Does selection bias cause us to overestimate gender differences in competitiveness?

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Introduction

- Lab experiments have been used extensively to explore the existence of differences in preferences across groups of individuals.
- One of the most prominent examples of such research programs: gender differences in the willingness to compete (Dariel et al. 2017, Niederle 2016, Niederle and Vesterlund 2011).

"There are large gender differences in reaction towards competition, with women shying away from competition with men … These differences persist and are only somewhat reduced when controlling for beliefs about relative performance as well as risk aversion." – Niederle (2016)

"While the laboratory evidence shows in many cases large gender differences (say, in attitudes towards risk, or attitudes toward competition), most of the existing attempts to measure the impact of these factors on actual outcomes fail to find large effects." – Bertrand (2011)

Research question

- Does self-selection in lab experiments cause us to overestimate the gender gap in competitiveness?

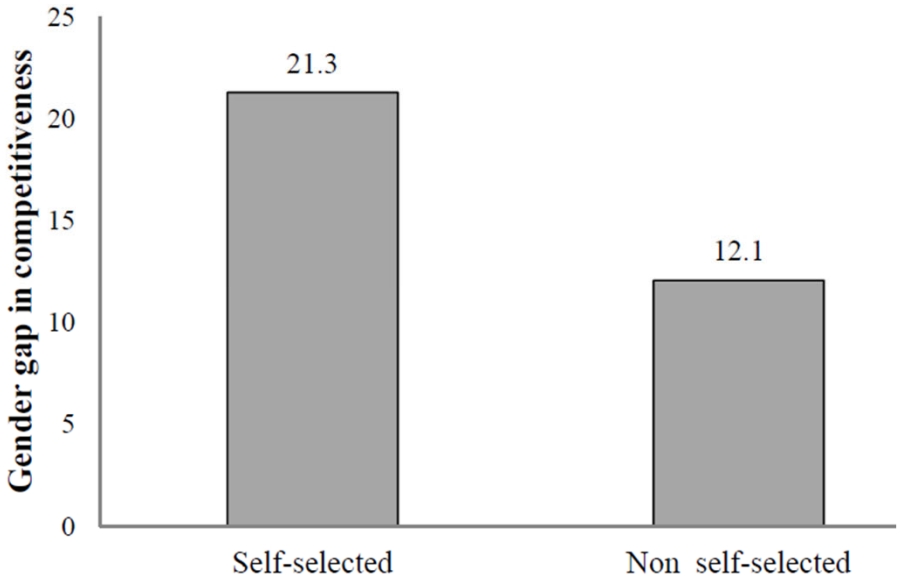
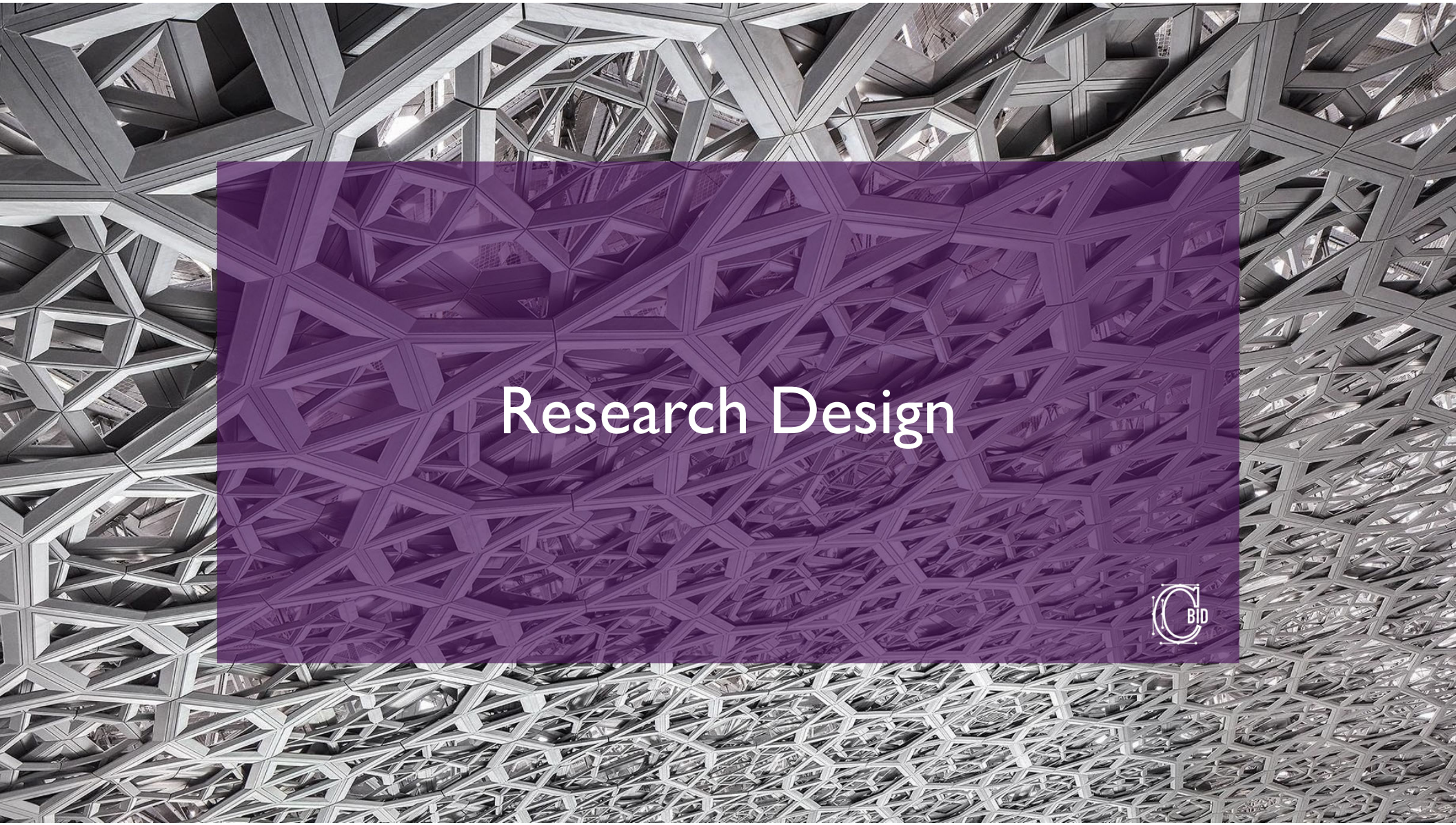
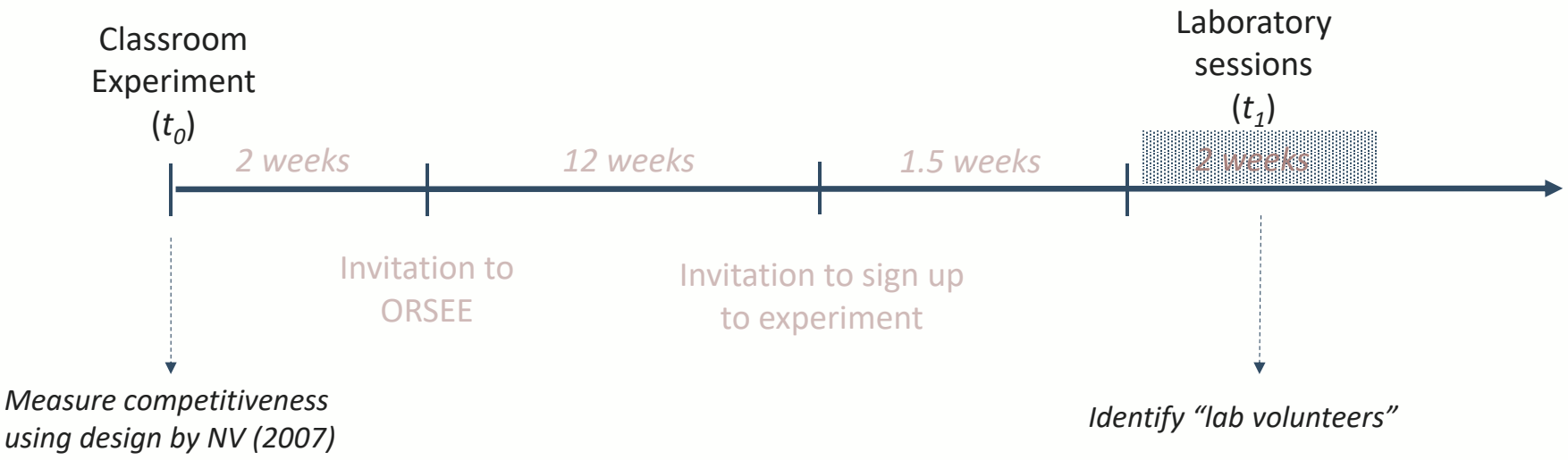


Figure 1 Gender gap in competitiveness (in percentage points) in previous studies surveyed in Dariel, Kephart, Nikiforakis and Zenker (2017) using designs similar to that in NV2007. *Self-selected* samples ($N = 36$) are those that could self-select into the experiment. *Non-self-selected* samples ($N = 17$) are typically found in studies relying on classroom experiments in which participants did not receive prior information about the experiment. The gender gap is calculated as the unweighted average across different samples of the difference in the fraction of men and women choosing to compete in a design similar to that in NV2007.


Research Design

Measuring selection bias

- Method similar to that by Cleave, Nikiforakis and Slonim (2013).



Measuring selection bias

- Let Δ_P^{G,t_o} denote the gender gap in competiveness in the "population" *(P)* at t_0, when self-selection is ruled out.
- Let Δ_V^{G,t_o} denote the gender gap in competiveness among the subset of lab volunteers (*V*) <u>also at t_0</u> who self-select into the lab at t_1.
- [We do <u>*not*</u> use Δ_V^{G,t_1} as learning, time and environmental effects would confound our estimate of the bias.]
- We say there is evidence that selection bias causes us to overestimate the gender gap if $\Delta_P^{G,t_o} < \Delta_V^{G,t_o}$.

Procedures

- Our population consists of **1,145 students** (96 tutorials).
- Students in "Academic Skills" at the Erasmus School of Economics.
- Compulsory for all first-year students of the program "Economics and Business Economics".
- Classroom experiment was implemented during the first tutorial of the year (September 2018).
- Computerized 15-minute experiment (Qualtrics).
- Only 7.9% (90 of the 1,145 students) are lab participants.

Main Results

Evidence of selection bias in estimate of gender differences in competitiveness

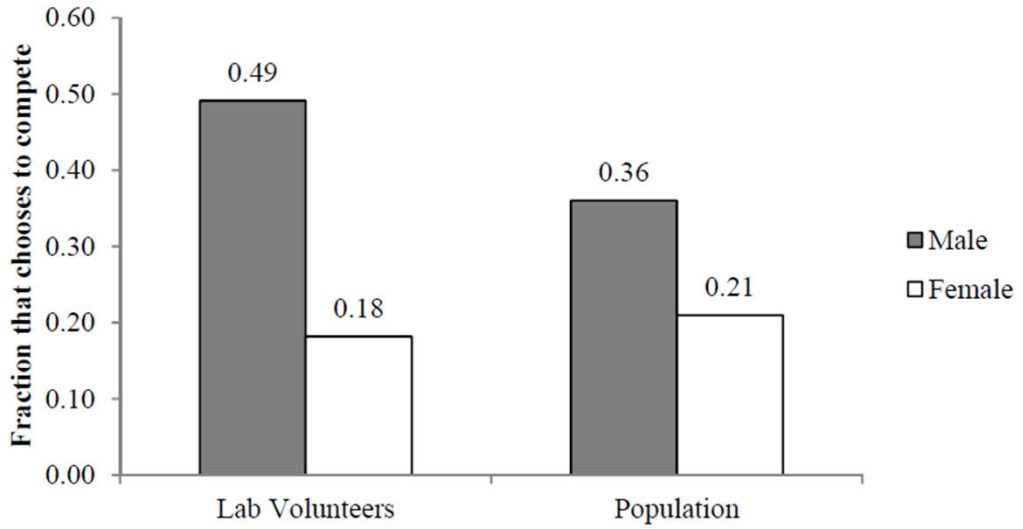


Figure 3 Gender gap in competitiveness Fraction of participants that chooses to compete in Task 3 of the experiment among volunteers and the population from which they were recruited.

Evidence of selection bias in estimate of men's willingness to compete too much

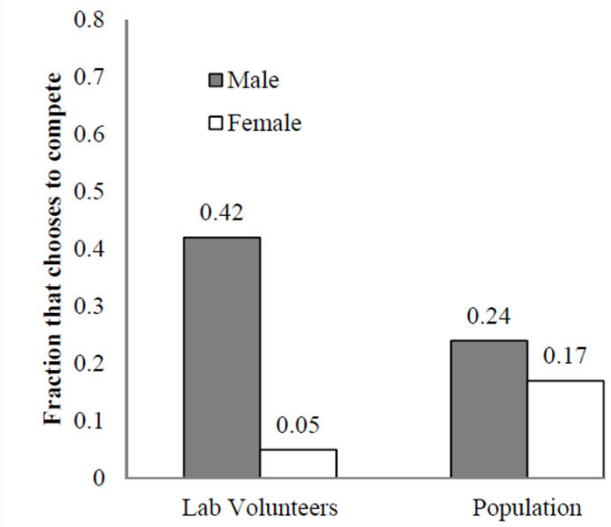


Figure 5A *Low performers*: subjects with a score that gives them a chance below 25% of winning the tournament.

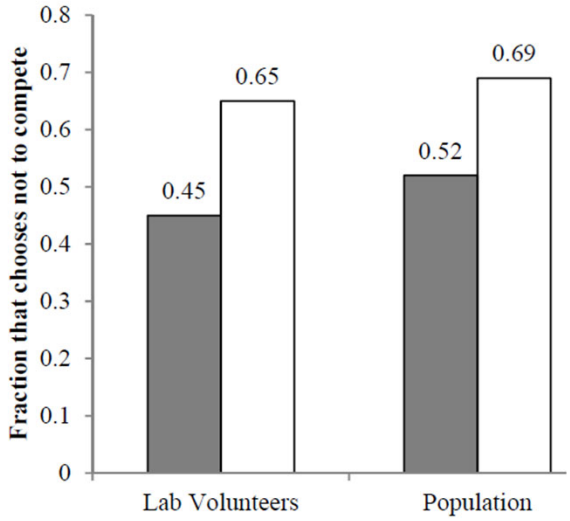
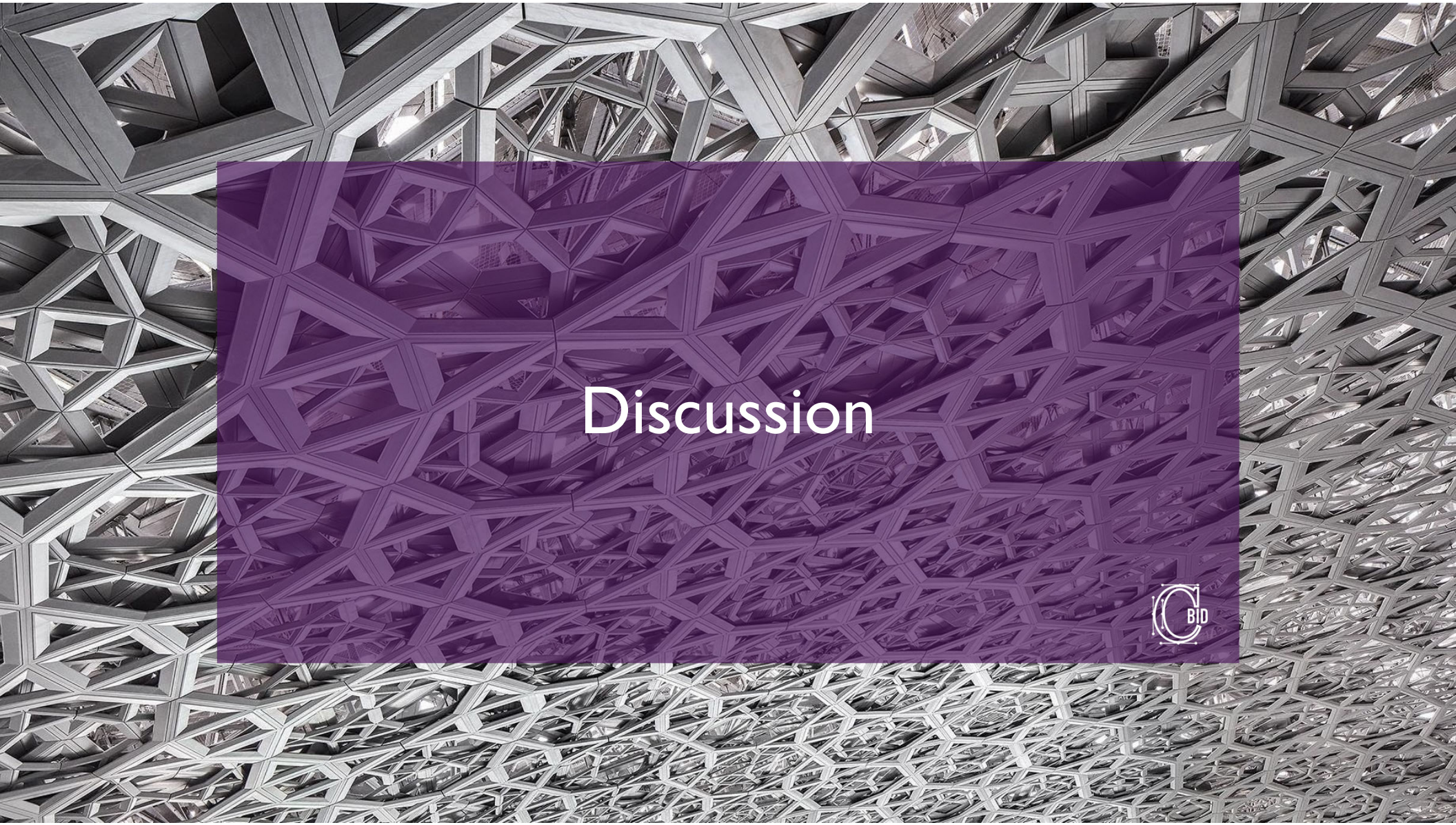


Figure 5B *High performers*: subjects with a score that gives them a greater than 25% chance of winning the tournament.

Evidence of gender differences in self-selection

	Male	Female
Compete	0.04**	0.00
	(0.02)	(0.04)
Risk tolerance	-0.00	-0.03***
	(0.01)	(0.01)
Leisure	-0.00	0.03
	(0.01)	(0.02)
Income	-0.01	-0.00
	(0.00)	(0.01)
Before	0.01	0.02
	(0.02)	(0.03)
Paid	0.00	0.08**
	(0.02)	(0.04)
Constant	0.10**	0.07
	(0.05)	(0.10)
Observations	811	334
R-squared	0.09	0.04

Table 6 The determinants of selecting into the lab for men and women Linear probability models. The dependent variable is a dummy whether a subject volunteered for lab experiments. Standard errors are clustered at the session level. ***/**/*: significant at the 1%/5%/10%-level.


Discussion

Discussion

- Lab experiments have advantages for studying gender differences.
- But if men/women differ in their willingness to select into competition/non-promotable tasks, should we not worry selection bias could affect estimated differences too?
- We provide evidence suggesting that self-selection could cause us to overestimate gender differences in competitiveness.
- Also, that men and women appear to select differently into the lab.
- We need to study gender differences in self-selection in greater breadth and depth.

Thank you!