Performance in Competitive Environments: Gender Differences

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Introduction

- Even though the provision of equal opportunities for men and women has been a priority in many countries, large gender differences prevail in competitive high-ranking positions.
- Suggested explanations include discrimination and differences in preferences and human capital.
- In this paper we present experimental evidence in support of an additional factor:

women may be less effective than men in competitive environments, even if they are able to perform similarly in non-competitive environments.

The Task

- The task participants have to perform is to solve mazes.
- Five levels of difficulty, from 1 = easy to 5 = hard
- Solve one maze of difficulty level 2 in order to get familiar
- Then, the final part of the instructions was distributed.

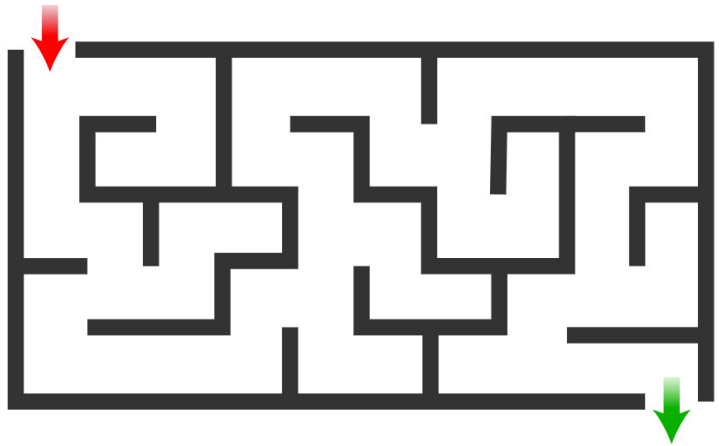


Figure 1: The maze game

The subjects

- Experiment was conducted at the Technion, Haifa, Israel
- Students there major in engineering (competitive institution)
- Students were recruited through posters on campus
- Six participants were invited by phone to each session
- Paid 20 shekels for showing up
- Overall, 54 sessions with 324 participants

Non-Competitive Environment

Treatment 1: Piece Rate Payment

- Participants have fifteen minutes to solve mazes
- Reward consists of 2 shekels for every maze
- Participants would not know how much other participants earned

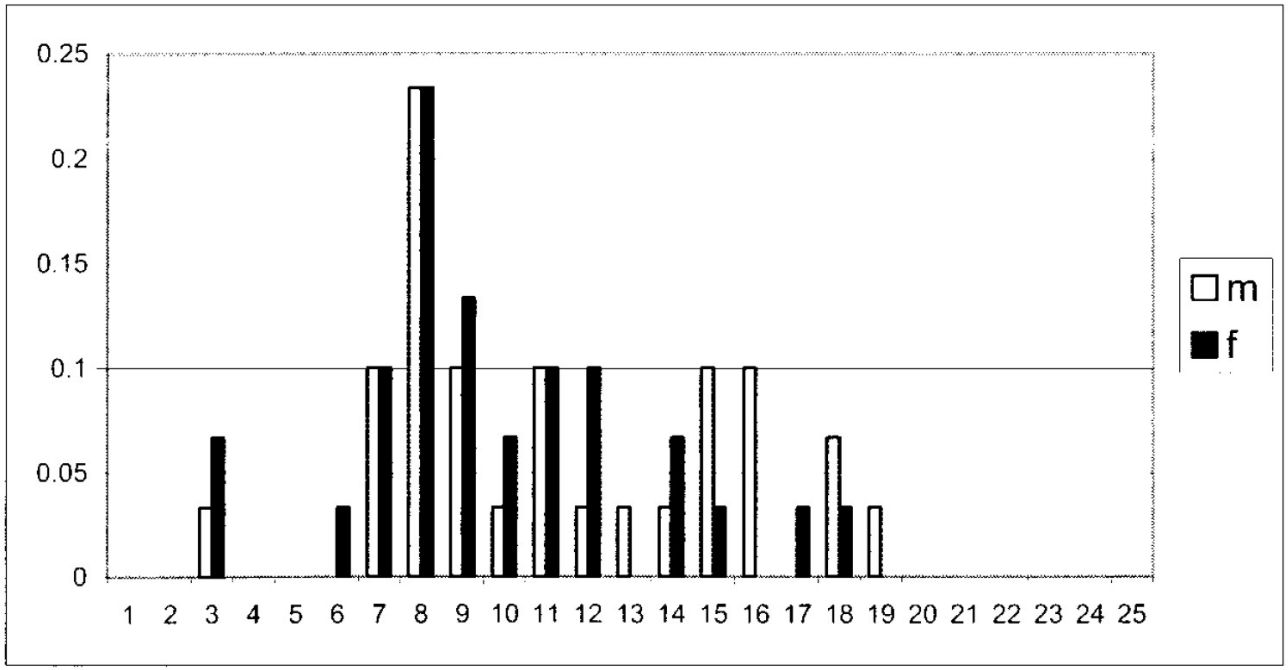


Figure 2: Number of Mazes Solved under Piece Rate

Competitive Environment

Treatment 2: Mixed Tournament

- Participants have fifteen minutes to solve mazes
- Only the participant who solved the most mazes will be paid 12 shekels for every maze he or she solved. (share prize in ties)

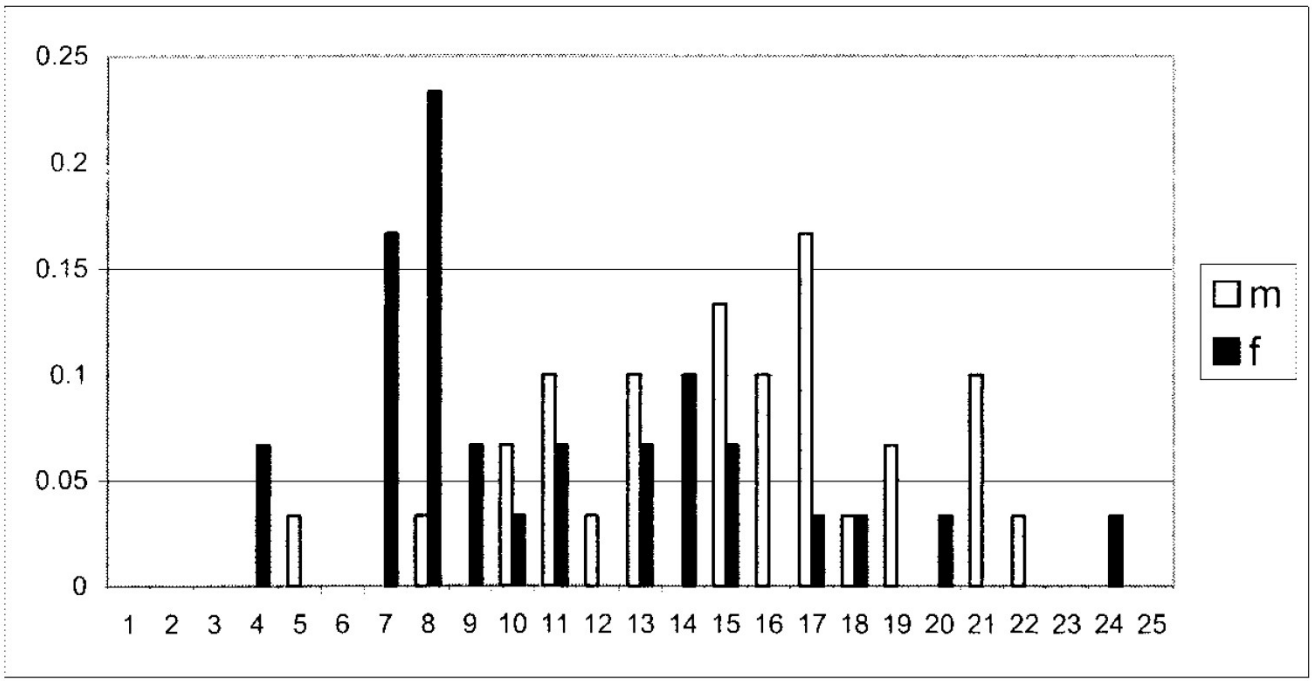


Figure 3: Number of Mazes Solved under Tournament Condition

Performance in the Mixed Tournament

- No significant gender differences in performance with the piece rate scheme or the random pay scheme.
- The p-value of the two-sided Mann-Whitney U test is 0.2023 and 0.165, respectively.
- Significant gender difference in performance in the mixed tournament.
- The p-value of the two-sided Mann-Whitney U test is 0.0004; the performance of men is significantly higher.

Is it Because of Different Risk Aversion

Treatment 3: Random Pay treatment

- Participants have fifteen minutes to solve mazes
- Only one of them (though they do not know which one) would be paid 12 shekels for every maze he or she solved
- This participant was chosen at random at the end of the experiment

$\Rightarrow$Participants do not change their performance in case of a random payment or a certain payment of the same expected value. We do not find any evidence that risk aversion influences performance

Competitive vs. non-Competitive Environment

for Men:

- *Men* perform significantly higher in mixed tournaments than under both non-competitive incentive schemes
- The p-value 0.001 for piece rate and 0.006 for random pay

for Women:

- *Women* do not significantly differ in their performance in the mixed tournament and non-competitive environment
- The p-value 0.62 for piece rate and 0.623 for random pay

Why mixed tournaments result in a significantly higher gender gap

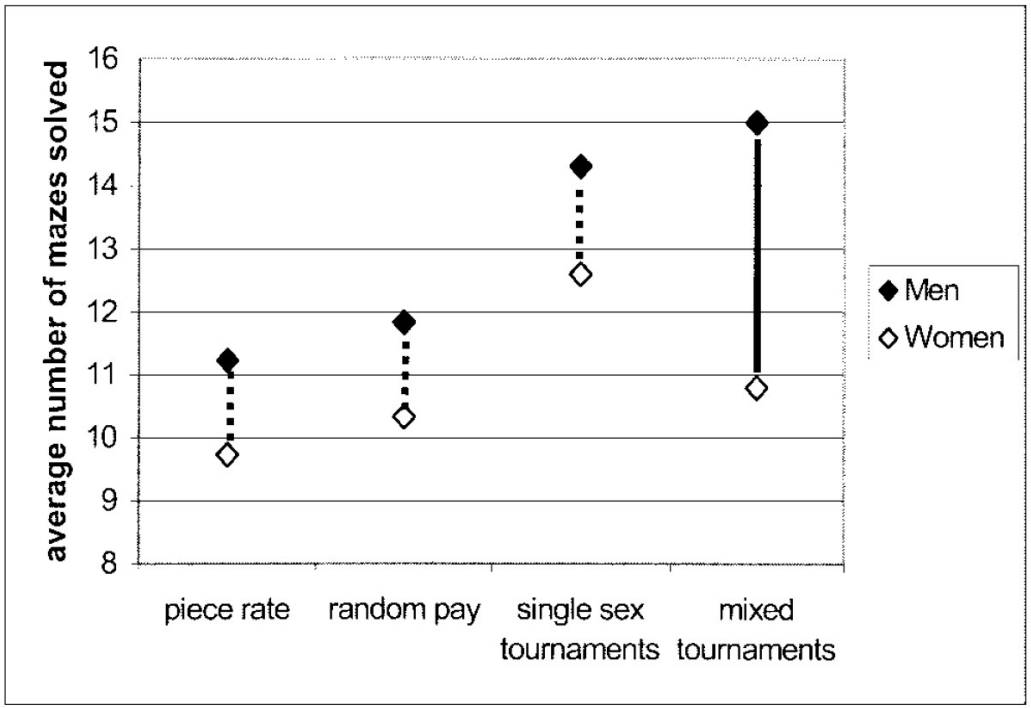
There are many possible explanations. several relevant categories are:

1. Women Do not Compete against Men
2. Women Do not Compete at All
3. Men Compete too Much

Treatment 4: Single-Sex Tournaments

- Five sessions of groups of six women only and five sessions of groups of six men only
- Everything else is the same as in the tournament treatment

The performance of men, even though a bit lower in single- sex than in mixed tournaments, is not significantly affected by the gender of their competitors. but women ...



Is it due to "absence of male participants?"

Treatment 5: Single-Sex Piece Rate Payment

- This treatment mimics the "mixed" Piece Rate treatment, but the group is homogeneous.

⇒The p-value of the two-sided Mann-Whitney U test when comparing the single-sex piece rate results of women to their mixed piece rate is 0.83.

⇒Increase in performance of women in single-sex tournaments is due to the incentive scheme and not the absence of male participants.

Discussion and Conclusion

- Tournament incentives in mixed gender groups resulted in a significant increase relative to the benchmark in performance of male participants, but not of female participants.
- Our experiments also allow for an analysis of the impact of different incentive schemes when participants are required to provide real effort.

Thank You