



## The effects of tournament horizon and the percentage of winners on social comparisons and performance in multi-period competitions



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### ABSTRACT

We examine the effects of two important tournament design features, tournament horizon and percentage of winners, on social comparisons and performance in a multi-period setting. Prior research has individually examined these two features, but has not examined their joint effects. Replicating prior research, we predict that a higher percentage of winners will result in better performance than a lower percentage of winners by inducing more social comparisons. We also predict that grand tournaments will result in better performance than repeated tournaments through their effects on the extent to which competitors will engage in social comparisons. We expect that relative to repeated tournaments, grand tournaments will encourage more social comparisons because the performance feedback provided to competitors will be more indicative of the likelihood of future period outcomes (i.e., winning or losing) than in a repeated tournament. We also examine the extent to which the percentage of winners moderates the strength of the predicted relations among tournament horizon, social comparisons and performance. Finally, we predict that in repeated tournaments using a higher percentage of winners will be more effective at sustaining effort in later periods but that these effects will be weaker for grand tournaments. Results from a laboratory experiment with 400 undergraduate student participants support these predictions. Moreover, we find no evidence that the percentage of winners influences the impact of tournament horizon on social comparisons or overall performance. We identify implications for theory and practice.

### 1. Introduction

The use of tournament-based incentives is common in organizations. In tournaments, individuals (or groups) compete against each other for either a single or a limited set of rewards with outcomes based on relative performance ranking at the end of the competition (Hazels & Sasse, 2008). Given their common use in practice, tournaments have attracted considerable research attention in recent years (Berger, Klassen, Libby, & Webb, 2013; Choi, Newman, & Tafkov, 2016; Hannan, Krishnan, & Newman, 2008; Kelly, Presslee, & Webb, 2017). Tournaments can motivate sustained effort because relative performance at the end of the tournament determines the winner(s) and loser (s) (Lazear & Rosen, 1981; Matsumura & Shin, 2006). The positive performance effects often observed in tournament settings are in part attributed to the social comparisons individuals make among themselves to judge their likelihood of winning the competition (Hannan, McPhee, Newman, & Tafkov, 2013; Matsumura & Shin, 2006).

We examine the impact of two tournament features known to affect competitor's social comparisons and performance, tournament horizon (repeated versus grand) and the percentage of competitors eligible to win. Repeated tournaments tend to be short in duration (e.g., a few weeks) with no performance carry-over from one competition to the next (Berger et al., 2013) while grand tournaments are longer in duration (e.g., several months) with outcomes based on cumulative performance (Hannan et al., 2008). Tournament horizon and percentage of winners are important to study jointly for two reasons. First, prior experimental research examining tournament horizon effects have produced equivocal results. Choi et al. (2016) find repeated tournaments lead to better performance than grand tournaments and Tong and Leung (2002) find the opposite result. However, Choi et al. reward 20% of competitors while Tong and Leung reward 50% indicating that the relation between tournament horizon and performance may be sensitive to the percentage of winners and is therefore worthy of further examination.<sup>1</sup> Moreover, Knauer, Sommer, and Wohrman (2016) find

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<sup>1</sup> Other research design differences between the two studies such as the nature of feedback provided and the type of task employed make it difficult to attribute their result solely to the difference in the percentage of winners.

that the percentage of winners has a significant effect on social comparisons and effort in repeated tournaments with a higher percentage of winners resulting in better performance than in tournaments with a lower percentage of winners. Second, field studies show that various combinations of win percentage and tournament horizon are used by organizations. For example, Berger et al. (2013) examine a repeated tournament setting at a reservation center of a major hotel chain where the percentage of winners is relatively high at 40%. Conversely, Casas-Arce and Martinez-Jerez (2009) examine the impact of a grand tournament at a retailing company where the percentage of winners is relatively low at 10%. Thus, understanding how tournament horizon and percentage of winners jointly impact performance is also relevant to practice.

Based on psychology theory and related evidence, we predict that when the percentage of winners is higher, competitors will engage more in social comparisons, which in turn will result in better performance (Festinger, 1954; Knauer et al., 2016). We also expect that tournament horizon will impact effort choices via differences in the type of relative performance feedback provided to competitors. In grand tournaments, individuals periodically receive cumulative relative performance feedback that can be used to determine if changes are needed to task strategies or effort in future periods (Casas-Arce & Martinez-Jerez, 2009). As such, the feedback is highly meaningful since it implicitly provides information about future behaviors required for a successful outcome (Tong & Leung, 2002). In a repeated tournament, individuals are typically provided relative performance feedback for the tournament just completed rather than receiving cumulative performance feedback across multiple tournaments (Kelly et al., 2017).<sup>2</sup> Because this feedback relates to the outcomes of a single tournament that is already complete, it is likely viewed as less meaningful with respect to future tournament outcomes since performance does not carry-over from one competition to the next (Choi et al., 2016). As a result of the difference in the meaningfulness of relative performance feedback we predict competitors in grand tournaments will engage in social comparisons more than those in repeated tournaments, which in turn will result in better performance than repeated tournaments.<sup>3</sup> Absent a clear theoretical basis for predicting interactive effects, we develop research questions examining the joint effects of tournament horizon and percentage of winners on social comparisons and performance.

We also develop predictions regarding performance changes in the late versus early periods of repeated and grand tournaments. In repeated tournaments, we predict that having a higher percentage of winners will lead to more positive effort changes over time because on average, competitors will begin each new successive tournament with a higher expectancy of success, which will serve to sustain effort (Knauer et al., 2016). In grand tournaments, we expect the positive effects of a higher percentage of winners on effort changes will be weaker. Assuming a fixed bonus pool, when the percentage of winners is higher, the rewards will be smaller and less attractive than they will be in competitions with a lower percentage of winners. In particular, we expect that attractiveness of the prizes paid at the end of multi-period grand tournaments will be increasingly influential on effort over time (Trope & Liberman, 2003). Accordingly, compared to repeated tournaments, we predict that in grand tournaments, competitors' effort changes in later periods will be less positive when the percentage of winners is high versus low.

To test our hypotheses, we use a 2 × 2 between-subjects experiment with tournament horizon (repeated or grand) and percentage of

winners (low versus high) manipulated as between-subject factors. A total of 400 undergraduate students worked on an effort-sensitive decoding task, competing in a series of 10-person tournaments where all winners received cash rewards. In the repeated tournament conditions, participants competed in six tournaments lasting four minutes each. In the grand tournament conditions, participants competed in a single 24-minute tournament separated into six, four-minute periods. In the low (high) percentage of winners conditions, 20% (50%) of competitors were eligible to win. Participants in grand (repeated) tournaments were only provided cumulative (current period) performance feedback including the number of correct decodes they completed and their relative ranking at the end of each period (tournament). Performance was measured as the number of decodes accurately completed. In the 20% (50%) winners condition, participants with performance ranked in the top two (five) earned a bonus, but we held the total reward pool constant across conditions.

Results support our main predictions. We find that grand tournaments indirectly lead to better performance through their positive impact on social comparisons. However, we find that the percentage of winners does not moderate the indirect effects of tournament horizon on performance, with grand tournaments resulting in more social comparisons when the percentage of winners is either low or high. Finally, we show that through their positive effects on participants' expectancy of success, repeated tournaments are more effective at sustaining motivation over time when the percentage of winners is high versus low. Conversely, grand tournaments, through their positive effects on reward attractiveness are more effective in sustaining motivation over time when the percentage of winners is low rather than high.

Our study makes several contributions to the literature on tournament incentive schemes. First, our main finding extends previous research (Berger et al., 2013; Casas-Arce & Martinez-Jerez, 2009; Choi et al., 2016; Tong & Leung, 2002) by showing that grand tournaments indirectly affect performance through their positive effects on social comparisons. These results suggest that provision of cumulative performance feedback, a feature inherent to grand tournaments, has strong behavioral consequences in the form of more extensive social comparisons. Moreover, while we replicate prior research in showing that a higher percentage of winners leads to better performance vis-à-vis more social comparisons (Knauer et al., 2016), we also find that the positive indirect effects of grand tournaments on performance are not influenced by the percentage of winners. We believe this offers further evidence of the importance of understanding how tournament horizon can influence effort through the considerable effects on social comparisons.

Second, we build on Choi et al. (2016) who find that repeated tournaments where both current period and cumulative relative performance feedback is provided result in better performance than grand tournaments that provide the same types of feedback. In conjunction with Choi et al. (2016) our findings suggest that companies planning to use repeated tournaments may want to provide cumulative relative performance feedback, a feature inherent to grand tournaments, given our evidence of the positive effect this information has on social comparisons and effort. Third, we provide new evidence on the dynamic effects of tournament horizon on effort that are relevant to compensation scheme designers. Specifically, our results show that grand tournaments are more effective at sustaining effort in later periods when the percentage of winners is low, but repeated tournaments are more effective when the percentage of winners is relatively high. While these effects do not change our inferences about the overall performance effects of tournament horizon and percentage of winners, they raise the possibility that differences may eventually emerge in settings where tournaments continue over an extended time period.

The rest of our paper is structured as follows. In Section 2, we review the literature and develop our hypotheses. Section 3 describes the experimental method and Section 4 presents our results. We conclude with a discussion of our findings, limitations and suggestions for future work in Section 5.

<sup>2</sup> Our predictions are developed in a setting where feedback type differs between grand and repeated tournaments. In grand tournaments, cumulative relative performance feedback is provided for all periods completed to date whereas in repeated tournaments relative performance feedback is provided only for the competition just completed.

<sup>3</sup> Assuming a fixed bonus pool, we also expect that the larger resultant financial rewards (i.e., payouts for a single tournament) under grand versus repeated tournaments will induce more social comparisons as the outcomes (i.e., 'winning') will be more consequential (attractive) to participants (Tong & Leung, 2002).

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