

Competitiveness and Social Preferences

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November 2025

Abstract: This paper investigates how individual prosocial behavior relates to competitiveness and whether this link differs across competitive context and gender. In a preregistered two-session laboratory experiment (N = 398), participants first complete incentivized social-preference tasks—the Dictator, Trust, and Prisoner’s Dilemma games—to generate a prosociality index (0–4). In a subsequent real-effort task, participants allocate earnings between piece-rate and competitive payment schemes. In the Other-Competition treatment, participants choose between competing against another person or working for a fixed rate; in the Other + Self - Competition treatment, they can also compete against themselves. Prosociality is positively but weakly correlated with competition entry in pooled analyses, yet the relationship becomes insignificant once self-competition is introduced. Purely prosocial individuals are slightly more willing to enter self-competition than others, while purely selfish types do not differ. Gender differences in competitiveness are small and statistically insignificant. Overall, the findings suggest that prosocial and competitive motives can coexist under tournament-based incentives.

Extended Abstract

1. Introduction, Background and Objectives

Modern economies are fundamentally competitive. Individuals routinely compete for grades, promotions, and recognition, while firms compete for resources, customers, and survival. Economic competition is widely regarded as a key driver of efficiency, innovation, and productivity (OECD, 2023). At the same time, the extent to which markets and competitive incentives influence human behavior—particularly ethical and social conduct—has long been debated. Since the early works of Smith (1763) and Friedman (1962), markets have been viewed as engines of prosperity and political freedom, generating wealth and fostering a more informed awareness of societal needs. Yet, a competing argument states that market institutions and

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competitive pressures can erode social responsibility and moral behavior by rewarding self-interest and crowding out ethical concerns (Ockenfels and Weimann, 1999; Charness et al., 2014). Behavioral economists emphasize that such environments reveal the complex interplay between self-interest and other-regarding preferences (Fehr and Fischbacher, 2002). Classic laboratory studies further show that individuals differ systematically in their willingness to compete, and that these differences have lasting consequences for educational and labor-market outcomes (Niederle and Vesterlund, 2007; Buser et al., 2014, 2017). These findings suggest that competition not only drives performance and efficiency but may also amplify preexisting heterogeneity in social and moral motives.

A growing body of work examines how competition influences not only performance but also moral and cooperative behavior. Experimental evidence shows that competitive incentives can, in some contexts, crowd out ethical or prosocial motives by emphasizing self-interest and relative success (Falk and Szech, 2013; Bartling et al., 2015). Other studies suggest that competition can also promote fairness and cooperation when success depends on effort, compliance, or mutual performance standards (Schwieren and Weichselbaumer, 2010; Balafoutas et al., 2012). A large-scale meta-analysis by Huber et al. (2023), blends evidence from 45 different experimental designs and finds an overall small negative effect of competition on moral behavior. Yet, the meta-analysis highlights considerable heterogeneity across designs: competitive environments that intensify interpersonal comparison tend to reduce prosocial outcomes, whereas contexts that emphasize self-improvement or independent performance show neutral or even positive effects. Taken together, this literature suggests that competition and morality are not inherently incompatible—rather, their relationship depends on how competitive structures interact with individuals’ underlying social motives and fairness concerns.

The social and moral dimensions of competition also intersect with gender. Decades of research in behavioral and experimental studies identify gender as one of the most consistent predictors of competitive behavior. Beginning with Niederle and Vesterlund (2007), studies show that women enter competitions less often than men, even when ability and performance are comparable. Subsequent work (Buser et al., 2014; Gillen et al., 2019) links this gap to differences in confidence and risk attitudes, and the competitive context (Apicella et al., 2017). More recently, Koch et al. (2025) demonstrate that these behavioral differences are reinforced by stereotypes that associate men with competitiveness and women with prosociality. Such beliefs shape what individuals perceive as socially appropriate, amplifying gender gaps even when actual differences are small. Hence, gender disparities in competition may reflect both intrinsic preferences and the social meanings attached to competing and cooperating.

The present experiment investigates how individual differences in prosociality relate to preferences for competitive payment choices. Participants first complete three incentivized social-preference tasks—the Dictator, Trust, and Prisoner’s Dilemma games—which together produce a continuous prosociality index ranging from 0 (completely selfish) to 4 (completely prosocial). In a following experiment after a time lag (minimum 5 days), they allocate additional

earnings among a piece-rate scheme and one or more competition schemes. In Treatment 1, participants choose between piece-rate and other-competition options, while Treatment 2 introduces an additional self-competition option (Apicella et al., 2017; Apicella et al., 2020; Demiral and Mollerstrom, 2024). This design isolates how social motives influence selection into competitive environments that differ in their social framing but not in expected payoff structure.

The results show only a limited connection between prosociality and competitiveness. More prosocial individuals are slightly more likely to allocate a larger share of their payoff to either type of competition, though the relationship remains small and statistically insignificant. When self-competition is introduced, prosociality no longer predicts allocation patterns, suggesting that competition itself is not incompatible with prosocial motives. Instead, individuals with stronger other-regarding preferences may view competition as an opportunity for self-assessment or self-improvement rather than as a threat to others' welfare. By situating these findings within the broader behavioral literature, the study provides evidence that competitiveness and prosociality can coexist under tournament-based incentives.

2. Experimental Design and Procedures

We preregistered the experimental design and analysis plan. Data were collected in Spring 2025 and Fall 2025 at the Interdisciplinary Center for Economic Science Laboratory of George Mason University. A total of 398 subjects completed the experiment. We used a between-subjects design with two main treatment conditions. In the Other-Competition Treatment (Treatment 1), participants chose between a piece-rate payment scheme and an other-competition scheme. In the Self-Competition Treatment (Treatment 2), participants chose among three schemes: piece-rate, self-competition, and other-competition. The two treatments were designed to vary the social context of competition while holding expected payoffs and task structures constant. All decisions were fully incentivized, and payoffs depended on participants' choices and task outcomes.

The experiment took place across two sessions separated by at least five days to minimize priming or demand effects between measures of prosociality and competitiveness. The first session focused on social preferences and was conducted online. Participants completed three standard incentivized games—the Dictator Game, Trust Game, and Prisoner's Dilemma—each implemented with real monetary consequences and randomly matched counterparts (Exley et al., 2024). From these tasks, a composite prosociality index was constructed, ranging from 0 (completely selfish) to 4 (completely prosocial), capturing the degree to which participants value fairness, reciprocity, and others' welfare.

The second session was conducted in the lab and centered on competitive decision-making. Subjects who completed the first session at least five days ago were allowed to participate in this second session. In the Other-Competition Treatment (Treatment 1), participants

added up five two-digit numbers within 3 minutes for three rounds. In the first round, they were paid 50 cents for each correct addition (piece-rate task). In the second round, they were randomly matched with another participant in the same experiment and received 100 cents per correct answer if their performance was higher than the opponent, and nothing otherwise (Other-competition task). In the third round, they chose between these two payment alternatives. Those who chose the piece-rate option received 50 cents per correct problem in round 3, while those who chose the other-competition option had their third-round performance compared to their paired opponent's second-round performance (Niederle and Vesterlund, 2007). If their score was higher, they received 100 cents per correct answer; otherwise, they earned nothing. In the event of a tie, the winner was determined randomly.

In the Other+Self-Competition Treatment (Treatment 2), participants completed a total of four rounds of the same real-effort task used in Treatment 1 (Apicella et al., 2020). In each round, they were asked to correctly add five two-digit numbers within a three-minute time limit. In the first round, participants were paid 50 cents for each correct problem, as in the piece-rate task of Treatment 1. In the second round, they were randomly and anonymously paired with another participant in the same session and received 100 cents per correct answer if their performance exceeded that of their opponent, and nothing otherwise. In the third round, participants competed against themselves (self-competition task): their performance in that round was compared to their own score from the first round. If they solved more problems correctly than in Round 1, they received 100 cents for each correct problem; otherwise, they earned nothing. In the fourth and final round, participants chose among all three payment schemes—the piece-rate, the other-competition, and the self-competition options. If they selected the piece-rate, they received 50 cents per correct problem in Round 4. If they chose other-competition, their Round 4 performance was compared to their opponent's Round 2 performance, and if their score was higher, they received 100 cents per correct problem; otherwise, they earned nothing. If they chose self-competition, their Round 4 performance was compared to their own Round 3 score. Participants who outperformed their prior self-competition performance received 100 cents per correct problem, and those who did not earned nothing. All ties were resolved randomly.

In the final round of both treatments, while deciding how they wanted to get paid, subjects distributed 100 percent of their potential bonus among the available payment schemes. In Treatment 1, the allocation decision was between piece-rate and other-competition; in Treatment 2, participants allocated among piece-rate, self-competition, and other-competition. This structure allows us to measure both the extent of competitive engagement and how it relates to the competitive context.

One of the two sessions and one game/round within that session were randomly selected for each participant to determine their final earnings. All participants completed detailed comprehension checks before proceeding and were paid privately at the end of the second session.

3. Data and Result Summary

Our data collection followed the sample size and power calculations outlined in the preregistration (<https://osf.io/xhjrq>). A total of 398 subjects participated in both sessions, with 131 assigned to Treatment 1 (Other-Competition) and 267 to Treatment 2 (Other + Self-Competition). The two treatment groups were balanced in terms of age, task performance, and prosociality. The only significant difference emerged in gender composition, with a smaller share of female participants in Treatment 1. Table 1 presents the balance statistics across treatments.

Table 1. Balance Table

	Treatment 1	Treatment 2
N	131	267
% Female	33.6*	45.3*
Age	23.4	23.3
Round_1_Score	4.34	3.92
Pro-sociality_Score	1.96	2.11

* indicates significant difference across treatments ($p < 0.05$, t -test).

3.1. Pooled Treatment Results

When pooling both treatment groups, participants allocate on average 59.1% of their potential payoff to competitive payment schemes (Other-competition or Self-competition) ($SD = 22.4$), indicating a moderate overall preference for competition. The average prosociality score is 2.06 ($SD = 1.25$) on a 0–4 scale, suggesting considerable heterogeneity in social preferences across participants.

Regression analysis reveals a small but statistically significant positive relationship between prosociality and the share allocated to competition ($\beta = 1.89$, $p = 0.046$), controlling for baseline task performance. A one-point increase in prosociality (on a 0–4 scale) corresponds to roughly a two-percentage-point increase in competitive allocation. The effect size is modest, yet it suggests that individuals with stronger other-regarding preferences are slightly more inclined to engage in competitive schemes. Table 2 documents this relationship.

Table 2. OLS Regression for Pooled Treatments

	(1) % Assigned to Competition Pooled Treatments
Prosociality_Score	1.885** (0.943)
Task1_Score	0.590 (0.527)
Constant	52.791*** (3.164)
Observations	398
R-squared	0.014

*Notes: The dependent variable is the percentage of total payoff allocated to competitive schemes (Other-competition and Self-competition combined). The regression pools data from both treatments and includes Task 1 performance as a control for ability. Robust standard errors are reported in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$*

3.2. Treatment-Level Results

In the Other-Competition treatment (Treatment 1), participants allocate on average 55.0% of their potential payoff to the competitive payment scheme ($SD = 21.6$). The average prosociality score in this treatment is 1.96 ($SD = 1.28$). OLS regression analysis (Table 3, column 1) shows that prosociality is positively but not significantly associated with the share allocated to other-competition ($\beta = 1.74$, $p = 0.28$). The direction of the effect aligns with the pooled analysis, but its magnitude is small and statistically indistinguishable from zero. Overall, results from Treatment 1 indicate that prosociality plays little role in shaping competitive behavior when competition entails direct comparison with another participant.

Table 3. OLS Regression Results by Treatment and Competition Type

	(1) % Assigned to Other- Competition Treatment 1	(2) % Assigned to Other- Competition Treatment 2	(3) % Assigned to Self- Competition Treatment 2
Prosociality_Score	1.739 (1.610)	0.951 (1.052)	0.735 (0.965)
Task1_Score	1.512** (0.693)	-0.948 (0.638)	0.975** (0.493)
Constant	44.973*** (5.018)	35.800*** (3.270)	21.629*** (2.912)
Observations	131	267	267
R-squared	0.044	0.011	0.012

*Notes: Each column reports an OLS regression where the dependent variable is the percentage of total payoff allocated to a specific competitive payment scheme. Column (1) shows results for the Other-Competition treatment (Treatment 1), where participants chose between piece-rate and other-competition options. Columns (2) and (3) report results for the Other-Competition and Self-Competition choices within Treatment 2, respectively. All models include Task 1 performance as a control for ability. Robust standard errors are reported in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$. **

In the Other + Self-Competition treatment (Treatment 2), participants allocate on average 27.0% of their potential payoff to the other-competition scheme (SD = 18.6) and 34.1% to the self-competition scheme (SD = 21.8). The average prosociality score in this treatment is 2.11 (SD = 1.23). A comparison of total competitive allocations across treatments shows that introducing the self-competition option significantly increases overall competition entry: participants in Treatment 2 allocated a larger share of their payoff to competition on average (61.1% vs. 55.0% in Treatment 1; $p = 0.010$, t -test¹). Regression results (Table 3, columns 2–3) show directionally positive, but not significant relationship between prosociality and the share allocated to either form of competition ($\beta = 0.95$, $p = 0.37$ for self-competition; $\beta = 0.73$, $p = 0.45$ for other-competition). Overall, results from Treatment 2 indicate that when participants can compete against either others or themselves, prosociality ceases to predict competitive behavior.

Taken together, results from both treatments reveal consistent patterns. Participants' willingness to compete varies across institutional settings—overall competition entry increases when self-competition is available—but prosociality remains an insignificant predictor of

¹ All tests are two-tailed t -tests, unless otherwise noted.

competitive behavior in all cases. To further explore potential heterogeneity, the next subsection examines whether these patterns differ among individuals with different categories of prosociality and competitiveness.

3.3. Extreme Types: Prosociality and Competitiveness

To examine whether behavioral relationships are more pronounced at the extremes, we create dummies to classify participants with a as purely prosocial (=1 if prosociality score is 4, =0 otherwise) and those with a score = 0 as purely selfish (=1 if prosociality score is 0, =0 otherwise). Across all subjects, purely selfish participants allocate on average 56.2% of their payoff to competitive schemes, compared with 59.5% among all others—a small and statistically insignificant difference ($p = 0.325$, t-test). In contrast, purely prosocial participants allocate on average 65.3 % of their payoff to competitive schemes, compared with 58.0 % among all others—a difference of 7.3 percentage points ($p = 0.020$, t-test).

Regression analyses confirm that this difference is small and treatment-specific (Table 4). In the Other-Competition treatment (Treatment 1), the coefficient on Pure_Prosocial is positive but not significant ($\beta = 8.78$, $p = 0.13$). In the Other + Self-Competition treatment (Treatment 2), purely prosocial individuals allocate somewhat more to self-competition ($\beta = 7.05$, $p = 0.090$), but not to other-competition ($\beta = -0.22$, $p = 0.950$). These results suggest that even the most prosocial participants do not systematically avoid competition; if anything, they are slightly more willing to enter self-competition, where success depends only on personal improvement.

Table 4: OLS Regression Results of Purely Prosocial Types

	(1) % Assigned to Other- Competition Treatment 1	(2) % Assigned to Self- Competition Treatment 2	(3) % Assigned to Other- Competition Treatment 2
Pure_Prosocial	8.776 (5.767)	7.055* (4.139)	-0.221 (3.574)
Task1_Score	1.571** (0.717)	-0.866 (0.637)	0.935* (0.500)
Constant	46.856*** (3.766)	36.434*** (2.875)	23.369*** (2.263)
Observations	131	267	267
R-squared	0.054	0.021	0.010

Notes: Each column reports an OLS regression where the dependent variable is the percentage of total payoff allocated to a specific competitive payment scheme. Column (1) presents results for the Other-Competition treatment (Treatment 1), where participants chose between a piece-rate and an other-competition option. Columns (2) and (3) report corresponding results for the Other+Self-Competition treatment (Treatment 2), distinguishing between allocations to the self-competition and other-competition schemes, respectively. The key independent variable (*Pure_Prosocial*) is a binary indicator equal to 1 if a participant's prosociality score equals 4, and 0 otherwise. All models include Task 1 Score as a control for individual performance ability. Robust standard errors are reported in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

We also compare extreme competitors—participants allocating at least 80 % of their payoff to competition—with non-competitors (≤ 20 %). Mean prosociality scores are statistically indistinguishable between the two groups (2.18 vs. 1.92, $p = 0.400$, t-test), a pattern consistent across both treatments. Together, these analyses indicate that categorical differences in moral orientation or competitive disposition do not materially change the overall conclusions: prosociality and competitiveness appear largely independent, even among individuals at the behavioral extremes. These findings are consistent with previous evidence suggesting that prosocial and competitive motives are not inherently incompatible but only weakly correlated (Fehr and Fischbacher, 2002; Huber et al., 2023).

3.4. The Role of Gender

Pooled across treatments, men allocate slightly more to competitive schemes than women (60.78 vs. 57.08 percentage points), but the difference is not statistically significant at conventional levels (diff = 3.70 pp, $p = 0.103$, t-test). This is in line with the literature reporting

significantly muted gender gaps in competitiveness with non-binary choices (Saccardo et al., 2018).

Turning to treatment-specific comparisons, in the Other-Competition treatment, men allocate more to other-competition than women (58.14 vs. 51.77 pp), yet this gap is again not statistically significant (diff = 6.37 pp, $p = 0.104$). In the treatment with both self- and other-competition, gender differences are small and statistically indistinguishable from zero for both other-competition (26.75 vs. 26.42 pp; $p = 0.881$) and self-competition (35.60 vs. 32.60 pp; $p = 0.267$).

Regression results mirror the descriptive patterns. In pooled OLS controlling for baseline performance, the female indicator is negative but not significant ($\beta = -3.52$, $p = 0.111$). Within Treatment 1, the female coefficient is -5.66 ($p = 0.128$) for other-competition; within Treatment 2, the female coefficient is -0.11 ($p = 0.960$) for other-competition and -3.24 ($p = 0.224$) for self-competition. An interaction model shows that the slope of prosociality does not differ by gender (prosociality $\times$ female: $\beta = -0.71$, $p = 0.700$), indicating no evidence that prosociality predicts competitive allocation differently for men versus women.

Finally, within-gender regressions show no significant association between prosociality and competitive allocation for men or women in either treatment. Overall, we find limited and non-robust gender differences in competitive allocation; once performance is controlled for, gender gaps are small and statistically indistinct, and the prosociality–competition link does not vary by gender.

4. Conclusion

We ask whether prosocial individuals are willing to compete, how this relationship changes when competition is framed as self-improvement rather than comparison with others, and whether these patterns differ by gender.

Our findings show that prosociality and competitiveness are not mutually exclusive. In pooled data, higher prosociality is associated with a modest increase in competitive allocation, but treatment-level analyses reveal that this relationship is small and statistically fragile,

especially once we distinguish between competing against others and competing against oneself. Introducing self-competition raises overall competitive entry, yet prosociality ceases to predict how subjects allocate across payment schemes. Even at behavioral extremes—purely prosocial vs. purely selfish types, and extreme competitors vs. non-competitors—differences are modest and rarely significant.

Gender differences are similarly limited. Men allocate slightly more to competitive schemes than women, but gaps are small and statistically indistinguishable once baseline performance is controlled. Within-treatment comparisons (other-competition only vs. Other+Self-competition) echo this pattern, and interactions between prosociality and gender are negligible.

Two implications follow. First, organizations seeking to broaden participation in competitive environments might focus on design features that emphasize self-referencing and improvement (e.g., progress benchmarks, personal bests), which increase uptake without making competition zero-sum. Second, our results suggest that competitiveness and prosociality are not inherently at odds; even highly prosocial individuals show a preference for self-competition. Thus, organizations aiming to implement performance-based competitions can do so without fear of crowding out cooperation or social motivation—especially when the design allows individuals to measure success through personal improvement rather than direct rivalry. Building on these insights, our next step involves an employer–worker extension in which employers evaluate workers’ prosociality, competitiveness, and performance based on the experimental treatments, allowing us to examine how beliefs about social preferences and gender influence hiring-related judgments.

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