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Honesty in tournaments

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HIGHLIGHTS

- We investigate the effect of increasing competition in different tournaments on honesty.
- We adapt the experimental setup of Fischbacher and Föllmi-Heusi (2013).
- On average we find that honesty is more pronounced when the prize spread is small.
- However, our results suggest individual heterogeneity of lying costs.

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ABSTRACT

We apply the die rolling experiment of Fischbacher and Föllmi-Heusi (2013) to a two-player tournament incentive scheme. Our treatments vary the prize spread. The data highlights that honesty is more pronounced when the prize spread is small.

1. Introduction

Introducing competition among employees, e.g., for a bonus, is a tool used by designers of organizational incentive schemes to increase effort provision. Even if such tournament incentives are not explicitly imposed, e.g., by payment schemes, tournaments are implicitly prevalent in basically all organizations. For example, promotions in hierarchies can be interpreted as tournament competition among employees. Previous research has theoretically (Lazear and Rosen, 1981; Grund and Sliwka, 2005), and empirically (Harbring and Lünser, 2008) shown the effort enhancing effect of such tournament incentives. The downside of competitive incentives, however, is linked to employees' potential engagement in unethical behavior to win the tournament. Especially in situations when effort provision or outcomes are not fully observable and verifiable, agents might be tempted to forge results. A growing strand of literature has shown unethical conduct under tournament incentives, e.g., less helping and greater sabotaging of opponents (see, Carpenter et al., 2010; Harbring and Irlenbusch, 2011). Unethical behavior can also be observed under other types of compensations schemes, e.g., goal-setting and team-incentives (see, Schweitzer et al., 2004; Shalvi et al., 2011; Conrads et al., 2013). Cadsby et al. (2010) compares a tournament scheme to other incentives schemes without investigating different prize spreads.

In this paper we concentrate on ethical conduct, i.e., employees' inclination to honestly report their performance, in different

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tournaments. We are particularly interested in how honesty is affected by increasing competition through varying the prize spread. Fischbacher and Föllmi-Heusi (2013) find that individuals systematically overreport the true value of a private die roll when the reported number determines their individual pay. We extend their experimental design to a simple two-player tournament incentive scheme with varying prize spreads between the winner and the loser. Thereby, we increase the degree of competition among the two players in order to analyze its effect on honesty.

If an individual has no costs of lying and is only interested in maximizing her own payoff she will always overreport her performance in tournaments. The growing literature on lying aversion (Gneezy, 2005; Mazar et al., 2008; Sutter, 2009; Kartik, 2009; Erat and Gneezy, 2011; Fischbacher and Föllmi-Heusi, 2013), however, has shed doubts on these assumptions. For example, Gneezy et al. (2013) classify subjects into liar-types with different lying costs, i.e., they find types that are totally honest or dishonest, respectively, and types that condition their lies on the given incentive structure. Gibson et al. (2013) also highlight the existence of heterogeneous preferences for truthfulness. Their studies underline the intuition that people differ in their perceived cost of lying. In particular, their results suggest that people experience either no costs of lying or high fixed costs. With respect to these findings, the aim of our study is to provide designers of incentives schemes with empirical insights into the potential adverse effects of a presumably effort enhancing compensation scheme.

2. Experimental design

Subjects are instructed that their payment for filling in a questionnaire will be based on a production output p_i randomly determined by rolling a fair 6-sided die.[1] We intentionally induce subjects' production output by a random procedure to abstract from concerns that lying behavior is influenced by subjects' production abilities (Charness et al., 2013). In all treatments, the production output p_i of subject i equals the number d_i shown on the die if $d_i \in \{1, \dots, 5\}$, whereas a die roll of $d_i = 6$ results in a production output $p_i = 0$. In order to implement a tournament we extend the game by Fischbacher and Föllmi-Heusi (2013) in the following way: subjects are randomly and anonymously matched in groups of two, and each subject privately rolls her die such that nobody apart from her, i.e., neither the experimenter nor any other subject, can observe the production output p_i. Then, each group member individually submits a report r_i of her production output where r_i does not have to be equal to p_i. Production outputs reported by the two group members are compared by the experimenter. The group member who submitted the higher reported production output receives the winner prize w, while the other group member receives the loser prize l, with $w > l$. If both group members submit the same report, the player to receive w is determined by a 50/50 random draw. Within our three experimental conditions we vary the prize spread $\Delta = w - l$ from 1 to 5: in treatment T5 the winner receives 5 while the loser gets nothing, in treatment T3 the winner receives 4 while the loser gets 1, and in treatment T1 the winner gets 3 while the loser receives 2.

Our treatments are designed such that they have several characteristics in common: first, on average subjects earn 2.5 whatever they report. Second, if all subjects report their true production output, the expected payoff of each subject is 2.5. Third, if both players report the maximum production output of 5, their expected payoff also equals 2.5. Fourth, the sum of winner and loser prizes and hence the cost of implementing the respective tournament is equal to 5 across all experimental conditions.

As indicated above, the aim of our study is to examine whether a change in the prize spread has an impact on subjects' willingness to honestly report their production output. Under the assumption that lying is completely costless, it is optimal for both subjects to report the highest production output of 5 which results in expected payoffs of 2.5 for both players. Hence, in absence of lying costs, the prize spread should not influence subjects' reports and we should not observe any treatment differences. If we assume that subjects incur lying costs, i.e., if a subject's utility diminishes by a certain amount whenever she submits a reported production output that is different from the true production output, her willingness to be honest depends on her lying costs and potential gains from lying. Since the latter is not independent from prize spread Δ, an increase in the prize spread across our experimental conditions may well reduce honesty.

A total of 478 students (with a mean age of 24 and 54% being female) participated in our experiment in the laboratories of the University of Bonn (BonnEconLab) and the University of Cologne (CLER), and were recruited via ORSEE (Greiner, 2003). After privately rolling their die and jotting down their report on a sheet of paper, subjects were asked to fill in the questionnaire. At the end of the session participants were privately paid at a conversion rate of 1€ per prize unit. Following Fischbacher and Föllmi-Heusi (2013) we ran our experiment after different other experimental sessions.[2]

3. Results

Fig. 1 depicts the distribution of reported production outputs across treatments. The dashed line represents the expected relative frequency of the true production output. Evidently, the observed distributions markedly differ from this benchmark.

To address our research question we need to compare the reported production outputs across treatments. In treatment T1 we observe the lowest average reported production output ($\bar{r}_{T1} = 3.42$).[3] Increasing the prize spread by 2 units in T3 enhances the average reported production output to $\bar{r}_{T3} = 3.71$. However, the highest average reported production output of $\bar{r}_{T5} = 3.86$ can be found in T5 — the treatment with the highest prize spread of 5. Although we cannot rule out that some subjects lie to their own disadvantage (as we do not observe the true production outputs) there seems to be a tendency that subjects lie more the higher the prize spread is by exaggerating their true production output. An overview of the results can be found in Table 1.

According to a Jonckheere–Terpstra test the hypothesis that there is no difference in reported production outputs can be rejected in favor of the hypothesis that reported production is increasing in the prize spread ($p = .0064$, one-sided). Pairwise comparisons of the distribution of reported production outputs show higher values in T3 compared to T1 ($p = .0464$, Mann–Whitney U test, one-sided), and in T5 compared to T1 ($p = .0064$, Mann–Whitney U test, one-sided). A pairwise comparison between T3 and T5 yields no significant difference ($p = .2114$).[4]

1 The original instructions in German and their translation in English are available from the authors upon request.

2 The preceding experimental sessions consisted of standard experimental games like dictator, ultimatum or public goods games. To counteract potential spill-over effects we balanced our three treatments over the different types of preceding experiments.

3 Note, that in the baseline treatment of Fischbacher and Föllmi-Heusi (2013) – which essentially resembles a piece-rate incentive scheme – an average of $\bar{r}_{FHH} = 3.51$ is observed. Statistically, there is no significant difference in reported production outputs between their baseline treatment and T1.

4 Interestingly, we find that women report significantly lower production outputs compared to men in T3 ($p = .0001$, Mann–Whitney U test, two-sided) and T5 ($p = .0153$, two-sided). When the prize spread is rather small (T1) no difference between men and women is observed. This supports observations from the literature on gender differences in lying behavior (Dreber and Johannesson, 2008).

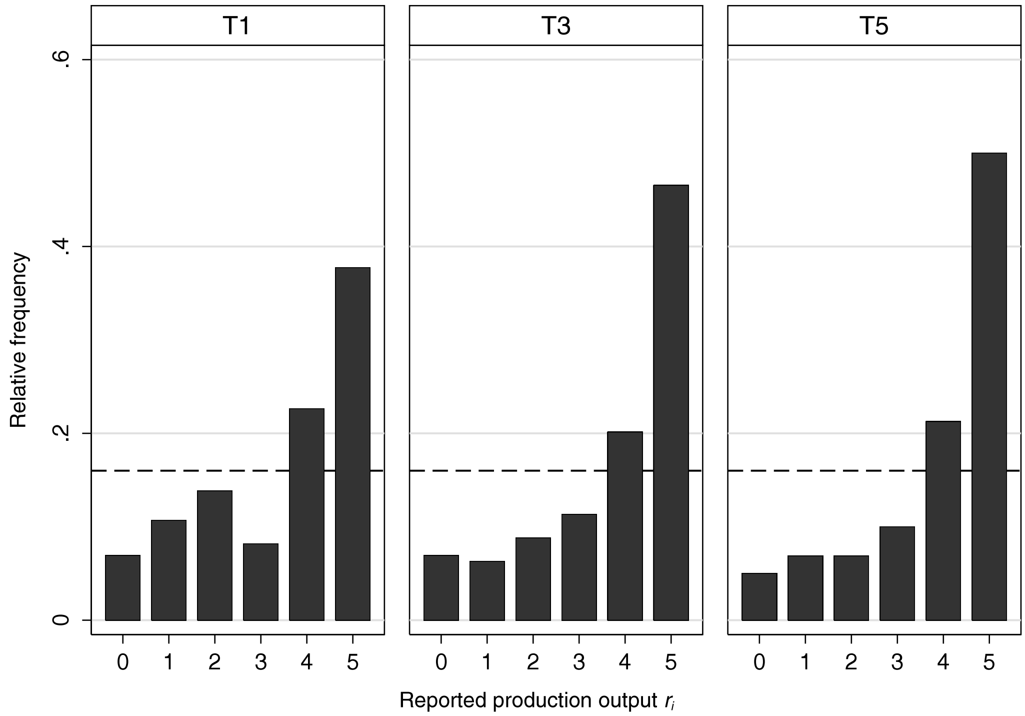

Fig. 1. Distribution of reported production outputs. The dashed line indicates the expected relative frequency of the true reported production output.

Table 1
Overview of results.

Treatments	w	l	n (% female)	$\bar{r}_{Tk}$	$r_i = 0$	$r_i = 1$	$r_i = 2$	$r_i = 3$	$r_i = 4$	$r_i = 5$
T1	3	2	159 (56%)	3.42	$.07^{---}$	$.11^{---}$	.14	$.08^{---}$	$.23^{++}$	$.38^{+++}$
				$\wedge^{**}$						
T3	4	1	159 (57%)	3.71	$.07^{---}$	$.06^{---}$	$.09^{---}$	$.11^{-}$	$.20^{+}$	$.47^{+++}$
T5	5	0	160 (50%)	3.86	$.05^{---}$	$.07^{---}$	$.07^{---}$	$.10^{--}$	$.21^{++}$	$.50^{+++}$
				$\vee^{***}$			$\wedge^{**}$			$\vee^{**}$
T1	3	2	159 (56%)	3.42	$.07^{---}$	$.11^{---}$	.14	$.08^{---}$	$.23^{++}$	$.38^{+++}$

Notes: n stands for the number of observations. $w(l)$ is the winner (loser) prize. $\bar{r}$ is the average reported production output. Stars show the significance of a two-sided Mann–Whitney U test or χ^2 test ($^* = 10\%$-level, $^{**} = 5\%$-level, $^{***} = 1\%$-level). Plus and minus signs display the significance of a one-sided binomial test indicating that the observed relative frequency is smaller (larger) than $\frac{1}{6}$ ($^{-}(^{+}) = 10\%$-level, $^{--}(^{++}) = 5\%$-level, $^{---}(^{+++}) = 1\%$-level). Some numbers of observations are uneven, because we exclude subjects that already took part in die rolling experiments at the laboratory in Cologne.

According to a Jonckheere–Terpstra test, reporting the highest possible production output $r_i = 5$ is more likely as the price spread increases ($p = .0139$, one-sided). Pairwise comparisons of the fraction of subjects reporting $r_i = 5$ between treatments yields a significant difference between T5 and T1 ($p = .027$, χ^2-test, two-sided). Comparing T5 against T3 and T3 against T1 yields no statistical significant differences ($p = .536$, $p = .112$, two-sided).

In all treatments the frequencies of the reported production output of $r_i = 4$ exceed the benchmark threshold of .16 ($p < .09$ for all treatments, binomial test, one-sided). Interestingly, the number of subjects reporting 4 does not statistically differ between treatments ($p = .86$, χ^2-test, two-sided).

In addition, we observe a positive fraction of subjects (T1: .07; T3: .07; T5: .05) reporting production outputs of zeros. According to a χ^2-test there is no significant difference across treatments regarding the fractions of subjects who report zeros ($p = .717$, two-sided).

4. Concluding remarks

Lying, as compared to other unethical activities has been mostly overlooked when studying the effectiveness of tournament incentives. This might be due to the fact that economists often consider lying to be costless. By focusing on the role of honesty in tournaments, this study augments the small literature on the interplay of incentive schemes and ethical behavior. Our experiment extends the simple and widely used die rolling game paradigm introduced by Fischbacher and Föllmi-Heusi (2013) to a two-player tournament and varies the difference between winner and loser prize.

We find evidence that a larger prize spread increases subjects' propensity to be dishonest. However, we also find that not all subjects report the highest possible production output and the fraction of subjects who (truthfully) reports a production output of zero does not change with the prize spread. Thus, even in the face of competitive incentives a considerable fraction of subjects appears to be reluctant to be untruthful to the full extent. Taken together, these results suggest individual heterogeneity of lying costs (Gneezy et al., 2013; Gibson et al., 2013).

When implementing tournament incentives, organizations should be aware of potential ethical misconduct, for example dishonesty of employees. In fact, employees' dishonest behavior might result in inefficient outcomes. For example, sales people who deceive their customers in order to win a bonus might harm a corporation's reputation, and employees' veiling of mistakes or overstatement of skills may hinder the organization to learn how to improve.

Hence, in order to prevent the occurrence of inefficiencies, designers of incentive schemes should be especially vigilant when considering to distribute a fixed amount of money among their employees by employing relative performance measures that are not fully observable or verifiable.

Unethical behavior in competitive situations can have many facets and lying over one's own performance is only one of them. Sabotage, office politics and employee theft are other possible scenarios. Taken together the study at hand and the existing literature calls for a more holistic investigation in order to gain a deeper understanding of moral transgressions in the workplace.

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