



# Moral values and increasing stakes in a dictator game



Uta K. Schier<sup>a,c,\*</sup>, Axel Ockenfels<sup>a,c</sup>, Wilhelm Hofmann<sup>b,c</sup>

<sup>a</sup> Department of Economics, University of Cologne, Albertus-Magnus-Platz, 50923 Cologne, Germany

<sup>b</sup> Social Cognition Center Cologne, University of Cologne, Richard-Strauss-Str. 2, 50931 Cologne, Germany

<sup>c</sup> Center for Social and Economic Behavior (C-SEB), University of Cologne, Germany

## ARTICLE INFO

### Article history:

Received 25 September 2015

Received in revised form 2 June 2016

Accepted 7 June 2016

Available online 15 June 2016

### JEL classification:

C72

D03

D63

### PsycINFO classification:

2340

2360

### Keywords:

Fairness

Morality

Dictator game

## ABSTRACT

Using data from a large representative US sample ( $N = 1519$ ), we compare hypothetical moral fairness values from the Moral Foundations Sacredness Scale with actual fairness behavior in an incentivized dictator game with either low or high stakes. We find that people with high moral fairness values fail to live up to their high fairness standards, when stake size increases. This violates principles from consistency theories according to which moral values are supposedly aligned with moral behavior, but is in line with temptation theories that question the absoluteness of morality values.

© 2016 Elsevier B.V. All rights reserved.

## 1. Introduction

One topic that economist as well as psychologist are increasingly interested in is self-control in face of everyday temptations. Exercising self-control is not only relevant for health and nutrition decisions but also for retirement plans, education, and all investment decisions in which long-term preferences may be suppressed in favor of short-term gratifications (e.g., Achtziger, Alós-Ferrer, & Wagner, 2016; DellaVigna, 2009; Duckworth & Seligman, 2005; Meier & Sprenger, 2010; Moffitt et al., 2011; Sutter, Kocher, Glaetzel-Ruetzler, & Trautmann, 2013). Temptation in this context describes all situational cues that might prompt decision makers to temporarily disregard their long-term preferences. To understand successful resistance to temptations, the question arises whether people with strong moral convictions are better equipped to overcome temptations and whether moral values can be a self-control device. Do they steer behavior and can they have a buffering effect against temptation?

To study these questions, we analyze data from a probability-based web panel of 1519 US citizens, designed to be representative of the US. These data come from the “Measuring Morality Survey”, collected from Duke University in 2013, and

\* Corresponding author at: Department of Economics, University of Cologne, Albertus-Magnus-Platz, 50923 Cologne, Germany.

E-mail addresses: [schier@wiso.uni-koeln.de](mailto:schier@wiso.uni-koeln.de) (U.K. Schier), [ockenfels@uni-koeln.de](mailto:ockenfels@uni-koeln.de) (A. Ockenfels), [wilhelm.hofmann@uni-koeln.de](mailto:wilhelm.hofmann@uni-koeln.de) (W. Hofmann).

have so far been published in methodological research, in the context of voting behavior or prosocial behavior and income inequality (Johnson et al., 2014; Miles, 2014; Miles & Vaisey, 2015; Vaisey & Miles, 2014; Côté, House, & Willer, 2015; Padilla-Walker & Jensen, 2015; Piff, Dietzke, Feinberg, Stancato, & Keltner, 2015). The survey includes a variant of the dictator game. Specifically, dictators were endowed with 10 “tickets” and were asked how many tickets they are willing to share with an anonymous co-player. Tickets could be submitted to an online raffle with either a prize of \$10 or \$500, depending on the treatment (the total number of distributed tickets was unknown to participants). At the same time, the survey also includes a variety of psychological morality tests. In our analyses, we will focus on moral concerns regarding fairness and thus on the *fairness/reciprocity* subscale of the Moral Foundations Sacredness Scale, which we will refer to as “*moral fairness*” (Graham & Haidt, 2012).<sup>1</sup>

To analyze fairness behavior of moral people in face of temptation, we will examine the following three research questions: (i) Is self-reported moral fairness reflected in more prosocial behavior in a dictator game? (ii) Does temptation in terms of high financial stakes decrease giving in a dictator game? (iii) Can high moral values buffer against the effects of temptation in high stakes situations? We find that participants harboring strong moral fairness values are on average more willing to share their endowment with an unknown co-player. However, participants with high moral fairness values fail to control themselves in face of high temptation: An increase in stake size from \$10 to \$500 reduces sharing to a greater extent for participants with high moral fairness values than for subjects with low moral fairness values. In particular, we find that people that claim they would never behave unfairly, “*not for a million dollars*”, fail to live up to this claim in an actual dictator game, when the stake size increases to \$500. This suggests that moral values are not absolute, and that people seem to underestimate the power of temptations.

## 2. Background and hypotheses

### 2.1. Previous evidence on stake size effects in dictator games

Behavioral economists have used dictator games for over two decades to study prosocial behavior (Forsythe, Horowitz, Savin, & Sefton, 1994). In the most common version of the game, the dictator receives an initial endowment of \$10 and is asked what amount he is willing to share with an anonymous co-player. Usually, laboratory experiments reveal that only about 30% of dictators keep all of their money, whereas the rest is willing to share their money with the recipient. These results seem quite robust across different contexts, including experiments that were conducted with children (Fehr, Bernhard, & Rockenbach, 2008) or in small-scale societies (Henrich et al., 2001).

That said, it has been found that changing the stake size can affect generosity. Several studies testing an increase in stake size from \$10 to \$100 (Carpenter, Verhoogen, & Burks, 2005) and \$20 to \$100 (List & Cherry, 2008) find a slight shift toward relatively less generous offers by dictators but cannot confirm these changes to be statistically significant. However, a recent meta-study comprising 131 experimental papers on dictator games shows that increasing the stake size reduces the dictator's generosity in relative terms (Engel, 2011).<sup>2</sup> In a study of purely hypothetical decisions, Novakova and Flegr (2013) find the same effect such that dictators tend to reduce their relative proposed share as stake size increases. Similarly, Blake and Rand (2010) found evidence that higher stakes decrease generosity in dictator games with children, when they play with low versus high valued stickers.

In addition, the discussion about stakes in dictator games also evolved around the question of how behavior changes between hypothetical and financially incentivized decisions, for the same cake size. For instance, Forsythe et al. (1994) were the first to report that for a given cake size dictators are less generous in an incentivized context than in a hypothetical context. Similar results were confirmed by Camerer and Hogarth (1999) who reviewed 74 experimental papers and found higher generosity of dictators in hypothetical games with no incentives. Moreover, Ockenfels (1998) found in his experiment that actually paying subjects does not affect average generosity in dictator games compared to hypothetical choices, but leads to ‘less round’ money amounts given to recipients (utilizing an objective measure of the roundness of the data based on the prominence structure of the decimal system). The higher occurrence of less prominent outcomes seems to suggest that monetary incentives trigger more complex decision processes. Camerer and Hogarth (1999), too, argue that higher incentives might not change behavior substantially on average but reduce variance in responses. Overall, the effect of stake size turns out to be rather mixed, although there is a tendency of reduced relative generosity with higher stake size. In our study, we extend this line of research and study how not only social behavior in the dictator game but also moral fairness values interact with stake size. The next subsection reviews two lines of literature that guide us when formulating our hypotheses.

### 2.2. Consistency theories vs. temptation theories

There are at least two competing families of models addressing how moral values can guide social behavior: consistency theories and temptation theories. Consistency theories propose that people align values with behavior to appear more con-

<sup>1</sup> Indeed, as it will become clear in Section 4, we argue that it is a moral concept of fairness that influences social behavior and drives our results.

<sup>2</sup> Evidence from the ultimatum game more robustly finds a decrease in generosity with higher stake size (e.g., Andersen, Ertaç, Gneezy, Hoffman, & List, 2011).

sistent to others and to themselves. This line of reasoning includes, for instance, Heider's (1946) balance theory, Osgood and Tannenbaum's (1955) congruity theory, and Ajzen and Fishbein's (1980) theory of planned behavior. These theories suggest that people aim for consistency between moral values and actual behavior. For this, they either adapt their moral values to reflect their previous behavior, or behave in a way consistent with previously stated moral values. As such, consistency theories suggest a strong relationship between people's moral values and their allocation behavior in the dictator game. Such a relationship can take the form of a buffering effect such that being reminded of or deliberating and deciding about one's moral values may act as a pre-commitment device for subsequent tempting situations (Aquino, Freeman, Reed, & Lim, 2009). In sum, consistency theories would predict that people who have expressed strong moral fairness values "on paper" should be better protected against the lure of temptation when stake size increases than those who have expressed weak moral fairness concerns.

In contrast, temptation theories like the moral hypocrisy theory by Batson, Kobrynowicz, Dinnerstein, Kampf, and Wilson (1997) propose that people often have moral standards which they aim to achieve but might fail to adhere to in the face of temptation. Rustichini and Villeval (2014) present experimental evidence on moral hypocrisy by measuring fairness judgments of allocation games, and a week later actual allocation decision and the same fairness judgments again. They find that people retrospectively justify a selfish decision by adjusting their previously stated perceived norm of fairness. This adjustment of moral judgment is larger in games without strategic consequences or more bargaining power, i.e. dictator games compared to ultimatum games (Rustichini & Villeval, 2014). Similarly, Lönnqvist, Irlenbusch, and Walkowitz (2014) find laboratory evidence on moral hypocrisy in dictator games which they suggest is driven rather by a desire to appear moral rather than by self-deception (see also Ockenfels & Werner, 2014a, 2014b). Likewise, there is a concordant literature in psychology on such biases of motivated reasoning (i.e., arriving at desired conclusions) attesting to Hume's famous dictum that reason may often be the "slave" of passion (e.g., De Witt Huberts, Evers, & De Ridder, 2014; Kunda, 2000). These theories of motivated reasoning as well as contemporary models of temptation and self-control (e.g., Kotabe & Hofmann, 2015) assume that the outcome of conflicting motivational dilemmas such as between selfish and prosocial motives would depend, among other things, on the strength of the temptation: As temptation increases, so does the desire to arrive at a particular conclusion—the conclusion that indulging in temptation in this moment, would, somehow, be justified, earned, or constitute an important exception (De Witt Huberts et al., 2014; Kivetz & Simonson, 2002). Moreover, when being in a "cold" state, people may seriously underestimate how they would react in the "heat" of the moment, that is, when faced with strong temptation that may affect their senses and occupy their minds more strongly than predicted, contributing to inconsistencies between values/intentions and actual behavior (Kavanagh, Andrade, & May, 2005; Loewenstein, 1996; Nordgren, van Harreveld, & van der Pligt, 2009). In support, a study on everyday temptations finds that, in spite of people's stated self-control goals, people often fail to resist temptation, but especially so when desire strength for the temptation is strong (Hofmann, Baumeister, Foerster, & Vohs, 2012). In sum, temptation theories incorporate the idea that strong temptation may lead people to temporarily revise their intentions in a way that promotes indulgence, leading to the phenomenon of weakness of will (Holton, 2009). In light of these converging lines of evidence and our own prior findings regarding desire strength (Hofmann et al., 2012), we expected to find evidence for stronger inconsistencies between stated moral fairness judgments and actual fairness behavior in a dictator game as temptation (i.e., stake size) increases.<sup>3</sup>

In this paper, we examine how stated moral fairness values correlate with actual fairness behavior, and how they interact with stake size. Based on the two families of theories reviewed above, we raise the question of whether people reporting strong moral fairness values behave more consistently with those values than people with weak moral fairness values when stake size increases.

### 2.3. Measurement of moral fairness: The Moral Foundations Sacredness Scale ("MFSS")

To understand how moral principles might motivate behavior, Graham and Haidt (2012) developed the Moral Foundations Sacredness Scale (MFSS). The MFSS offers a map of the moral space, with sacredness as protected moral value. These protected moral values are in a sense absolute and should not be traded off for money (Ritov & Baron, 1999). Graham and Haidt (2012) studied this absolute morality partly to understand how morality can potentially motivate idealistic violence. For that matter, morality is defined as the sets of values, virtues, norms, practices, identities, institutions, technologies, and psychological mechanisms that regulate selfishness and guide social life (Graham & Haidt, 2012). As such, morality and in particular absolute morality are concepts that deviate from the standard economic perspective of rational, self-interested agents (see Roth, 2007, for a broader economics approach).

In this context, the MFSS aims to measure five innate, psychological foundations on which culturally different moralities can evolve: harm/care, fairness/reciprocity, in-group/loyalty, authority/respect, and purity/sanctity. In addition, attitudes toward non-moral values are included, to control for unpleasant outcomes that are not relevant to morality. Thus, compared to other morality measures, Graham and Haidt (2012) suggest that the MFSS triggers an intuitive response, as well as activates deliberative reasoning.

Each foundation is measured with three to four items, depending on the short or long version of the scale, and are presented in random order without foundation labels. For instance, to quantify the subscale fairness/reciprocity (which we will

<sup>3</sup> We will comment on the relationship to the social preferences literature in economics in our concluding section.

use as our “moral fairness” measure), participants have to answer for which amount of money they would be willing to “cheat in a game of cards played for money with some people you don’t know well” (Item 1) and “throw out a box of ballots, during an election, to help your favored candidate win” (Item 2) and “sign a secret-but-binding pledge to only hire people of your race in your company” (Item 3). Responses for each item are given on an 8-point scale, from “\$0 (I’d do it for free)”, then “\$10” and increasing numbers by a factor of 10, up to “\$1 million dollars or more”, and the final option of “never for any amount of money”. Additionally, participants could refuse an answer. Subscales for each foundation are measured by the average score across items. Typically, the internal consistencies are relatively low, around 0.64, indicating broad constructs in line with the idea that the items grasp moral attitudes for a range of topics, from nation, to family or club identity (Graham & Haidt, 2012).

## 2.4. Hypotheses

Our research question in this paper is to examine how stake size moderates the effect of strong moral judgments on fairness behavior. In particular, we are interested in how people with strong moral values behave in a dictator game, when stake size increases. For this, we predict, based on previous research, that increasing stake size in a dictator game reduces the willingness to share an endowment with others. Thus, our first hypothesis is:

**Hypothesis 1 (stake size main effect).** Higher stake size in a dictator game decreases giving (as measured by the number of tickets, out of ten, given).

Second, we assume that people with strong moral foundations in fairness are generally more altruistic and will be more willing to share their endowment with an unknown co-player.

**Hypothesis 2 (moral fairness concerns main effect).** Giving in a dictator game increases along the moral fairness (MFSS fairness/reciprocity) dimension.

**Hypothesis 2** is crucial for showing that hypothetical statements made on the MFSS fairness/reciprocity dimension are not cheap-talk but, in fact, do signal a type of people behaving fairer in a dictator game. Hence, Hypothesis 2 is an essential precondition for **Hypothesis 3**.

Based on the previous two hypotheses, **Hypothesis 3** is then concerned with the interaction effect between stake size and moral fairness values. We investigate whether stake size moderates how people with different moral foundations behave in a dictator game. Are people harboring strong moral fairness values better at resisting financial temptation? Contradictory to previously discussed consistency theories of moral behavior, we expect that strong moral foundations can lead to moral inconsistencies. Therefore, we propose that people with strong moral fairness values fail to control behavior, when temptation increases:

**Hypothesis 3 (stake size  $\times$  moral fairness concerns interaction).** According to temptation theories, we expect that people reporting high moral fairness values behave relatively less fair in a high stakes dictator game, compared to people with lower moral fairness values. Alternatively, consistency theories would predict no difference in behavior across varying stake size scenarios between people with high moral fairness values and people with lower moral fairness values.

## 3. Methods

We used data from a large representative sample of 1519 US adults, collected for the “Measuring Morality Survey” by the Kenan Institute for Ethics of the Duke University in 2012. Subjects were randomly selected from a GfK panel and invited by e-mail to participate in an online survey.<sup>4</sup> The study comprised several psychological tests on morality, including a reduced version of the MFSS, and a dictator game. All tests were presented in a randomized order.

The dictator game was manipulated with either a low stakes condition (\$10) or a high stakes condition (\$500), to which participants were randomly assigned. 772 subjects were assigned to the \$10 stake size condition, 747 participants to the \$500 stake size condition. They all received an initial endowment of 10 tickets and were asked how many tickets they are willing to share with an anonymous co-player. All participants were playing the dictator role but were made believe that every other, alternate participant is the receiver. Specifically, odd subjects were told that even subjects are receivers, and vice versa. Although such deception would be widely unacceptable for economic experiments, we suggest it does not impair our results, since participants had no reason to doubt that every second player (odd or even) is a receiver and had no chance of communicating with each other.<sup>5</sup> We also emphasize that the data were neither collected by economists nor in an economics laboratory, and thus this study does not threaten the reputation for a no-deception policy that economics laboratories are committed to.

Tickets could be used as entry tickets to an online raffle that subjects automatically entered at the end of the survey. Within their assigned treatment group, subjects had a 0.13% chance of winning the prize of either \$10 or \$500 but this

<sup>4</sup> More detailed information on the study and access to the data: <http://kenan.ethics.duke.edu/attitudes/resources/measuring-morality/>.

<sup>5</sup> In fact, if at all, the participants in the survey were on average more social than what is found in a typical laboratory experiment (Engel, 2011). E.g., only 13% of all participants decided to give nothing, and 54% chose the equal split.

was not known to subjects. 21 out of 1519 participants refused to decide and their answer was coded as missing value. On the MFSS, 13 out of 1519 subjects refused to give any answer.

## 4. Results

In this section, we present results following our three main hypotheses. Then, we discuss our findings, and finally present additional robustness checks.

### 4.1. Stake size

Fig. 1 shows the distributions of tickets given for both stake size treatments.<sup>6</sup>

As predicted by Hypothesis 1, we find a strong effect of stake size on the dictator's decision. Overall, participants in the low stakes condition shared significantly more tickets ( $M = 4.52$ ;  $SD = 2.46$ ) than participants in the high stakes condition ( $M = 3.95$ ;  $SD = 2.48$ ;  $t = 4.46$ ,  $df = 1,496$ ,  $p < .001$ ).<sup>7</sup> That is, consistent with the literature, we find that an increase in stake size tends to reduce generosity in relative terms but to increase generosity in absolute terms.

### 4.2. Moral fairness

As predicted by Hypothesis 2, results from the Morality Foundation Sacredness Scale (MFSS) demonstrate that people with high moral fairness values contribute more in a dictator game. In general, participants in the survey stated relatively strong moral fairness foundations, with a mean of 7.26 ( $SD = 1.26$ ) on an 8pt Likert scale with a score of 8 representing the highest moral fairness (Cronbach's  $\alpha = .71$ ).

As for the moral fairness (fairness/reciprocity) dimension, we also tested a base regression model with *giving* in the dictator game as outcome variable and the MFSS *moral fairness* values as predictor variable. *Moral fairness* scores had a significant, positive influence on *giving* in the dictator game ( $B = 0.36$ ,  $p < .001$ ).<sup>8</sup> This confirms that, on average, people stating high *moral fairness* values on the MFSS do behave more prosocially in a dictator game.

### 4.3. Interaction between stake size and moral fairness

To test Hypothesis 3 and the interaction effect between moral fairness concerns and stake size on fairness behavior, we conducted a moderated regression analysis using centered continuous predictors. In the overall model, we included *stake size* and *moral fairness* as predictors for the outcome variable *giving*, including the *interaction* effect between stake size and moral fairness following the procedure recommended by Aiken and West (1991). *Stake size* was modeled as a dummy variable for the low and high stakes conditions, with low stake size as baseline (i.e., coded 0). The remaining four moral foundations *harm*, *loyalty*, *authority* and *purity* were included as covariates, centered on their mean, as statistical control.

The outcome of this moderated regression model is depicted in Table 1. The estimated allocation decisions for the low and high stakes condition are plotted in Fig. 2 across a meaningful range of moral fairness scores ranging from 6 to 8 on the scale for presentational purposes (these values encompass 87% of the range of participants' moral fairness scores).<sup>9</sup> The central interaction was significant ( $B = -0.24$ ,  $p = .017$ ), indicating that the impact of moral fairness concerns on more prosocial allocation decisions declines with increasing stake size. Accordingly, simple slope analyses showed that whereas there was a highly reliable effect of moral fairness concerns in the low stakes condition ( $B = 0.32$ ,  $p < .001$ ), the effect was not significantly different from zero in the high stakes condition ( $B = 0.08$ ,  $p = .345$ , see Fig. 2).

Further analysis showed that this significant interaction effect between moral fairness and stake size was independent of the covariates. Even in a model excluding the covariates *harm*, *authority*, *loyalty* and *purity*, the interaction effect remained significant ( $R^2 = .04$ ,  $p = .022$ ). Moreover, none of these variables interacted with stake size (all  $p > .128$ ). Similarly, the interaction effect survived in a model including *non-morality* as covariate. *Non-morality* is the sixth subscale of the MFSS, suggested to measure extreme attitudes of participants that are independent of moral concerns (Graham & Haidt, 2012). However, even with *non-morality* as covariate in the model, the interaction effect remained significant.<sup>10</sup>

### 4.4. Discussion

We found that the interaction effect is mostly driven by responses on Item 1 (MFSS1) of the moral fairness dimension. Item 1 asked whether respondents would cheat in a game of cards played with some people they do not know well. Running

<sup>6</sup> See Table S1 in the Supplementary Material for a descriptive summary of the number of tickets given in the dictator game by reported moral fairness values and by stake size.

<sup>7</sup> Mann-Whitney  $U$  test;  $p < .001$ .

<sup>8</sup> Kruskal-Wallis test:  $\chi^2 = 54.28$ ,  $p < .001$ .

<sup>9</sup> This is a meaningful range because the distribution of moral fairness is left-skewed.

<sup>10</sup> This holds for a model with only *non-morality* as covariate ( $R^2 = .04$ ; *non-morality*  $p = .67$ ; *interaction*  $p = .03$ ), as well as for a model including all other MFSS subscales and *non-morality* as covariate.

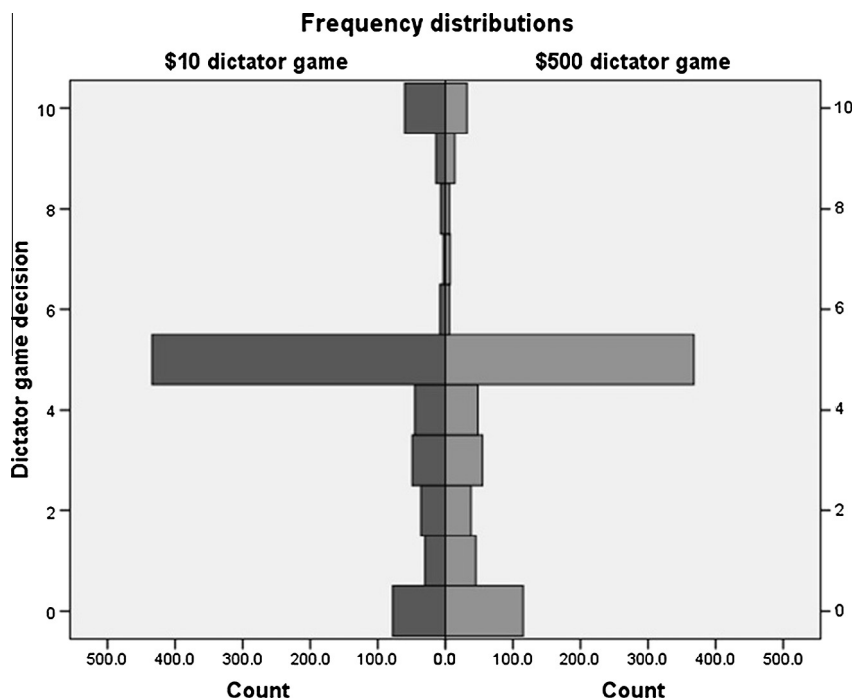


Fig. 1. Distribution of giving in the dictator game by stake size ( $N = 1498$ ).

Table 1

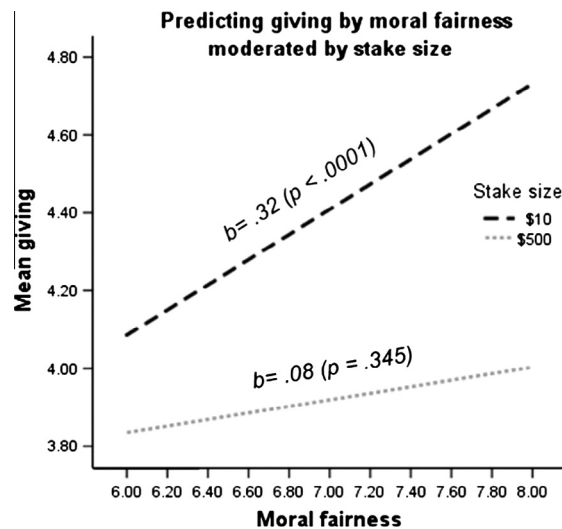
Moderated regression with giving as outcome variable, moral fairness (MFSS) as predictor and stake size scenario as moderator.

Regression summary						
	<i>R-sq</i>	<i>F</i>	<i>df1</i>	<i>df2</i>	<i>p</i>	<i>n</i>
	0.04	8.87	7	1480	.000	1488
			<i>b</i>	<i>se</i>	<i>t</i>	<i>p</i>
Constant			4.05	0.67	6.04	.000
Stake size (baseline = low)			−0.55	0.13	−4.35	.000
Moral fairness			0.32	0.09	3.78	.000
Interaction (moral fairness * stake size)			−0.24	0.10	−2.39	.017
Harm			−0.07	0.09	−0.75	.453
Loyalty			0.01	0.07	0.17	.866
Authority			0.10	0.05	1.94	.052
Purity			0.03	0.05	0.05	.585
Conditional effect of focal predictor at values of the moderator variable						
	<i>b</i>	<i>se</i>	<i>t</i>	<i>p</i>	<i>LLCI(b)</i>	<i>ULCI(b)</i>
Stake size						
High (\$500)	.08	.09	0.95	.345	−.09	.26
Low (\$10)	.32	.09	3.78	.000	.16	.49

the moderated regression on predicting the dictator's decision only with *item1*, *stake size* and their interaction effect resulted in a significant interaction effect ( $B = -0.176$ ,  $p = .01$ ). In contrast, models with Item 2 or Item 3 yielded interaction effects with stake size that were not significant at the conventional level of  $p = .05$  (Item 2:  $B = -0.089$ ,  $p = .324$ ; Item 3:  $B = -0.164$ ,  $p = .071$ ). Item 2 described moral fairness behavior with respect to cheating in an election to help the favored candidate win, whereas Item 3 described moral fairness with respect to discriminating people of different race.

In addition, the interaction effect is driven by absolute moralists, defined as participants that reported the highest possible value on each of the three *moral fairness* items MFSS1, MFSS2, and MFSS3. This applied to 57% of subjects in the survey (867 out of 1519). These subjects believed they would never behave unfairly, “not for a million dollars” but failed to behave consistently when stake size increases from a \$10 to a \$500 pie (mean tickets shared = 4.94 in low stakes scenario, mean = 4.13 in high stakes scenario). More specifically, the stake size effect observed in [Hypothesis 1](#) also holds, when we only consider absolute moralists ( $t = 4.98$ ,  $p < .001$ ; Mann–Whitney  $U$  test:  $p < .001$ ). In contrast, for relative moralists stake size did not significantly influence their decision in the dictator game ( $t = 0.88$ ,  $p = .378$ ; Mann–Whitney  $U$  test:  $p = .272$ ). In other words, participants with high moral fairness scores were comparatively more sensitive to financial temp-





**Fig. 2.** Interaction effect between moral fairness values (MFSS) and stake size on mean giving in a dictator game, for moral fairness scores between 6 and 8 (87% of data).

tation. Similarly, in line with intuition, moral fairness scores drive generosity in the dictator game more strongly for absolute moralists than for relative moralists.<sup>11</sup> These findings strongly suggest that the interaction effect is mostly driven by absolute moralists. And indeed, considering only relative moralists for the moderated regression, the interaction effect disappears.<sup>12</sup> This implies that our results are driven by absolute moralists who fail to behave consistently when temptation increases. In line with temptation theories (but inconsistent with consistency theories), our results therefore suggest that participants with higher moral fairness values behave relatively less fair in a high stakes scenario than subjects with lower moral fairness values.

Moreover, we considered a double-hurdle model, assuming that the question to share or not to share in a dictator game is different from the question of how much to share, conditional on having decided to share something (McDowell, 2003).<sup>13</sup> For this, the decision to give in a dictator game was modeled as a two-step process: The decision to give or not to give was constructed as a binary probability model using a probit regression. Whereas the decision of how much to give, conditional on a positive contribution, was modeled as a truncated-at-zero OLS model following a Poisson process. The probit model (*LR Chi-Square test* = 27.74,  $p < .0001$ ) suggested that moral fairness values predict the dictator's decision to give something or keep everything ( $B = 0.16$ ,  $p < .001$ ), but stake size and the interaction effect between moral fairness and stake size were not significant predictors (stake size:  $B = 0.34$ ,  $p = .424$ ; interaction effect:  $B = -0.09$ ,  $p = .149$ ). In addition, the truncated Poisson model revealed that the size of the dictator's contribution seemed to be driven by moral fairness values ( $B = 0.06$ ,  $p < 0.001$ ), as well as weakly significantly by the interaction effect between moral fairness and stake size ( $B = -0.04$ ,  $p = .077$ ). This suggests that the interaction effect observed in the main results can be mostly attributed to dictators who have decided to share something but are unsure about how much to share. However, selfish dictators who are not willing to share anything are not influenced in their decision by the stake size. As such, it seems that the interaction effect between moral fairness and stake size applies less to selfish dictators but rather drives the size of contribution of prosocial dictators.

Finally, we found that it is indeed valuing *fairness* that drives the results. A comparison of the *fairness* concept (MFSS) with related measures assessed in the survey, like *benevolence* (Schwartz values), *community* concerns (Ethics Value Assessment) and *engagement* (Triune Ethics Theory), revealed no significant corrected item-total correlations (below .40) and low internal validity (Cronbach's alpha of .47) between the variables. That is, participants that scored extremely high on *fairness* only scored average on *benevolence*, *community* concerns and *engagement*. In addition, neither *benevolence*, nor *community*, nor *engagement* had a significant direct or indirect effect on giving. Thus, only *moral fairness* concerns distinctively influenced giving in a dictator game and significantly affected giving under different stake size scenarios.<sup>14</sup>

<sup>11</sup> In addition, there is a significant relationship between absolute moralists vs. everybody else and the equal split in the dictator game ( $\chi^2 = 37.84$ ,  $p < .001$ ; see Table S2 in the Supplementary Material).

<sup>12</sup> See Table S3 in the Supplementary Material. A moderated regression model separately for absolute moralists is not feasible because the focal predictor (moral fairness) could only take one value.

<sup>13</sup> See Table S4 in the Supplementary Material.

<sup>14</sup> Our results are robust when controlling for potential demographic confounds (age, education, household income, etc.), as well as when considering dictator game data to be left-censored. See "Robustness Checks" in the Supplementary Material.

## 5. Discussion and conclusions

We find that moral fairness concerns influence prosocial giving in a dictator game, and that this effect is moderated by stake size. Increasing stake size from \$10 to \$500 in a dictator game reduces the average willingness to share to a greater extent for people harboring high moral fairness values than for people with lower moral fairness concerns. This pattern of findings can be accounted for by temptation models assuming that stronger temptations may compromise people's ability to live up to the moral standards they maintain otherwise (i.e., when stakes are low), but cannot be easily explained through consistency theories. In particular, we find no evidence that high moral values may better shield people from temptation. This finding is particularly pronounced for *absolute moralists* who claim they would never behave unfairly for any amount of money. To the extent that *absolute moralists* fail to behave fairly in a dictator game, the present results also provide evidence for moral hypocrisy (Batson et al., 1997; Rustichini & Villeval, 2014).

Economic social preference models typically do not explicitly address the role of moral judgments, and how stake size interacts with such moral judgments. Some work (e.g., Ariely, Bracha, & Meier, 2009; Benabou & Tirole, 2011) assumes that social behavior is affected by (self-) image concerns or moral identity, which might be interpreted as modeling a consistent relationship between social behavior and moral judgments. Other economic models often do take into account the trade-off between social parameters and the size of monetary gains, although the predictions can depend on the exact model. For instance, the model of inequity aversion by Fehr and Schmidt (1999) is invariant to any change in stake size for given social utility parameters, and thus would suggest that social behavior in dictator games should only depend on fairness parameters but be independent of stake size. Bolton and Ockenfels' (2000) model, on the other hand, is consistent with different stake size effects, including the one we observe (which is also predicted by their example motivation function, as well as a concave version of the Fehr-Schmidt model). That is, if the self-reported *moral fairness* in our data is interpreted as a fairness parameter in the social utility function, different social preference models correspond to the hypotheses with respect to stake size effect that we derived from models in psychology. At the same time, we note that none of the economic models predicts that many participants grossly understate the impact of stake size on their fairness behavior. From this perspective, the temptation theories in psychology complement the economic social utility approach by emphasizing that morality should be seen as a relative concept that people might aim for but struggle to achieve in face of everyday temptations. That is, financial temptation can sometimes be more difficult to resist than estimated. We thus conclude that even though moral fairness values do guide prosocial behavior, they fail to function as an effective self-control device in high stakes situations.

While we study a large representative subject pool, our dictator game differs from standard dictator games. In particular, dictators were not endowed with money, but rather with ten tickets to participate in an online raffle with a given prize. The number of other tickets that could possibly enter the raffle and thus impact the chances to win the raffle was not disclosed to the participants. Such uncertainty is known to decrease the willingness to behave pro-socially (see Engel, 2011; Ockenfels, Sliwka, & Werner, 2015), and is often found to interact with social preferences over certain outcomes in non-trivial ways (e.g., Bolton, Ockenfels, & Stauf, 2015). There is no obvious reason why the dictator game variant in our study would affect results in specific ways and thus confound our conclusions. Still, it would be useful to replicate our study with more standard dictator games, as well as with a broader set of games of social behavior, to see how robust our findings are.

Also, from a psychology perspective, it would be interesting to study the consequences of gaps between moral claims and actual fairness behavior. Some researchers suggest that people with strong moral foundations might suffer from a greater distress from not behaving consistently with their moral values (Aquino et al., 2009). However, Rustichini and Villeval (2014) suggest that people adjust their moral norms to be in line with their previous behavior. Alternatively, people may conjure up certain justifications that would help frame the specific behavior as somehow deserved or a defensible exception from the rule, in line with theories of motivated reasoning (Kunda, 2000). Although our data are consistent with this view, especially for absolute moralists, the study of such consequences was beyond the scope of the present research. Nevertheless, this could be a promising avenue for further research.

## Acknowledgements

We thank Duke University for access to the "Measuring Morality Survey" data and Stephen Vaisey for helpful comments. Financial support of the German Research Foundation (DFG) through the Research Unit "Design & Behavior: Economic Engineering of Firms and Markets" (FOR 1371), as well as through the Research Unit "Relativity in Social Cognition: Antecedents and Consequences of Comparative Thinking" (FOR 2150) is gratefully acknowledged.

## Appendix A. Supplementary material

Supplementary data associated with this article can be found, in the online version, at <http://dx.doi.org/10.1016/j.joep.2016.06.004>.

## References

- Achtziger, A., Alós-Ferrer, C., & Wagner, A. K. (2016). The impact of self-control depletion on social preferences in the ultimatum game. *Journal of Economic Psychology*, 53, 1–16.



- Aiken, L. S., & West, S. G. (1991). *Multiple regression: Testing and interpreting interactions*. Newbury Park, CA: Sage Publications.
- Ajzen, I., & Fishbein, M. (1980). *Understanding attitudes and predicting social behavior*. Englewood Cliffs, NJ: Prentice-Hall.
- Andersen, S., Ertac, S., Gneezy, U., Hoffman, M., & List, J. A. (2011). Stakes matter in ultimatum games. *American Economic Review*, 101(7), 3427–3439.
- Aquino, K., Freeman, D., Reed, A., II, & Lim, V. K. G. (2009). Testing a social-cognitive model of moral behavior: The interactive influence of situations and moral identity centrality. *Journal of Personality and Social Psychology*, 97(1), 123–141.
- Ariely, D., Bracha, A., & Meier, S. (2009). Doing good or doing well? Image motivation and monetary incentives in behaving prosocially. *American Economic Review*, 99(1), 544–555.
- Batson, C. D., Kobryniewicz, D., Dinnerstein, J. L., Kampf, H. C., & Wilson, A. D. (1997). In a very different voice: Unmasking moral hypocrisy. *Journal of Personality and Social Psychology*, 72(6), 1335–1348.
- Benabou, R. J., & Tirole, J. (2011). Identity, morals and taboos: Beliefs as assets. *Quarterly Journal of Economics*, 126(2), 805–855.
- Blake, P. R., & Rand, D. G. (2010). Currency value moderates equity preference among young children. *Evolution and Human Behavior*, 31(3), 210–218.
- Bolton, G. E., & Ockenfels, A. (2000). ERC: A theory on equity, reciprocity, and competition. *American Economic Review*, 90(1), 166–193.
- Bolton, G. E., Ockenfels, A., & Stauf, J. (2015). Social responsibility promotes conservative risk behavior. *European Economic Review*, 74, 109–127.
- Camerer, C. F., & Hogarth, R. M. (1999). The effects of financial incentives in experiments: A review and capital-labor-production framework. *Journal of Risk and Uncertainty*, 19(1–3), 7–42.
- Carpenter, J., Verhoogen, E., & Burks, S. (2005). The effect of stakes in distribution experiments. *Economic Letters*, 86(3), 393–398.
- Côté, S., House, J., & Willer, R. (2015). High economic inequality leads to higher-income individuals to be less generous. *Proceedings of the National Academy of Sciences of the United States of America*, 112(52), 15838–15843.
- De Witt Huberts, J. C., Evers, C., & De Ridder, D. T. (2014). "Because I am worth it": A theoretical framework and empirical review of a justification-based account of self-regulation failure. *Personality and Social Psychology Review*, 18(2), 119–138.
- DellaVigna, S. (2009). Psychology and economics: Evidence from the field. *Journal of Economic Literature*, 47(2), 315–372.
- Duckworth, A. L., & Seligman, M. E. P. (2005). Self-discipline outdoes IQ in predicting academic performance of adolescents. *Psychological Science*, 16(12), 939–944.
- Engel, C. (2011). Dictator games: A meta study. *Experimental Economics*, 14(4), 583–610.
- Fehr, E., Bernhard, H., & Rockenbach, B. (2008). Egalitarianism in young children. *Nature*, 454, 1079–1083.
- Fehr, E., & Schmidt, K. (1999). A theory of fairness, competition, and cooperation. *Quarterly Journal of Economics*, 114(3), 817–868.
- Forsythe, R., Horowitz, J. L., Savin, N. E., & Sefton, M. (1994). Fairness in simple bargaining experiments. *Games and Economic Behavior*, 6, 347–369.
- Graham, J., & Haidt, J. (2012). Sacred values and evil adversaries: A moral foundations approach. In P. Shaver & M. Mikulincer (Eds.), *The social psychology of morality: Exploring the causes of good and evil* (pp. 11–31). New York: APA Books.
- Heider, F. (1946). Attitudes and cognitive organization. *The Journal of Psychology*, 21, 107–112.
- Henrich, J., Boyd, R., Bowles, S., Camerer, C., Fehr, E., Gintis, H., & McElreath, R. (2001). In search of homo economicus: Behavioral experiments in 15 small-scale societies. *American Economic Review*, 91(2), 73–78.
- Hofmann, W., Baumeister, R. F., Förster, G., & Vohs, K. D. (2012). Everyday temptations: An experience sampling study of desire, conflict, and self-control. *Journal of Personality and Social Psychology*, 102(6), 1318–1335.
- Holton, R. (2009). *Willing, wanting, waiting*. New York: Oxford University Press.
- Johnson, K. M., Iyer, R., Wojcik, S. P., Vaisey, S., Miles, A., Chu, V., & Graham, J. (2014). Ideology-specific patterns of moral indifference predict intentions not to vote. *Analyses of social issues and public policy* (pp. 1–7). (Special Issue: The Social Psychology of the 2012 US Presidential Election). doi:<http://dx.doi.org/10.1111/asap.12039>.
- Kavanagh, D. J., Andrade, J., & May, J. (2005). Imaginary relish and exquisite torture: The elaborated intrusion theory of desire. *Psychological Review*, 112(2), 446–467.
- Kivetz, R., & Simonson, I. (2002). Earning the right to indulge: Effort as a determinant of customer preferences toward frequency program rewards. *Journal of Marketing Research*, 39(2), 155–170.
- Kotabe, H. P., & Hofmann, W. (2015). On integrating the components of self-control. *Perspectives on Psychological Science*, 10, 618–638.
- Kunda, Z. (2000). The case for motivated reasoning. In E. T. Higgins & A. W. Kruglanski (Eds.), *Motivational science: Social and personality perspectives* (pp. 313–335). New York, NY: Psychology Press.
- List, J. A., & Cherry, T. L. (2008). Examining the role of fairness in high stakes allocation decisions. *Journal of Economic Behavior and Organization*, 65(1), 1–8.
- Loewenstein, G. (1996). Out of control: Visceral influences on behavior. *Organizational Behavior and Human Decision Processes*, 65(3), 272–292.
- Lönnqvist, J.-E., Irlenbusch, B., & Walkowitz, G. (2014). Moral hypocrisy: Impression management or self-deception? *Journal of Experimental Social Psychology*, 55, 53–62.
- McDowell, A. (2003). From the help desk: Hurdle models. *The Stata Journal*, 3(2), 178–184.
- Meier, S., & Sprenger, C. (2010). Present-biased preferences and credit card borrowing. *American Economic Journal: Applied Economics*, 2(1), 193–210.
- Miles, A. (2014). Demographic correlates of moral differences in the contemporary United States. *Poetics*, 46, 75–88.
- Miles, A., & Vaisey, A. (2015). Morality and politics: Comparing alternate theories. *Social Science Research*, 53, 252–269.
- Moffitt, T. E., Arseneault, L., Belsky, D., Dickson, N., Hancox, R. J., Harrington, H., ... Heckman, J. J. (2011). A gradient of childhood self-control predicts health, wealth, and public safety. *Proceedings of the National Academy of Sciences of the United States of America*, 108(7), 2693–2698.
- Nordgren, L. F., van Harreveld, F., & van der Pligt, J. (2009). The restraint bias: How the illusion of self-restraint promotes impulsive behavior. *Psychological Science*, 20(12), 1523–1528.
- Novakova, J., & Flegr, J. (2013). How much is our fairness worth? The effect of raising stakes on offers by proposers and minimum acceptable offers in dictator and ultimatum games. *PLoS One*, 8(4), e60966.
- Ockenfels, A. (1998). *Fairness, Reziprozität und Eigennutz: Ökonomische Theorie und experimentelle Evidenz. Die Einheit der Gesellschaftswissenschaften*, 108. Tübingen: Mohr Siebeck.
- Ockenfels, A., Sliwka, D., & Werner, P. (2015). Bonus payments and reference point violations. *Management Science*, 61(7), 1496–1513.
- Ockenfels, A., & Werner, P. (2014a). Beliefs and ingroup favoritism. *Journal of Economic Behavior and Organization*, 108, 453–462.
- Ockenfels, A., & Werner, P. (2014b). Scale manipulation in dictator games. *Journal of Economic Behavior and Organization*, 97, 138–142.
- Osgood, C. E., & Tannenbaum, P. H. (1955). The principle of congruity in the prediction of attitude change. *Psychological Review*, 62(1), 42–55.
- Padilla-Walker, L. M., & Jensen, L. A. (2015). Validation of the long- and short-form of the Ethical Values Assessment (EVA): A questionnaire measuring the three ethics approach to moral psychology. *International Journal of Behavioral Development*, 40(2), 181–192.
- Piff, P. K., Dietzke, P., Feinberg, M., Stancato, D. M., & Keltner, D. (2015). Awe, the small self, and prosocial behavior. *Journal of Personality and Social Psychology*, 108(6), 883–899.
- Ritov, I., & Baron, J. (1999). Protected values and omission bias. *Organizational Behavior and Human Decision Processes*, 79(2), 79–94.
- Roth, A. E. (2007). Repugnance as a constraint on markets. *Journal of Economic Perspectives*, 21(3), 37–58.
- Rustichini, A., & Villeval, M. C. (2014). Moral hypocrisy, power and social preferences. *Journal of Economic Behavior and Organization*, 107, 10–24.
- Sutter, M., Kocher, M. G., Glaetzel-Ruetzler, D., & Trautmann, S. T. (2013). Impatience and uncertainty: Experimental decisions predict adolescents' field behavior. *American Economic Review*, 103(1), 510–531.
- Vaisey, S., & Miles, A. (2014). Tools from moral psychology for measuring personal moral culture. *Theory and Society*, 43(3), 311–332.