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Gender Differences in Compliance:
The Role of Social Value Orientation

Kerstin Grosch
Holger A. Rau

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# Gender Differences in Compliance:
# The Role of Social Value Orientation[*]

Kerstin Grosch [†1] and Holger A. Rau[‡1]

[1]University of Göttingen

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## Abstract

This paper experimentally analyzes the determinants of compliance in a cheating game. The results show that men are less compliant than women. We demonstrate that social value orientation predicts differences in cheating and explains the gender differences. Individualistic men cheat more than all social types of both gender.

# 1 Introduction

Compliant behavior plays a key role in many personnel interactions such as purchasing tickets in buses, behaving honestly in exams or cooperating in principal-agent relations. However, compliance on imposed tasks, rules or norms is imperfect and people bend rules for their individual benefit. In all aforementioned scenarios, dishonest behavior might increase the need for monitoring, resulting in higher transaction costs.

Hence, a clearer understanding of subjects' motivations may help to effectively counteract cheating behavior. Subjects' heterogeneity in preferences is of importance in organizational economics as employees differ in many aspects. Experimental economics repeatedly revealed gender differences in cheating in the lab (e.g., Erat and Gneezy, 2012; Conrads et al., 2014) and in the field (Azar et al., 2013; Bucciol et al., 2013). Although, the literature predominately finds that men are significantly less compliant, some studies find no effects (e.g., Childs, 2012). This suggests that apart from biological reasons other determinants play a role. Thus, analyzing the role of social preferences is promising, as it may add new insights on the impact of heterogeneity on cheating. Established gender differences in social preferences (e.g., Andreoni and Vesterlund, 2001)[1] may help explaining why women commonly cheat less than men.

This paper experimentally analyzes compliant behavior in a die-roll game where subjects have to report the rolled number (Fischbacher and Föllmi-Heusi, 2013). We focus on the case where cheating has no externality on colleagues, but yields an individual benefit. Therefore, we capture motives to comply to a dictated rule. Here, people might engage in breaking the rules consciously by trading off expected benefits and costs. The paper aims at better understanding subjects' heterogeneity to behave dishonestly. We map cheating behavior to subjects' social value orientation. Results yield that men are less compliant than women. Social value orientation matters for the level of cheating. Individualistic men report significantly higher mean-die numbers than all other types of each gender.

# 2 Experimental Design

As our experiments took less than ten minutes we conducted it after another experiment.[2] At the end of the experiments subjects were told that they can receive an extra payoff

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[1] A common view of these studies is that women have more pronounced social preferences.

[2] The experiment encompasses three treatments and focuses on the role of distributive justice on anti-social behavior (Grosch and Rau, 2016). Our cheating data does not significantly differ between the treatments (Kolmogorov-Smirnov tests, all $p-values > 0.470$).

for completing a questionnaire (Fischbacher and Föllmi-Heusi, 2013). Subjects knew that they had to roll a die which would determine the payoff. Participants were told that they receive the rolled die number times €0.2, e.g., rolling a 3 yields €0.6.[3] Subjects would earn zero if the die number was a 6. Subjects rolled the die ten times in a row. They had to enter the outcome after the die throws. Subjects were informed that at the end a random draw selects one of the ten throws to be paid out.

In the beginning we elicited participants' social value orientation (svo) (Murphy et al., 2011). They were matched in dyads and simultaneously decided in six different decision sets. Subjects had to choose the preferred money allocation for themselves and their matched partner. As payoffs we applied the original points used in Murphy et al. (2011). The exchange rate was 1 point = €0.03. At the end, one out of the nine 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. We calculate a svo angle for each participant. The angles classify them into altruistic, prosocial, individualistic, or competitive types.

The experiment was conducted at the University of Göttingen and programmed using z-Tree (Fischbacher, 2007). Subjects from various fields were recruited with ORSSE (Greiner, 2004). We ran 14 sessions with 268 subjects (129 male and 139 female subjects). Subjects' average payment in the main experiment was €12.65 (they earned €0.63 in the cheating game).

# 3    Results

In this section we present the results and report two-sided $p - values$ when applying non-parametric tests.

## 3.1    Gender Differences

Figure 1 illustrates the frequency of reported die throws conditioned on gender. We set the number rolled six to zero as it yields the lowest possible outcome.

We find that both gender's distribution is right-shifted, i.e., Kolmogorov-Smirnov one sample tests reject that the distributions are uniform (both gender: $p < 0.001$). Thus, both gender apparently cheat. The data highlight a conspicuous gender effect, i.e., men report a significantly higher mean-die number (3.29) than women (3.10) (Mann-Whitney test, $p = 0.028$). Men's distribution is clearly more right-shifted and differs from women's

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[3]Fischbacher and Föllmi-Heusi (2013) demonstrate that chearing is not affected by the level of stake.
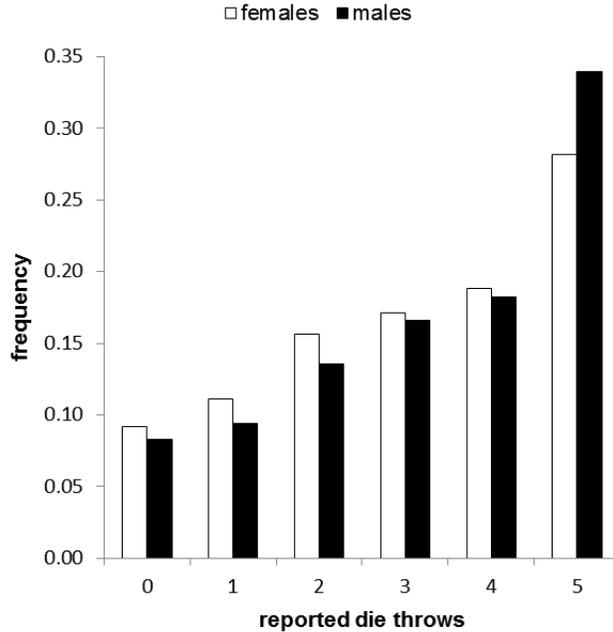
Figure 1: Frequency of reported die throws conditioned on gender.

distribution. This is confirmed by a Kolmogorov-Smirnov test on reported mean die numbers ($p = 0.039$). Hence, we support the gender differences predominately found in the literature (e.g., Dreber and Johannesson, 2008; Houser et al., 2012).

**Result 1**

*Male subjects report significantly higher die throws than women.*

## 3.2 Social Value Orientation

Table 1 classifies subjects on their social value orientation and presents the corresponding mean-die numbers (standard deviations in parentheses).

|  | freq. observed | avg. reported die number |
|---|---|---|
| altruists | 0.43 | 3.09 (0.71) |
| prosocials | 0.35 | 3.13 (0.79) |
| individualists | 0.19 | 3.45 (0.79) |
| competitive subjects | 0.03 | 3.64 (0.74) |
| avg. | – | 3.19 (0.77) |

Table 1: Average reported die numbers conditioned on social-value orientation.

Most subjects are altruists or prosocials (78%), followed by 19% individualists and

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3% competitive subjects. Subjects' social value orientation leads to significantly different report levels (Kruskal-Wallis test, $p = 0.015$). Individualists report significant higher levels (3.45) than altruists (3.09) (Mann-Whitney test, $p = 0.008$) and prosocials (3.13) (Mann-Whitney test, $p = 0.021$). Competitive types also report significantly higher levels than altruists (Mann-Whitney test, $p = 0.043$) and prosocials (Mann-Whitney tests, $p = 0.071$).

**Result 2**

*Individualistic and competitive subjects behave less honest than altruists and prosocials.*

## 3.3 Social Value Orientation and Gender

Figure 2 conditions on subjects' social value orientation. As we only classify 8 out of 268 subjects as competitive, we exclude them. Figure 2 depicts the frequency of reported die throws by men (left panel) and women (right panel).
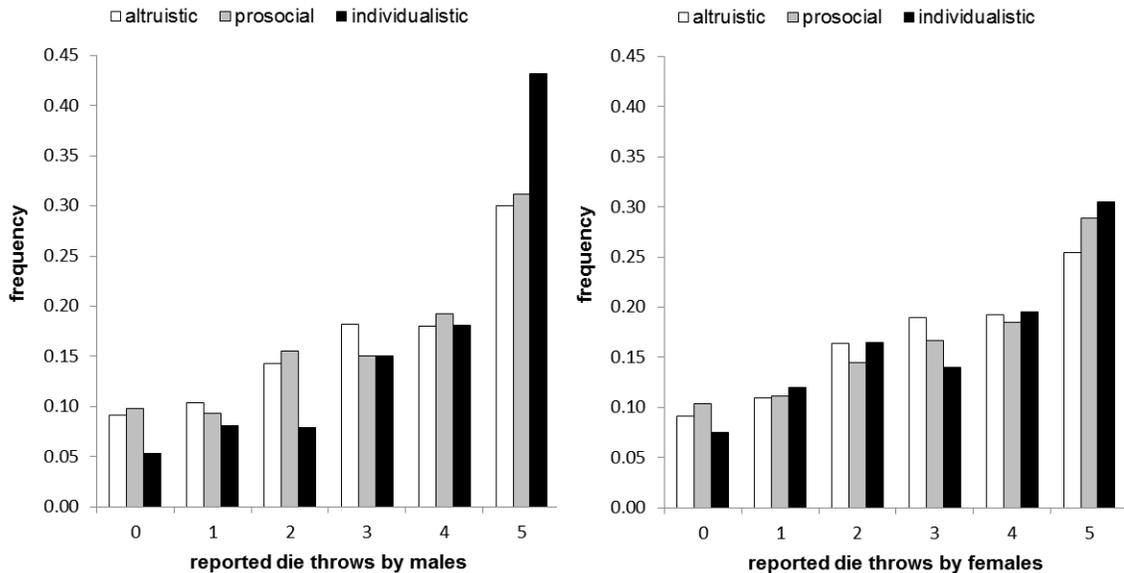


Figure 2: Frequency of die throws conditioned on social value orientation and gender.

A conspicuous finding is the high frequency of reports on the rolled number five (43%) by male individualists. A Kruskal-Wallis test shows that men's mean-die number differs significantly between the social value types ($p = 0.048$). For men we find that individualists report significantly higher levels (3.62) than altruists (3.15) (Mann-Whitney test, $p = 0.013$) and prosocials (3.18) (Mann-Whitney test, $p = 0.071$). Ignoring individualists,

women's distribution does not differ from men's distribution (Kolmogorov-Smirnov test, $p = 0.280$). We find that women's data is similar between their svo types ($p = 0.704$).[4]

Strikingly, male individualists apparently cheat significantly more than female individualists (Mann-Whitney test, $p = 0.054$). This resolves the gender difference in cheating behavior, we observe in Section 3.1.

These findings are confirmed by OLS regressions (Table 2). Models (1) to (3) are based on aggregate data. It can be seen that women cheat significantly less than men (model (1)). Model (2) highlights the importance of social value types, i.e., individualists cheat more often than altruists and prosocials (Wald-test, $p = 0.015$).

|  | mean die (aggregate) | | | mean die (male) | | mean die (female) | |
|---|---|---|---|---|---|---|---|
|  | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
| *female* | -0.245*** | | | | | | |
|  | (0.092) | | | | | | |
| *prosocials* | | 0.028 | 0.030 | 0.010 | -0.018 | 0.035 | 0.032 |
|  | | (0.104) | (0.105) | (0.170) | (0.175) | (0.125) | (0.127) |
| *individuals* | | 0.349*** | 0.356*** | 0.423** | 0.374** | 0.163 | 0.164 |
|  | | (0.122) | (0.124) | (0.182) | (0.188) | (0.166) | (0.170) |
| *age* | | | 0.011 | | 0.019 | | 0.002 |
|  | | | (0.011) | | (0.018) | | (0.012) |
| *risk* | | | 0.012 | | 0.037 | | -0.021 |
|  | | | (0.023) | | (0.035) | | (0.032) |
| *econ* | | | -0.018 | | 0.046 | | -0.106 |
|  | | | (0.095) | | (0.150) | | (0.123) |
| *experience* | | | 0.002 | | 0.008 | | 0.000 |
|  | | | (0.006) | | (0.013) | | (0.006) |
| *Constant* | 3.320*** | 3.110*** | 2.773*** | 3.206*** | 2.454*** | 3.037*** | 3.123*** |
|  | (0.067) | (0.069) | (0.287) | (0.114) | (0.518) | (0.082) | (0.333) |
| Observations | 280 | 280 | 280 | 133 | 133 | 147 | 147 |
| $R^2$ | 0.025 | 0.031 | 0.037 | 0.047 | 0.069 | 0.007 | 0.017 |

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 2: Effects of gender and social value orientation on cheating

This finding is robust when including control variables (model (3)). The control variables are participant's age, their risk preferences[5], economics background and their

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[4]No significant differences can be found when comparing individualists with altruists (Mann-Whitney test, $p = 0.452$) and prosocials (Mann-Whitney test, $p = 0.416$).

[5]We elicited risk by asking: "Are you generally a person who is fully prepared to take risks or do you

self-reported number of attended experiments (experience). None of these variables is significant.[6] A gender-disaggregated analysis in models (4) and (5) reveals that only individualistic men cheat relatively more compared to altruists and prosocials (Wald-test, $p = 0.024$). For women (models (6) and (7)), we find no significant relation between subjects' svo and cheating behavior.

**Result 3**

*Male individualists lie significantly more. Social value orientation has no effect for women.*

# 4   Conclusion

In our simple experiment we focused on the determinants of compliant behavior. Reporting higher numbers increases individual benefits, but has no effect on others. We find that women behave more compliant than men. A closer look at svo shows that only individualistic men cheat more. Our first result supports the predominant gender finding in experimental cheating games (Friesen and Gangadharan, 2012; Conrads et al., 2014) and is in line with research in other areas such as tax compliance (Kastlunger et al., 2010). Psychologists explain this gender difference by learned gender roles (Eagly and Chrvala, 1986). Early on in life, men perceive more social approval for breaking rules than women. The argument of learned compliant behavior is experimentally supported by Ariely et al. (2015). The paper reports that people growing up in the former eastern Germany socialist system cheat more than people from western Germany.

Our second finding emphasizes the importance of social value orientation as predictor of compliant behavior. We observe that individualists who attach greater importance to their outcome behave less compliant. This fits to the notion that individualists maximize payoffs. Notably, social value orientation has no predictive power whatsoever for women. It suggests that women's learned compliant behavior apparently outweighs the influence of svo. The finding that svo may explain why subjects differ in cheating (e.g., gender differences) is an interesting starting point for further research aiming at the motivations of individual cheating behavior.

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try to avoid taking risks?" Participants could answer on a scale from 1 (risk averse) to 10 (risk seeking) (Dohmen et al., 2012).

[6]We test svo seperately because of multicollinearity, i.e., women are more likely to be prosocial or altruistic.

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