earn in Part 1 and a bonus of 5 Euros for completing the session. Payments are made individually and in cash.

You are not allowed to talk during the experiment. Participants who violate this rule will be excluded from the experiment and payments. It is important that you perfectly understand the rules of this experiment. Should you have any questions, please raise your hand.

Thank you again for your participation.

5.2 Computer Screen

[Experimental Game: Information on the First Screen]

In this part of the experiment, your additional payment will be determined. The game has two players: player A and player B. **Only player A makes a decision, and this decision**

affects player B's payoff only. You will be paired randomly with another participant. You will then be asked about the decision you would make as player A. Finally, **at the end of the experiment, a random draw will determine your actual role** in the pair. If you are player A, your decision will determine the other group member's payoff. If you are player B, your payoff will be determined by player A.

[Experimental Game – Information on the Second Screen]

The game is played by two persons, player A and player B, and runs as follows. Player A's payoff is fixed and equals 10 Euros. Player A decides about player B's payoff. More precisely, player A selects an amount between 0 and 10 Euros which is then attributed to player B. Player A's choice does not affect her own payoff. Player B makes no decision and her payoff corresponds to the amount determined by player A.

Suppose that you are player A. What amount would you like to give to player B?

[Participants entered amount using the computer's keyboard.]

5.3 Moral-Intuitions Questionnaire

In this part of the session, we ask you to answer a few questions. The answers will enable us to learn about some of your personal characteristics. We remind you that we are not able to link your answers with your identity.

[Participants used a computer mouse to tick the appropriate box on a scale of-2, -1, 1, 2. The leftmost box represents the strongest disagreement and the rightmost box corresponds to the highest agreement.

1. Submarine

You are the captain of a small military submarine traveling underneath a large iceberg. An on-board explosion has dramatically decreased the oxygen supply and has injured a member of the crew. He may die from his injuries. The remaining oxygen is not sufficient for the entire six-man crew to make it to the surface. If you shoot the injured crew member, there will be just enough oxygen for everyone else to survive.

In this situation, would you shoot the crew member?

2. Trespassers

You and a group of friends are backpacking, and while crossing a rocky plain in the Guatemalan highlands, you inadvertently camp on a local clan's burial ground. The leader of the clan says that his clan's laws command him to kill all six of you as a sacrifice to the gods, but that if you kill one of your own, the gods will be appeased, and the rest will be let go.

In this situation, would you kill one of your friends?

3. Hostages

You are traveling with five other peace advocates in a war-torn country when your group is taken hostage by a group of terrorists. After a week, the terrorists' demands have not been met, and they offer you a choice: either they will kill all of you, or if you execute one of your fellow hostages, you and the others will be free to go.

In this situation, would you execute one of your fellow hostages?

4. Bystander

In the path of a runaway train car are five railway workmen who will surely be killed unless you, a bystander, do something. If you flip a switch, the train will be diverted onto another track, where it will kill a single railway workman.

In this situation, would you flip the switch?

5. Life Raft

You are on a small ship, a fire breaks out, and the ship has to be abandoned. Because your tiny life raft is carrying more than its capacity, it is sitting dangerously low in the water. The seas get rough and the raft begins to fill with water. Unless you do something, all six of you will drown. There is an injured person on board who may die either way. If you throw him overboard, everyone else will be saved.

In this situation, would you throw him overboard?

6. Plane Crash

Your plane has crashed in the Himalayas. The only survivors are you, some other men, and a young boy. The six of you travel for days, battling extreme cold and wind. Your only chance of survival is to make it to a village a few days away. The boy cannot move very quickly. Without food, you and the other men will surely die. One of the men suggests killing the boy and eating his remains over the next few days.

In this situation, would you sacrifice the boy?

7. Prisoners of War

You and some other soldiers were captured. After a year in a prison camp, your group tried to escape but was caught. The warden has decided to hang your group in front of the other prisoners of war. At the gallows, he releases the noose from your neck and announces that if you pull the chair from underneath one man in your group, the remaining five will be set free; otherwise you all die. He means what he says.

In this situation, would you remove the chair?

8. Fumes

You are the late-night watchman in a hospital where an accident has occurred in one of the on-site testing labs, and now there are deadly fumes rising up through the hospital's ventilation system. The fumes are headed to a certain area where there are five patients who

will surely die. If you flip a switch, the ventilation system will cause the fumes to bypass this room and enter a room containing a single patient, killing him.

In this situation, would you flip the switch?

9. Spelunkers

You and five others are exploring a seashore cave. A rock falls and blocks your exit. The tide is rising. You spot a hole elsewhere and let a large man in your group out first. He gets stuck, and unless you get out soon, everyone but this man (whose head is sticking out of the cave) will drown. You have a stick of dynamite that will not move the rock, but will blast the man out of the hole. He does not want to die; neither do you or the others.

In this situation, would you blast him out?

10. Soldiers

You are leading a group of soldiers returning from a completed mission in enemy territory when one of your men steps in a trap. He is injured, and the trap is connected to a device that alerts the enemy to your presence. If the enemy finds your group, all six of you will die. If you leave him behind, he will be killed, but the rest of the group will escape safely.

In this situation, would you leave him behind?

11. Surgery

You are a surgeon with a number of patients. Five of them need organ transplants. Each of them needs a different organ or they will surely die. You have another patient who is healthy and would be an ideal organ donor for the others. If you transplant his organs (against his will) into the bodies of the other patients, they will live but he will die.

In this situation, would you perform this transplant?

12. Derailment

In the path of a runaway train car are five railway workmen who will surely be killed unless you, a bystander, do something. If you flip a switch, the train will be diverted onto a set of tracks in need of repair. The train will be derailed and go down a hill, across a road, and into a man's yard. The owner, sleeping in his hammock, will be killed.

In this situation, would you flip the switch?

13. Footbridge

In the path of a runaway train car are five railway workmen who will surely be killed unless you, a bystander, do something. You are standing next to a larger stranger on a pedestrian walkway that arches over the tracks. Your body would be too light to stop the train, but if you push the stranger onto the tracks, killing him, his large body will stop the train.

In this situation, would you push the man?

14. Baby

Enemy soldiers have taken over your village and will kill all remaining civilians. You and five others are hiding in the cellar of a large house. Soldiers have come to search the house for valuables. A baby in your group begins to cry. So, you cover her mouth, but she cannot breathe. If you remove your hand, the baby can breathe, but her crying will summon the soldiers who will kill everyone in the cellar.

In this situation, would you smother the baby?

[Participants were thanked for their participation and paid in private.]

Supplementary Material

1. In the supplement, we show a second set of regression results. In the ordered logit regression, we revisit our original set of explanatory variables; indicator variable $1[MALE]$ that is 1 for males and 0 for females (β_3), $1[AMOUNT < 10]$, that is 1 if the participant chose to transfer less than 10 and 0 otherwise (β_1), $1[AMOUNT < 10] \times AMOUNT$ (β_2), and $1[GAME\ FIRST]$ if the game was followed by the questionnaire, and 0 otherwise (β_4). The analysis supports Finding 5 (Gender Effect on Intuitions). We find a gender effect in moral intuitions even when we control for the transferred amount. In 9 out of 14 situations, the male indicator variable is significant at the 5% level.

		est.	p	***est.***	p	***est.***	p	***est.***	p
Type of Dilemma		*Submarine*		*Trespassers*		*Hostages*		*Bystanders*	
1[AMOUNT<10]	β_1	0.913	0.274	1.194	0.150	0.247	0.758	-0.132	0.876
____× AMOUNT	β_2	-0.169	0.195	-0.168	0.209	0.010	0.938	0.071	0.583
1[MALE]	β_3	0.752	0.005	0.681	0.014	0.611	0.020	0.759	0.005
1[GAME FIRST]	β_4	-0.677	0.009	0.101	0.711	0.135	0.599	-0.020	0.938
Cutoff 1		-1.613		0.553		-0.191		-1.475	
Cutoff 2		-0.332		1.627		0.780		-0.416	
Cutoff 3		1.204		2.785		1.803		1.006	
$H_0: \beta_1 = \beta_2 = 0$		—	0.414	—	0.350	—	0.605	—	0.537
pseudo-R^2		0.032	—	0.069	—	0.012	—	0.016	—

Type Of Dilemma		*Life Raft*		*Plane Crash*		*Prisoners Of War*		*Fumes*	
1[AMOUNT<10]	β_1	0.684	0.431	2.342	0.015	-0.029	0.973	0.620	0.461
____× AMOUNT	β_2	-0.008	0.954	-0.293	0.060	0.022	0.873	-0.037	0.781
1[MALE]	β_3	1.057	0.000	0.480	0.129	0.293	0.256	0.705	0.008
1[GAME FIRST]	β_4	-0.273	0.300	0.389	0.213	0.058	0.821	0.069	0.787
Cutoff 1		-1.469		1.421		-0.929		-1.054	
Cutoff 2		-0.255		3.094		0.022		-0.098	
Cutoff 3		0.997		3.854		1.226		1.327	
$H_0: \beta_1 = \beta_2 = 0$		—	0.168	—	0.032	—	0.938	—	0.418
pseudo-R^2		0.036	—	0.032	—	0.003	—	0.016	—

Type Of Dilemma		*Spelunkers*		*Soldiers*		*Surgery*		*Derailment*	
1[AMOUNT<10]	β_1	0.315	0.718	0.037	0.962	1.833	0.091	1.291	0.126
____× AMOUNT	β_2	-0.003	0.985	0.016	0.896	-0.227	0.215	-0.226	0.087
1[MALE]	β_3	1.070	0.000	0.406	0.120	1.123	0.003	0.273	0.295
1[GAME FIRST]	β_4	0.286	0.267	-0.324	0.210	0.130	0.712	0.317	0.217
Cutoff 1		-0.378		-1.237		2.108		-0.869	
Cutoff 2		0.920		-0.462		3.618		0.284	
Cutoff 3		2.333		0.841		4.559		1.840	
$H_0: \beta_1 = \beta_2 = 0$		—	0.628	—	0.899	—	0.173	—	0.227
pseudo-R^2		0.034	—	0.007	—	0.046	—	0.011	—

Type Of Dilemma		*Footbridge*		*Baby*	
1[AMOUNT<10]	β_1	0.956	0.388	1.018	0.225
____× AMOUNT	β_2	-0.188	0.318	-0.114	0.375
1[Male]	β_3	0.145	0.668	0.816	0.002
1[GAME FIRST]	β_4	0.272	0.418	0.069	0.790
Cutoff 1		1.385		-0.023	
Cutoff 2		2.705		1.069	
Cutoff 3		3.859		2.457	
$H_0: \beta_1 = \beta_2 = 0$		—	0.599	—	0.390
pseudo-R^2		0.007	—	0.022	—

Table 4: Ordered Logit regression results; Dependent variable is points of agreement, one for each of the 14 situations. For the model in the bottom right panel, the dependent variable is average points of agreement, across the 14 situations. Superscript a denotes $p < 0.01$, superscript b denotes $p < 0.05$, and superscript c denotes $p < 0.10$. $N = 198$.