



# 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.

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## 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.<sup>1</sup> 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  $\Delta$ , 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.<sup>2</sup>

## 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 ( $\bar{r}_{T1} = 3.42$ ).<sup>3</sup> 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 ( $p = .2114$ ).<sup>4</sup>

<sup>2</sup> 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.

<sup>3</sup> 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.

<sup>4</sup> 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).

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

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