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GENDER DIFFERENCES IN HONESTY: THE ROLE OF SOCIAL VALUE ORIENTATION

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Gender Differences in Honesty: The Role of Social Value Orientation*

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Abstract

This paper experimentally analyzes the determinants of the honesty norm in a lying game. The findings confirm common gender differences, i.e., men cheat significantly more than women. We detect a novel correlation between subjects' magnitude of concern they have for others (social value orientation) and their moral valuation of the norm honesty. The data suggest that individualistic subjects are less honest than prosocial ones. Interestingly, this difference can explain the gender differences we observe. First, we find that the distribution of social value orientation differs between gender, i.e., significantly more male subjects are characterized as individualistic subjects. Second, once we control for social value orientation the gender differential disappears.

JEL Classification numbers: C91, H26, J16.

Keywords: Experiment, Gender Differences, Honesty, Social Value Orientation.

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1 Introduction

Honesty plays a key role in many personnel interactions such as purchasing tickets in buses, behaving compliant in exams or cooperating in principal-agent relations. However, compliance on imposed tasks, rules or norms is imperfect and people often bend rules for their individual benefit. As a consequence, dishonest behavior might increase the need for monitoring to avoid higher transaction costs (e.g., Cialdini et al. 2004). Therefore, it is important to get a clearer understanding of the norm honesty to effectively counteract cheating behavior. It is especially relevant to learn more about the determinants (e.g., individual preferences) which may be correlated with dishonest behavior. In this regard, experimental economics is a powerful discipline as one of its evident strengths is the elicitation of subjects' preferences, and the consequences of their choices. Hence, many experiments study honesty and truth-telling behavior.

In an excellent survey, Rosenbaum et al. (2014) emphasize that despite honesty is not a fixed trait, most of the studies report that women cheat less than men.[1] This is shown in the lab (e.g., Erat and Gneezy, 2012; Houser et al., 2012; Conrads et al., 2014; Kocher et al., 2016)[2] and in the field (Azar et al., 2013; Bucciol et al., 2013). Although, the literature predominately finds that men cheat significantly more, some studies find no gender differences (e.g., Childs, 2012; Djawadi and Fahr, 2015).

The empirical evidence suggests that subjects' gender does not solely influences why people may behave dishonest. According to Rosenbaum et al. (2014), "[..] it seems that the experimental agenda regarding honesty could greatly benefit from having a more precise understanding of underlying individual-level motives and how they aggregate to prosocial norms, which would provide a better understanding of how dishonest behavior may be impeded" (p.194). Many experiments on dishonest behavior analyze settings where cheating has an externality on another person (e.g., Sutter 2009; Gneezy et al. 2013; Cappelen et al. 2013). Of course dishonest behavior can incorporate a social component when the act of lying benefits somebody else. In settings with a social component lying may not only be affected by motivations of the norm honesty, but also by other-regarding behavior. However, we aim at drawing general conclusions on the drivers of violating the norm honesty. Hence, we focus on a setting where dishonesty has no consequence on a matched player.

[1] There is even experimental evidence that lying behavior also significantly occurs among kids (Bucciol et al. 2013), among nuns (Utikal and Fischbacher 2013) and decreases in age (Glätzle-Rützler and Lergetporer 2015).

[2] Grolleau et al. 2016 even find that cheating is more pronounced in the loss domain. They report that this effect is especially pronounced for men.

Social preferences in form of social value orientation (SVO) may be a good candidate to study subjects' motivation to behave honest. More precisely, eliciting subjects' SVO allows to classify them in prosocial and individualistic types which reflect their attitudes towards social norms. A meta-analysis from Balliet et al. (2009) concludes that prosocial subjects are more sensitive to social norms and assess social dilemma situations in terms of morality.[3] By contrast, individualistic subjects assess such dilemmas in terms of strength and power (Van Lange and Kuhlman, 1994; De Cremer and Van Lange, 2001). In this vein, prosocial-oriented persons could not only be different in their concern for somebody else's payoff but also in the way they evaluate situations with a moral component involved. The latter may help to get a clearer picture on the individual determinants of the norm honesty.

In this study, we run a laboratory experiment to elicit subjects' SVO and test its impact on dishonest behavior. The paper aims at better understanding the determinants of dishonest behavior and the common gender effect observed in cheating games (Rosenbaum et al. 2014). In the beginning of the experiment we measure SVO in a task where subjects have to choose a money allocation between them and a matched partner. We map individual SVO to subjects' honesty in a subsequent die-roll game where they have to report the rolled number (Fischbacher and Föllmi-Heusi, 2013). In our simple setup, dishonest behavior has no externality on colleagues, but yields an individual benefit. Thus, we capture motives such as social norms in form of honesty to comply to a dictated rule (Gneezy et al. 2013). Importantly, we rule out that honest behavior is motivated by concerns of other-regarding behavior. Instead, in its negative sense, people violate the norm if they are less concerned to break a rule for an individual benefit.

Our results show that subjects' gender matters for honesty, i.e., we confirm previous findings of gender differences (Rosenbaum et al. 2014). Interestingly, we report a novel result: individual SVO plays an important role for the decision to behave honestly. The data show that prosocial subjects behave more honest, than individualisitic subjects. We find that the percentage of prosocial women is significantly higher as compared to men. The combination of more honest behavior among prosocials and the highest occurrence of this SVO type among women, can explain the gender difference in cheating. The finding that honest behavior is correlated with SVO does not only help to understand gender differences in this domain, but it may also spur research on the motives of individual honesty.

[3]The authors find that these subjects cooperate more in social dilemma situations.

2 Experimental Design

As our experiments took less than ten minutes we conducted it after another experiment.[4] We apply the lying game introduced by Fischbacher and Föllmi-Heusi (2013), i.e., at the end of the experiments subjects were told that they could receive an extra payoff for completing a questionnaire. Subjects learned that they had to roll a die that would determine their payoff. Participants were told that they receive the rolled die number times €0.2, e.g., rolling a 3 yields €0.6. The only exception is the number 6. Subjects would earn zero if the number of points on the die was 6. Note that, Fischbacher and Föllmi-Heusi (2013) demonstrate that dishonest behavior is not affected by the level of stake.[5]

The procedure was as follows: subjects rolled the die ten times in a row and had to enter the die number after each die roll. Our participants knew that at the end of the experiment a random draw would select one of the ten die rolls to be paid out. Subjects' SVO was elicited at the beginning of the experimental session. In this respect we used the money allocation task introduced by Murphy et al. (2011). Our participants were matched in dyads and were presented simultaneously six different decision sets. In each situation subjects had to choose the preferred money allocation for themselves and their matched partner. For payoff decisions, we presented the original points used in Murphy et al. (2011). The exchange rate was 1 point = €0.03. At the end, one out of the six decision sets was selected for payment and one player was randomly assigned the role of the active decision maker. The other player was passive and had to accept the allocation. Evaluating the participant's decisions in the active role, a SVO angle can be calculated for each person. The angle allows a classification into four groups of altruistic, prosocial, individualistic, and competitive types. The types differ in their magnitude of concern they have for other people's payoff. Individualistic types mainly maximize their own payoffs whereas prosocial types maximize the sum of earnings for themselves and the matched participant.

The experiment was conducted at the University of Göttingen and programmed using z-Tree (Fischbacher, 2007). Subjects from various fields were recruited with ORSEE (Greiner, 2004). We ran 14 sessions with 268 subjects (129 male and 139 female subjects).

[4]The experiment encompasses three treatments and focuses on the role of distributive justice on anti-social behavior (Grosch and Rau, 2016). Our data of the die-roll game do not significantly differ between the treatments (for all pairwise comparisons we find for Kolmogorov-Smirnov tests that $p > 0.6$).

[5]Moreover, there is evidence that low-stake sizes do not impact the replication of standard results in ultimatum, dictator, trust, public-good games (Amir et al. 2012; Kocher et al. 2008), and social preferences (Müller and Rau 2016).

Subjects' average payment in the main experiment was €12.65 (they earned €1.54 in the SVO-elicitation task and €0.63 in the cheating game).

3 Results

In this section we present the results on honesty in the die-roll game. We always report two-sided $p - values$ when applying non-parametric tests. Before we report our findings we present descriptive statistics of subjects' socio-demographic characteristics (see Table 1).

	females (n = 139)	males (n = 128)	aggregate data (n = 267)
SVO angle	28.10 (11.79)	24.63 (14.35)	26.44 (13.17)
risk tolerance	5.14 (1.92)	5.60 (2.16)	5.36 (2.04)
age	24.40 (4.89)	25.11(4.16)	24.74 (4.56)
experience	8.02 (9.75)	7.46 (6.20)	7.76 (8.23)
econ student (in%)	0.41 (0.49)	0.47 (0.50)	0.44 (0.50)

Table 1: Descriptive statistics on subjects' socio demographics. Standard deviations in parentheses.

The reported variables are as follows: *SVO angle* corresponds to the average SVO angle calculated in an individual level.[6] *Risk tolerance* is the mean of subjects' self-reported risk tolerance.[7] *Age* represents subjects' average age in years, whereas *econ student* reports the percentage of subjects studying economics or business economics. Finally, *experience* is the self-reported number of participation in economic experiments.

The table encompasses 267 subjects as we excluded one subject for the further data analysis as this was the only person who was classified as a competitive type in SVO.[8] Overall, it can be seen that women on average have higher mean SVO angles and are less risk tolerant than men[9] which confirms gender differences in risk taking (Charness and Gneezy 2012). It can be seen that males are slightly older and no differences exist in the reported number of participation in experiments. We observe a similar percentage of female (41%) and male (47%) subjects who study economics or business.

[6]Lower angles indicate selfish behavior and higher angles can be interpreted as more prosocial.

[7]We elicited risk in a questionnaire by asking: "Are you generally a person who is fully prepared to take risks or do you try to avoid taking risks?" Participants could answer on a scale from 1 (risk averse) to 10 (risk seeking) (Dohmen et al., 2012).

[8]Our main results do not change, if we include this subject.

[9]We find that the SVO angle a significant difference between the female and male distribution of the SVO angle (Kolmogorov-Smirnov test, $p = 0.025$). Men also have a significantly higher risk tolerance than women (Mann-Whitney test, $p = 0.057$).

3.1 The Impact of Gender and SVO on Honesty

We start our analysis by analyzing the impact of gender and SVO types on subjects' inclination to behave dishonestly. Figure 1 depicts the frequency of reported profit levels by gender (left panel) and by SVO types (right panel). Profit levels range from 0 to 5. The lowest level (0) is paid when subjects report a 6 whereas profit levels 1–5 are increasing by the rolled die number from 1 (€0.2) to 5 (€1). We condition SVO types on individualists and prosocials as we could not identify any altruists and only one competitive type.[10]

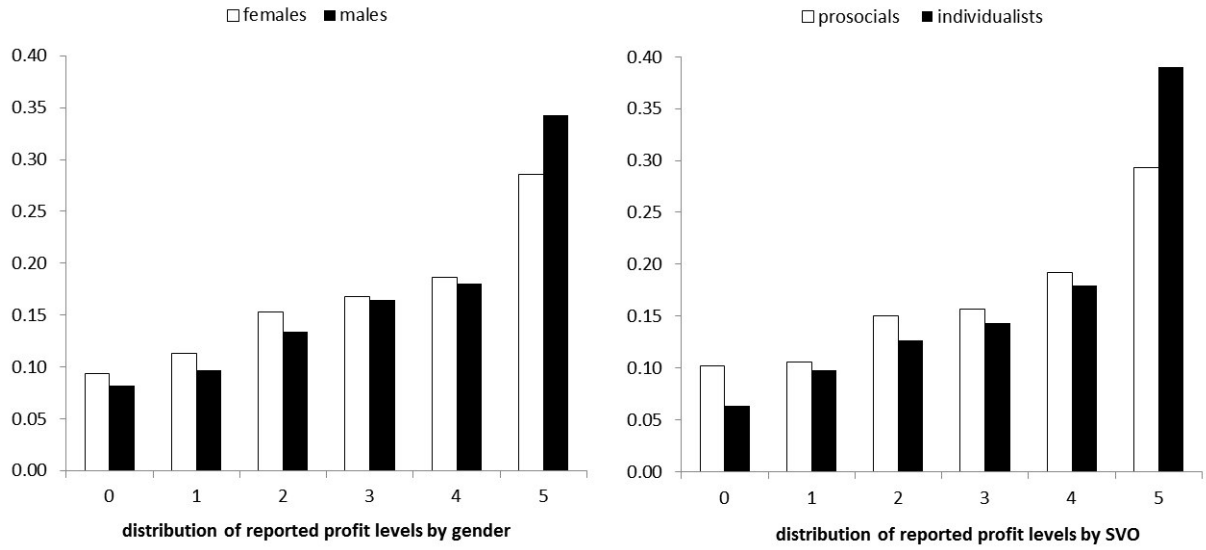

Figure 1: Distribution of reported profit levels by gender and by SVO.

Subjects report an average a profit level of 3.19 which is similar to previous finding of Conrads et al. (2013) who played a die game with higher stake size.[11]

A conspicuous finding of Figure 1 is that the distribution of reported payoffs is right-shifted for both gender, i.e., Kolmogorov-Smirnov one sample tests reject that the distributions are uniform (both gender: $p < 0.001$). Thus, both gender apparently report untrue profit levels. The data highlight a conspicuous gender effect, i.e., men report a significantly higher average profit level (3.29) than women (3.10) (Mann-Whitney test, $p = 0.035$). Men's distribution is clearly more right-shifted and significantly differs from women's distribution. This is confirmed by a Kolmogorov-Smirnov test on average reported profit levels ($p = 0.047$). Hence, we support the gender differences predominately

[10]We identify this subject as an outlier, as only one out of 268 subjects was characterized by such an extreme SVO angle. The data do not change if we include this subject.

[11]The authors find in their individual treatment that subjects report an average profit level of 3.31. Thus, our setting replicates common data on die-roll games, although the stake size is lower.

found in the literature (e.g., Dreber and Johannesson, 2008; Houser et al., 2012; Conrads et al., 2013).

Result 1

Male subjects report significantly higher profit levels than women.

Next, we analyze the impact of SVO on subjects' inclination to behave dishonestly. The right panel of Figure 1 demonstrates that subjects' SVO crucially matters for honest behavior. That is, prosocials report lower profit levels (3.07) than individualists (3.44). A Mann-Whitney test reveals a highly significant difference ($p < 0.001$). It can be seen that the distribution of reported profit levels is clearly more right shifted for individualists as compared to prosocials. A Kolmogorov-Smirnov test detects a highly significant difference ($p = 0.006$). Strikingly, it can be seen that the distribution of females directly translates into the distribution of prosocials. That is, no significant difference can be observed between these two distributions (Kolmogorov-Smirnov test, $p = 1.000$). Similarly, no significant differences can be found when comparing the distribution of males and individualists (Kolmogorov-Smirnov test, $p = 0.675$). This suggests that the gender differences may be explained by differences in the distributions of SVO types between women and men.

Result 2

Prosocial subjects report significantly lower profit levels than individualists.

To get a more precise understanding on the correlation between SVO and dishonest behavior, Table 2 classifies subjects based on their SVO and on gender. The table presents the corresponding mean of the reported profit levels (standard deviations in parentheses).

	freq. observed	avg. reported profit levels
prosocials		
all	–	3.07 (0.73)
among females	0.73	3.03 (0.69)
among males	0.59	3.12 (0.77)
individualists		
all	–	3.44 (0.80)
among females	0.27	3.29 (0.75)
among males	0.41	3.54 (0.83)
avg.	–	3.19 (0.77)

Table 2: Average reported profit levels by SVO.

We find that SVO matters for both gender. That is, prosocial females report a signifi-

cantly lower profit level (3.03) than individualists (3.29) (Mann-Whitney test, $p = 0.058$). Interestingly, the effect of SVO is clearly more pronounced among men. That is, prosocial males behave highly significantly more honestly (3.12) than individualists (3.54) (Mann-Whitney test, $p = 0.006$). The table highlights that a high fraction of females can be characterized as prosocial (73%), whereas the share of prosocial men (59%) is lower. Taken together the evidence that prosocial subjects are more honest and that most of these subjects are female, suggests that the gender difference may be induced by SVO. To get deeper insights we focus on gender differences in the distributions of SVO types in the next section.

3.2 Gender Differences in SVO

The previous results showed that women are significantly more honest than men. We also observed a novel finding which demonstrated that subjects' SVO types correlate with honesty behavior. Hence, it is possible that gender differences in this domain may be ascribed to gender differences in the distributions of SVO types.

Figure 2 depicts subjects' SVO distributions conditioned on gender. In the left panel it displays cumulative distribution functions of females' and males' SVO angle. The right panel is a bar chart of the distribution of the SVO types conditioned on gender.

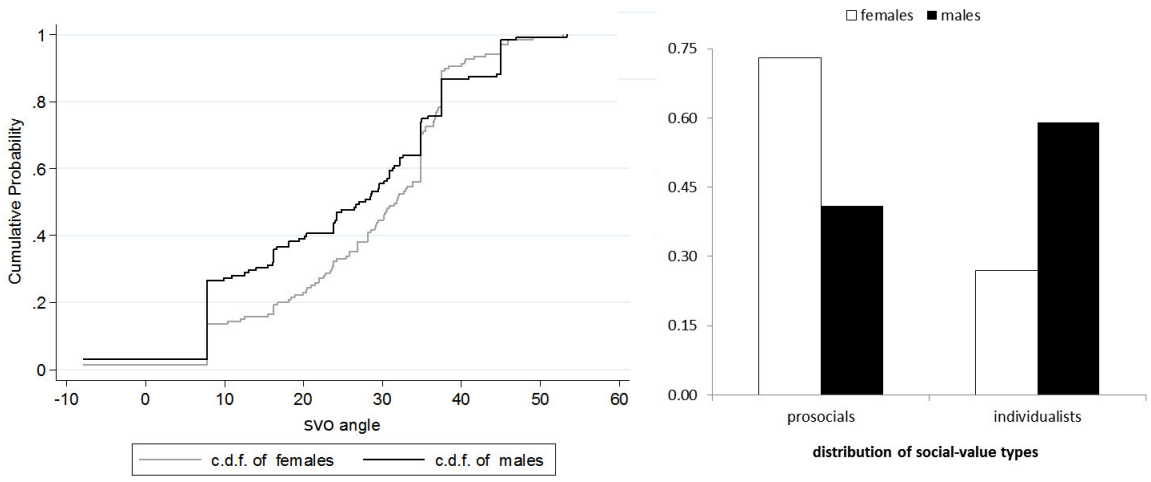

Figure 2: Gender differences in SVO angles (left panel) and SVO types (right panel).

The left panel shows that the distribution of the SVO angles is significantly different between gender. We find a mean SVO angle of 28.10 for females, whereas it is significantly smaller (24.63) for males (Kolmogorov-Smirnov test, $p = 0.025$). Turning to subjects' SVO types we find that the percentage of prosocials is significantly larger among female

subjects (73%) as compared to male subjects (59%) ($\chi^2(1) = 5.265,\ p = 0.022$).[12] We summarize that the gender difference in the distribution of SVO types may explain the commonly observed gender difference in honesty. Put differently, prosocials are most honest and the highest percentage of these subjects can be found among women.

Result 3
The fraction of prosocial subjects is significantly higher among females as compared to males.

3.3 Regression Analysis on the Determinants of Honesty

We try to get a better understanding about the link of gender and SVO and its influence on honesty by using regression analyses. Table 3 presents OLS regressions on subjects' average reported level of profits (*reported mean profit level*). Models (1)-(3) analyze the full sample. Further regressions only consider female data (Models (4)-(5)) and male data (Models (6)-(7)). In Model (1) we incorporate *female*, a dummy which is positive (zero) for females (males). We also control for subjects' SVO type, i.e., *prosocial* is a dummy which is positive (zero) for prosocial (individualistic) subjects. We include the following covariates: subjects' *risk tolerance*, and their *age* in years. *Econ student* is positive for students studying economics or business economics, whereas *experience* is the number of self-reported experiment attendances.

Focusing on the full sample, Model (1) shows that *female* is negative and significant, i.e., females are significantly more honest than men. Model (2) reveals that the gender effect disappears once we control for subjects' SVO type. That is, the coefficient of *female* is lower (-0.142) and insignificant when we control for prosocial subjects. At the same time, we find a highly significant negative coefficient (-0.347) for prosocials, i.e., these subjects report clearly higher mean profit levels than individualists. Hence, the effect induced by subjects' SVO type obviously partly explains the gender effect in honesty behavior. Model (3) confirms that the effect of SVO remains highly significant when we control for covariates. None of these control variables are significant.

[12] This finding is also confirmed by a Fisher's exact test ($p = 0.027$).

	reported mean profit level						
	full sample			females		males	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
female	-0.188**	-0.142	-0.128				
	(0.094)	(0.093)	(0.094)				
prosocial		-0.347***	-0.350***	-0.266**	-0.303**	-0.419***	-0.369**
		(0.092)	(0.099)	(0.134)	(0.131)	(0.143)	(0.149)
risk tolerance			0.016		0.013		0.033
			(0.023)		(0.032)		(0.033)
age			0.012		-0.001		0.029*
			(0.010)		(0.013)		(0.017)
econ student			-0.027		-0.227*		0.185
			(0.094)		(0.123)		(0.141)
experience			0.001		-0.001		0.005
			(0.006)		(0.006)		(0.012)
constant	3.290***	3.149***	2.758***	3.029***	3.075***	3.120***	2.093***
	(0.068)	(0.073)	(0.293)	(0.070)	(0.337)	(0.091)	(0.482)
obs.	267	267	267	139	139	128	128
R^2	0.015	0.060	0.068	0.028	0.046	0.064	0.108
Standard errors in parentheses							
*** p<0.01, ** p<0.05, * p<0.1							

Table 3: OLS regressions on average reported profit levels. Standard errors in parentheses.

To present a clearer picture on the impact of SVO, Models (4)-(7) focus on sub samples conditioned on gender. Model (4) and (6) confirm that SVO affects females' and males' honesty behavior. That is, the coefficients of the *prosocial* dummies are negative and highly significant for both gender. The magnitude is lower for female subjects (-0.266) than for male subjects (-0.419). This indicates a level effect between women and men, i.e., the impact of SVO is more pronounced among male prosocials who are more honest than female prosocials. Models (5) and (7) again demonstrate that the effect of SVO is robust when including control variables.

Result 4

The gender difference in SVO and the level effect between prosocial women and men suggest why women may be more honest than men.

4 Discussion

In our simple experiment we scrutineer social value orientation as a mediator of honesty. Reporting higher numbers increases individual benefits, but has no effect on others. First, we confirm predominant gender differences in compliance behavior, that is women are more honest than men (e.g., Friesen and Gangadharan 2012; Conrads et al. 2014). One could argue that our results may not adequately replicate existing results in honesty behavior as our stakes were low. However, there is evidence that low stake-size experiments replicate data of standard laboratory experiments (e.g., Amir et al. 2012). Moreover in lying games Fischbacher and Föllmi-Heusi (2013) report that people show similar dishonest behavior under different stake sizes.[13]

Our second finding presents important novel insights, i.e., honest behavior is correlated with subjects' social value orientation. More precisely, individualists behave clearly more dishonest than prosocial types. A closer look at the distribution of SVO types reveals that a higher proportion of men than women are among individualistic types. One might argue, that observing a gender difference in social value orientation may not be surprising as gender differences in social preferences exist (Croson and Gneezy 2009). However, the contribution of our study is that the gender difference in SVO can be translated into the miscellaneous engagement in dishonest behavior of men and women. In this paper, we detected a novel correlation between subjects' SVO and their inclination to be dishonest. The latter may help to better understand individual-level motives to violate the norm honesty. More precisely, our regression analysis demonstrates that a combination of social value orientation and gender may explain honesty behavior. First, prosocial subjects are generally more honest. Second, it turns out that the effect of social value orientation is more pronounced for men as compared to women. The combination of both explains common gender differences.

Dishonest behavior can incorporate a social component when the act of lying benefits somebody else. For such a white lie, prosocials are willing to violate the norm of being honest and lie to a higher extent than more individualistic types (Cappelen et al., 2013). The decision to behave dishonestly is a rational calculation in which the individual weighs the personal payoff against the expected costs and is dishonest if the net payoff is positive (Okeke and Godlonton, 2014). Our way of measuring dishonesty inheres no such social component. Hence, we can rule out that prosocials act more honest in our setup because of

[13]One could argue that men and women may react differently to low stake sizes. However, this is unlikely as our aggregate data replicates existing findings on honesty behavior. At the same time, Conrads et al. (2013) find a similar gender effect.

their social preference to care more about other's payoff than individualists. As discussed, prosocials might be more honest as they see the lying situation as a choice between moral and immoral and suffer higher moral costs from being dishonest than individualists. The finding that SVO is correlated with individual honesty is an interesting starting point for further research. First, it enables us to better understand gender differences in honest behavior. Second, it may spur research aiming at the motivations of individual cheating behavior. In this respect we leave the question open which additional factors may play a role for the more pronounced effect of social value orientation for male subjects.

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Appendix:

On-screen Instructions (translated from German; not intended for publication)

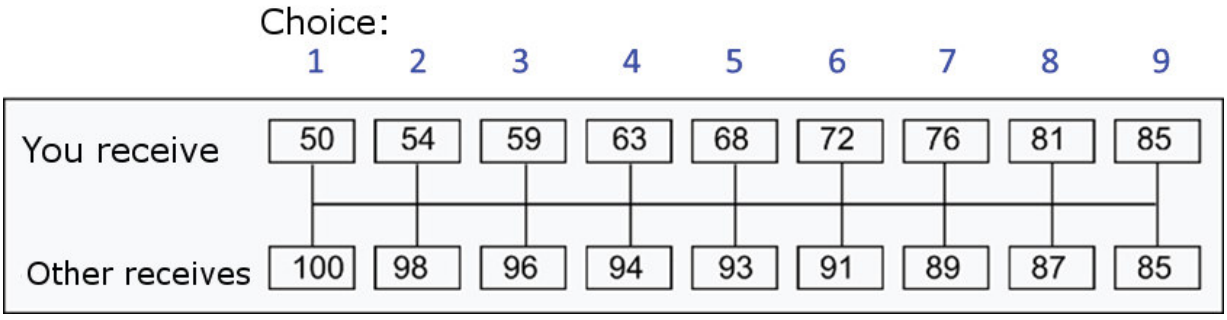
Social value orientation

In this part the computer randomly matches you with another participant of this room. Here, you and your matched partner simultaneously make several decisions. The identities of both participants will not be revealed at any point in time (also not after the experiment). All decisions are made in Taler. Therefore we make use of the following exchange rate:

1 Taler = 0.03.

We present you with six different decision-making situations. These are scenarios which reflect the possible payoffs of you and your matched partner. A possible example is presented below.

Example:



You can find your payoffs in the first row ("you receive"). Whereas, the matched participants payoffs are displayed in the row below ("other receives"). You have the possibility to choose one of nine different money allocations between you and your matched participant. You have to do this in six different decision situations.

We will present you with two cases.

Case 1: If you choose the allocation two in the above depicted example, then you would get 54 Talers and your matched participant would get 98 Talers. However, if you would choose allocation six, then you would get 72 Talers and your matched participant would get 91 Talers.

Roles A and B:

The person in role A has to decide between two allocations of Taler between herself and person B. The person in role A can actively decide, whereas person B is passive and has to accept person A's choice. Both participants decide in the role as person A. At the end of the experiment the computer will randomly

determine whether you are in the role of person A or B. If you will be in the role of person A, then your active decision will count and the matched participant will be passive. However, if you are in the role of person B, then the matched participant will be active. In this case the choice of participant B will determine your payoff.

At the end of the experiment the computer will randomly choose one out of the six decision sets to become payoff relevant. Moreover, the computer will select whether your choice or the choice of the matched participant will determine the payoffs. Afterwards the payoffs will be converted to Euros. At the end of the experiment you will be informed on the selected decision set, whether you were active/passive. We will also inform you on the payoff of this stage.

Die-roll game:

In what follows, you are asked to complete a questionnaire. You will be paid an additional payment for completing these questions.

- Your payoff will be determined by one of ten die rolls.
- Therefore we ask you to roll ten times a die. After each die roll, please enter the number you rolled in the box displayed on the computer screen (therefore you will be presented with input fields on the next computer screen).
- After the end of the experiment, the computer will randomly select one of these ten die rolls. This die roll will determine your extra payoff for completing the questionnaire.
- The rolled die numbers yield the following payoffs:
    - 1 = €0.20; 2 = €0.40; 3 = €0.60; 4 = €0.80; 5 = €1.00; 6 = €0.00