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Compensation and Honesty: Gender Differences in Lying

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Compensation and Honesty: Gender Differences in Lying

Abstract

We compare gender differences in lying under two incentive schemes that are widely used in companies: individual performance-pay and tournament incentives. While we do not observe significantly different behavior of males and females given individual performance-pay, females lie significantly less than males if the compensation scheme is switched to tournament incentives. This result is mainly driven by a decrease in the propensity to lie of females in a competitive environment. The gender gap in lying is robust with respect to the gender composition of the pool of opponents. Dishonesty is largest for males competing in a mixed-gender environment.

Keywords: gender effects; unethical behavior; lying; incentives; experiment

JEL Classification: C91; J16, M52

Introduction

During the last years a growing body of literature has focused on studying various aspects of unethical behavior such as sabotage, cheating or lying in economic contexts. Especially if compensation is tied to performance, employees might be prone to manipulating output (see, e.g., Amegashi, 2014; Chowdhury and Gürtler, 2015).

Recent experimental studies show evidence of lying in a variety of settings (see, e.g., Gneezy, 2005; Erat and Gneezy, 2012; or Gibson et al., 2013).¹ Regarding gender differences, the results are rather mixed. Generally, the findings suggest that males are to some extent more likely to lie, however, gender differences are often not significant or rather small (see, e.g., Gneezy, 2005; Dreber and Johannesson, 2008; Childs, 2012; or Gylfason et al., 2013). A prominent design for studying dishonest behavior under individual incentives in the lab is the set-up by Fischbacher and Föllmi-Heusi (2013) (in the following FFH) where subjects have to roll a die and report the result which determines their payoff. Because the die is rolled privately, subjects can manipulate their report. FFH observe "incomplete lying," namely subjects that lied but did not report maximum output. The die-rolling task is also used to study lying under alternative compensation schemes. Under team compensation, male teams behaved more dishonest than mixed-gender or female teams (Mülheusser et al., 2015). Conrads et al. (2014) adopt the FFH-task to a tournament and show that an increase in the prize spread led to a higher propensity to lie. Although they do not study gender systematically, they acknowledge a gender gap if the prize spread was rather high while there was no gender gap for low prize spreads.

Previous studies mainly focus on identifying dishonest behavior under a particular compensation scheme. While for instance FFH, Foosgard et al. (2013), Jiang (2013), or Ploner and Reger (2013) analyze behavior in an individual decision-making context, others such as Gneezy (2005), Dreber and Johannesson (2008), or Erat and Gneezy (2012) study a sender-receiver game where the belief about the receivers action can influence dishonest behavior. If the sender believed that the receiver would not follow his message, the sender might have decided to tell the truth. Gneezy et al. (2013) propose an alternative design to overcome this problem. These contributions provide valuable insights regarding

¹Our paper is also related to the large strand of literature investigating sabotage and cheating in tournaments where behavior of subjects can be observed by the experimenter and unethical behavior induces monetary costs (see, e.g., Cadsby et al., 2010; Harbring and Irlenbusch, 2011; Gürtler et al. 2013; Charness et al., 2014; or Dato and Nieken, 2014; Faravelli et al., 2015; Ridgon and D'Esterre, 2015).

the influence of personal characteristics such as cultural background or gender on the propensity to lie. Furthermore, the empirical evidence shows dishonest behavior but at the same time not all subjects report the lie that would maximize their payoffs. The propensity to lie seems to depend on the costs relative to the possible gains of a lie. Without varying the incentive scheme, however, the existing studies are not able to disentangle whether the results are driven exclusively by differences in fundamental personal characteristics or by the type of compensation. We, therefore, lack a general understanding about the interaction of personal characteristics and type of compensation when analyzing dishonest behavior. Do individuals generally have an aversion to lie or is it possible that the propensity to lie is context-dependent, i.e., that it might be affected by the underlying incentive scheme? The effectiveness of campaigns to prevent dishonesty as well as equal opportunity programs, however, requires a thorough comprehension of the determinants of the propensity to lie. Hence, gaining an exhaustive understanding of the driving forces of gender differences in dishonesty is important for companies and society.

We take a first step in filling this gap in literature and focus on the comparison of gender differences in honesty under two compensation schemes that are widely used in companies: individual performance-pay and tournament-based incentives. We implement a within-subject design to study behavior of subjects with equal preferences and characteristics under both schemes. This allows us to precisely pin down the effect of varying the compensation scheme on the propensity to lie for each subject. In particular, our design allows us to study how each gender adjusts behavior according to the underlying incentive structure.

Under both compensation schemes, subjects systematically engage in lying. There is no significant gender-gap under an individual performance-pay-scheme, but males are significantly more prone to lying than females under tournament incentives. Our data shows that both genders react to a change of compensation schemes, but in a rather different way. While the competitive nature of the tournament enhances honesty for females, males tend to report the maximum output. Hence, our results clearly indicate that the gender gap in dishonesty is affected by the underlying compensation scheme.

Experimental Design

Our experimental design is based on the die-rolling task of FFH. We implemented a within-subject-design to study how the change from an individual to a tournament compensation scheme affected the behavior of a given subject. All subjects

participated in two treatments: First, in the individual-treatment corresponding to the set-up of FFH and second, in the tournament-treatment similar to Conrad et al. (2014). In both treatments, each subject was asked to privately roll a standard six-sided die simulating production output. We made sure that neither the experimenter nor other subjects could learn the truly diced number. This privacy was common knowledge. Subjects played the individual-treatment first. Reported output between one and five translated into a positive payoff (20 taler for a "one," 40 for a "two," 60 for a "three," 80 for a "four," and 100 for a "five") while six resulted in zero output and zero payoff. Next, subjects participated in the tournament-treatment. Now, they were anonymously paired with another subject and informed about the following payment scheme: the subject with the higher reported output obtained the winner prize of 80 taler, the subject with the lower reported output the loser prize of 20 taler. Again, a six resulted in zero output. If both subjects reported the same output, the winner was determined by a random draw.² The expected payoffs of truthfully reporting subjects were identical in both treatments, namely 50 taler. Hence, monetary incentives for honest subjects were balanced across treatments.

288 subjects (144 females / 144 males) participated in the experiment (programmed with z-tree (Fischbacher, 2007), which were recruited via hroot, (Bock et al., 2014). We executed 12 sessions with 24 participants in each session. To study gender effects in greater detail, six sessions contained both male and female subjects (mixed-gender) while three sessions had only male and three sessions had only female subjects (single-gender). Due to the short nature of both treatments, we followed the approach of FFH and conducted them together with another experiment.³ The exchange rate was 20 taler for one euro. At the end of the experiment, one of the treatments was randomly selected for payment.

Results

If subjects had no cost of lying, it was optimal to report maximum output. If, in contrast, subjects were completely honest, we should observe an average reported output of 2.5. The average reported output is 3.95 in the individual-treatment and 3.80 in the tournament-treatment (see Table 1). The distribution of reported outputs differs significantly from a uniform distribution under honest reporting in both treatments (one-sample Kolmogorov-Smirnov-test (KS), $p < 0.01$).⁴ Hence, subjects showed dishonest behavior. However, in line with previous literature

²The instructions translated into English are in the appendix.

³Subjects were not informed about any payoff of the preceding games.

⁴All tests are two-sided.

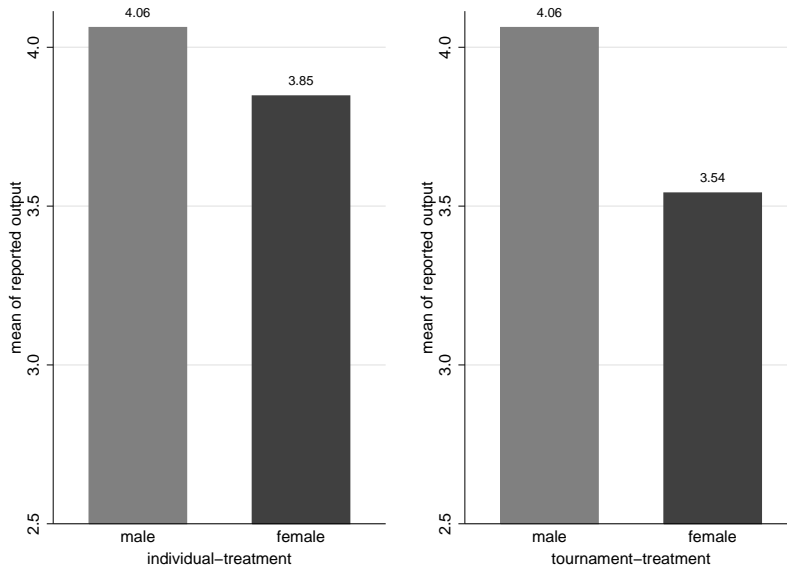


Figure 1: Average output reported by gender

(e.g., Charness and Dufwenberg, 2006; Lundquist et al., 2009; Erat and Gneezy, 2012; Fischbacher and Föllmi-Heusi, 2013; Gneezy et al, 2013; Conrads et al., 2014), not all subjects reported maximum output. We, therefore, conclude that there exist some positive costs of lying in our sample.

Splitting the dataset by gender reveals that the reported output of both genders is statistically different from a uniform distribution in both treatments (KS, $p < 0.01$). Hence, both genders systematically deviated from truth-telling in both treatments. The result is mainly driven by the high frequency of maximum output reports. As Figure 1 shows, females on average reported lower outputs than males in the individual-treatment (mean 3.85 vs. 4.06) as well as in the tournament-treatment (mean 3.54 vs. 4.06).⁵ For the individual compensation scheme, the difference - in line with previous literature (e.g. Mühlheusser et al., 2015) - is not statistically significant (Mann-Whitney-U-test (MWU), $p = 0.13$). Under tournament incentives, in contrast, the gender difference in reported outputs is highly significant (MWU, $p < 0.01$). Hence, gender differences in dishonesty are strongly affected by the underlying type of compensation scheme.

Notably, on average males reported the same output in both treatments

⁵Note that the y-axis starts at 2.5 which is the average reported output given truthful reporting.

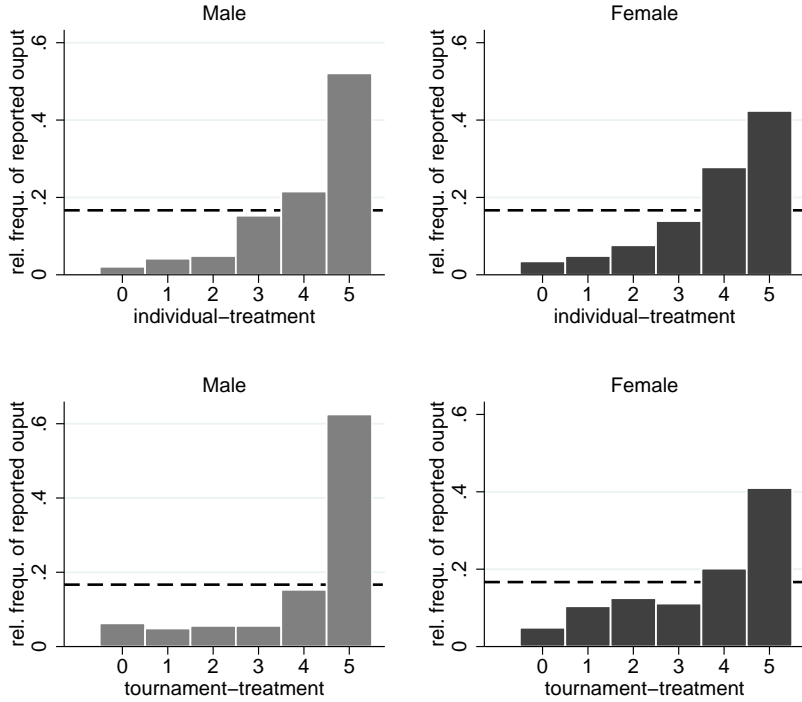


Figure 2: Histogram of reported output

whereas females on average reported lower outputs in the tournament-treatment than in the individual-treatment. At first glance, the gender gap under tournament incentives seems to be driven by females being more honest than in the individual-treatment.

So far we have not analyzed the distribution of reports in detail (see Figure 2). Next, we will shed light into the following questions: First, did males, as the average report suggests, behave identically under both incentive schemes? Second, were females more honest in the tournament than under individual incentives?

Analyzing the distribution of reported outputs, the percentage of maximum reports of males under tournament incentives (63%) was significantly higher than under individual incentives (52%) (Wilcoxon signed-ranked test (WSR), $p < 0.05$). Males also increased the reporting of minimum output in the tournament-treatment (WSR, $p < 0.1$), which explains the identical average report for both treatments. Compared to individual incentives, being in a competitive situation changed behavior of males and led to more extreme reports.

Treat.	Gender	n	$\bar{\pi}$	$\pi_i = 0$	$\pi_i = 1$	$\pi_i = 2$	$\pi_i = 3$	$\pi_i = 4$	$\pi_i = 5$
Ind.	both	288	3.95	0.03***	0.05***	0.06***	0.15	0.25***	0.47***
Ind.	male	144	4.06	0.02***	0.04***	0.05***	0.15	0.22	0.52***
Ind.	female	144	3.85	0.04***	0.05***	0.08***	0.14	0.28***	0.42***
Tour.	both	288	3.80	0.06***	0.08***	0.09***	0.08***	0.18	0.52***
Tour.	male	144	4.06	0.06***	0.05***	0.06***	0.06***	0.15	0.63***
Tour.	female	144	3.54	0.05***	0.10**	0.13	0.11*	0.20	0.41***

Note: n and π_i indicate the number of obs. and the frequency of reported output. A star displays the significance of a two-sided binomial test indicating that the obs. rel. frequency is different from 1/6: * 10% level, ** 5%-level, *** 1%-level, bold print indicates frequency larger than 1/6.

Table 1: Summary statistics

Compared to truthful reporting, females reported high outputs of more than three too often and low outputs of less than three not often enough in the individual-treatment. In the tournament-treatment, they less often reported an output of more than three (61% vs. 70%; WSR, $p < 0.1$) and more frequently reported an output of less than three (28% vs. 17%; WSR, $p < 0.05$) than in the individual-treatment. By reducing the reporting of high outputs and increasing reporting of low outputs, females came closer to a distribution induced by truthful reporting in the tournament-treatment (see Figure 2).

The use of the within-subject design allows us to compare two reports of the same subject under different compensation schemes. This sheds light into the question how the propensity to lie of a specific subject depends on the type of compensation. Compared to the individual-treatment, males more often reported a higher output in the tournament-treatment (29%) than a lower output (23%), whereas females more frequently reported a lower (40%) than a higher output (33%). This observation underpins the conclusion that the competitive nature of a tournament caused a slight increase in dishonesty of males and a decrease in the willingness to lie of females, resulting in a significant gender gap.

As the gender composition might have an effect on behavior (see, e.g., Holm, 2000; Mühlheusser et al., 2015), we analyze mixed-gender and single-gender sessions separately. Even though the gender of the opponent was not revealed, subjects in the single-gender sessions could be sure to compete against a subject belonging to the same gender while they had no information about the gender of their opponent in the mixed-gender sessions. As subjects did not interact in the individual-treatment, we expect no differences between the behavior in the single and mixed-sessions, which is supported by the data (pairwise MWU, $p >$

0.15). In the tournament-treatment, however, the average reported output and a Jonckheere-Terpstra-test for ascending order ($p < 0.01$) indicate the following ordering of reported outputs: female single-gender (mean 3.42) < female mixed-gender (mean 3.67) < male single-gender (mean 3.89) < male mixed-gender (mean 4.23). According to this result, the common match-up of mixed gender contestants led to more dishonest behavior of both genders compared to single-gender contests.

As can already be inferred from the reported average outputs above, males reported significantly higher outputs than females in mixed-gender sessions (MWU, $p < 0.01$) as well as in single-gender sessions (MWU, $p < 0.05$). This indicates the robustness of our finding: in a tournament, males were more prone to lying than females, no matter the gender composition of the pool of potential opponents.

In the following, we discuss possible explanations for our results. First, the belief about the behavior of the opponent can have affected honesty in the strategic interaction (see, e.g. Castillo and Cross, 2008; Sutter, 2009; Gneezy et al., 2013). If subjects believed their opponents to report maximum output, they might have been less reluctant to select higher output levels. Second, costs of lying might help to explain our finding. If there exists a gender difference regarding general lying-aversion or a norm that classifies dishonesty as unethical in general, we should have observed similar outcomes in both treatments. However, the change of compensation schemes triggered different behavior. The costs of lying might have been higher in the tournament because lying affected the payoff of another subject while lying in the individual-treatment only raised the costs of the experimenter. Those costs, induced by social preferences, might be higher for females explaining their reluctance to lie in the tournament-treatment (Croson and Gneezy, 2009). On the other hand, the competitive nature of the tournament can also yield a non-monetary utility of winning (Sheremeta, 2010), have a positive impact on self-esteem, or status. Those effects can mitigate the costs of lying. Previous studies indicate that these effects are particularly strong for males (e.g., Wieland and Sarin, 2012; Dato and Nieken, 2014) which can explain why many males report maximum output in the tournament-treatment.

Conclusion

Our results reveal a significant gender gap in honesty under tournament incentives with males being more prone to lying than females. In comparison with individual performance-pay, males more often reported maximum output while

females reduced lying. The gender gap in reported results is robust with respect to the gender composition of the pool of opponents.

Companies looking for a compensation scheme that fosters honest reports and compliance need to be aware that their workforce might respond differently to competitive incentives, which seem to trigger significantly different behavior of males and females, not only regarding performance (Gneezy et al., 2003; Gneezy and Rustichini, 2004; Masclet et al., 2015) but also regarding unethical behavior. Given that many economic situations have an underlying competitive structure and are prone to output manipulations, the potential consequences of this finding, e.g., distorted outcomes and biased management decisions, are highly relevant.

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Appendix

Instructions Individual-Treatment

You are not playing with another player. In this part of the experiment you will roll a die twice, which we are handing out to you now. Your first roll will determine your payoff. This payoff will be determined according to the following table:

Outcome of die roll	1	2	3	4	5	6
Payoff in talers	20	40	60	80	100	0

The second roll of the die will only secure that the die is working properly. Of course, you are allowed to roll the die more than twice. However, your payoff will be determined by the outcome of the first roll. If there are any questions left, please give us a hand signal. If there are no questions left, please press OK.

Instructions Tournament-Treatment

In this part of the experiment you will be playing with another player. You will roll a die twice. Your first roll will determine your result. The result is determined by the following table:

Outcome of die roll	1	2	3	4	5	6
Result	1	2	3	3	5	0

The second roll of the die will only secure that the die is working properly. Of course, you are allowed to roll the die more than twice. However, your result will be determined by the outcome of the first roll. In contrast to the previous part of the experiment, your payoff will be determined by your first roll and by the result of the first roll of the other player. The results of both players will be compared. The player with the higher result will receive 80 talers, the player with the lower result 20 talers. If the results of both players are identical, a random draw will determine which player will receive the higher payoff. If there are any questions left, please give us a hand signal. If there are no questions left, please press OK.