

Cognitive overload in financial decision making: the impact of gender-homogeneous and gender-heterogeneous groups

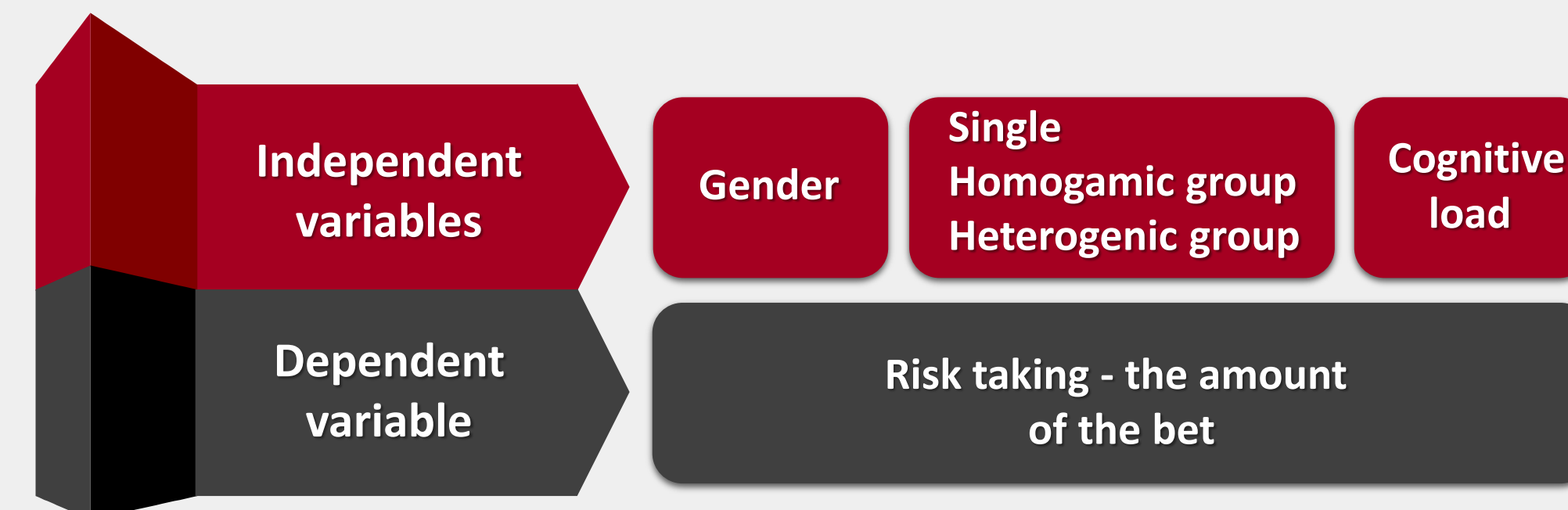
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Research Question

How cognitive Load, group membership and gender composition affect risk taking in financial decisions.



OVERVIEW OF STUDIES

| Interaction Composition of the group *Cognitive load | | Interaction Cognitive load+Gender | | Cognitive load | Gender | Composition of the group | Amount of bet |
|--|---------------------------|--------------------------------------|---------------------------|---|----------------|-----------------------------|------------------|
| Without cognitive load | With cognitive load | Without cognitive load | With cognitive load | | | | |
| =Single < (Hetro Homo | =Single Homo=Hetro | Men > Women | Men = women | With cognitive > load Without cognitive load | Men > women | Single | All |
| | | Men > women | Men = women | | | Homogeneous | |
| | | Men > women | Men = women | | | Heterogeneous | |

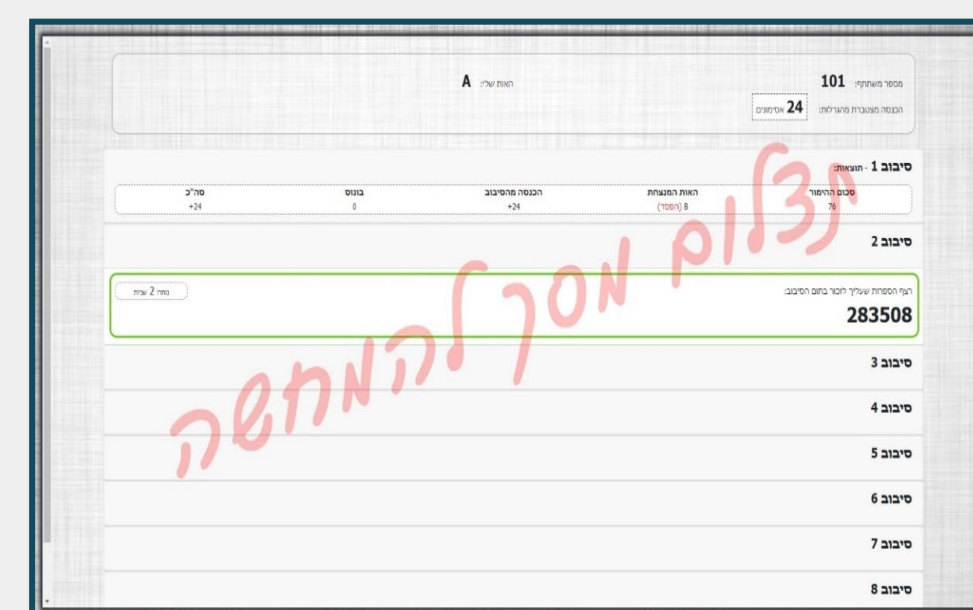
5. Each cluster included 9 rounds in each of which the task of selecting the bet amount (between 0 and 100 tokens) was repeated.

6. Participants under the manipulation of cognitive load (remembering a 6-digit number in cluster 1 when working alone, and 12-digit number in clusters 2 and 3 when part of a gender homogeneous and gender heterogeneous group, respectively).

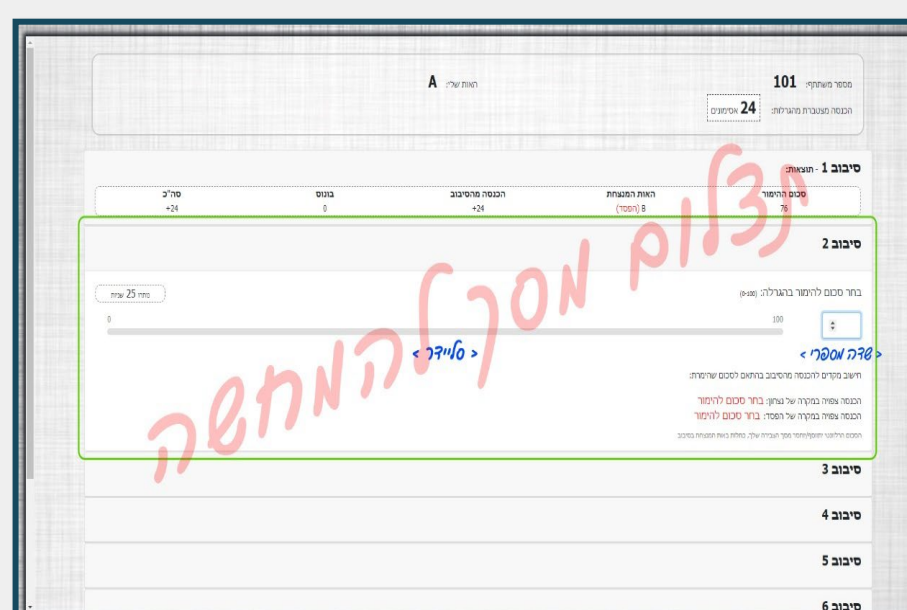
Cluster 1 (Rounds 1-9) – participants take decisions individually.

The 12 participants (6 men and 6 women) took part in an "investment game" that required them to take a decision on the amount they wished to bet. Losing or winning on the bet was determined by a 'winning' letter generated randomly. Six of the participants - three men and three women - were manipulated so that they were under additional cognitive load. The cognitive load was created by briefly exposing the participants under the manipulation to a 6-digit string that they were required to reproduce (type) within 6 seconds of making the bet decision.

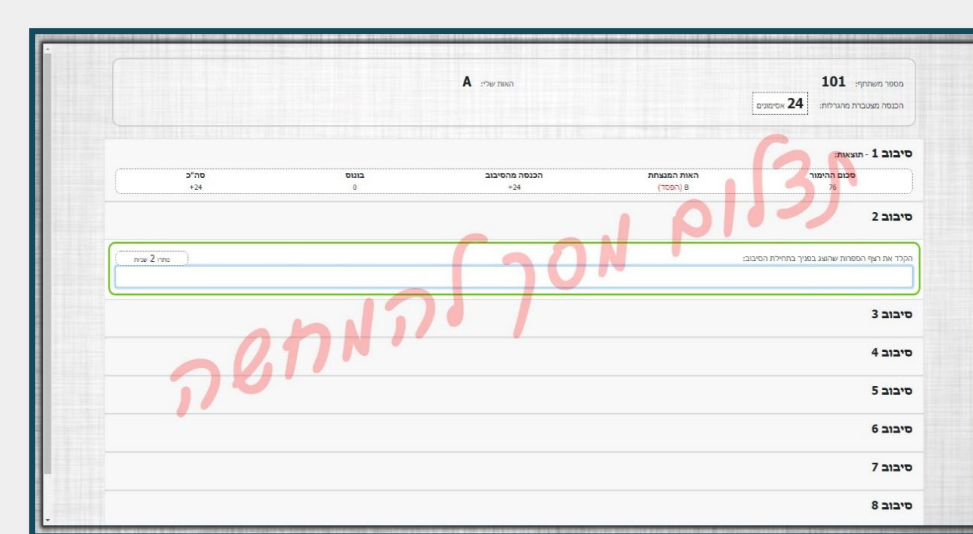
A six-digit numerical sequence was briefly displayed to participants under cognitive load



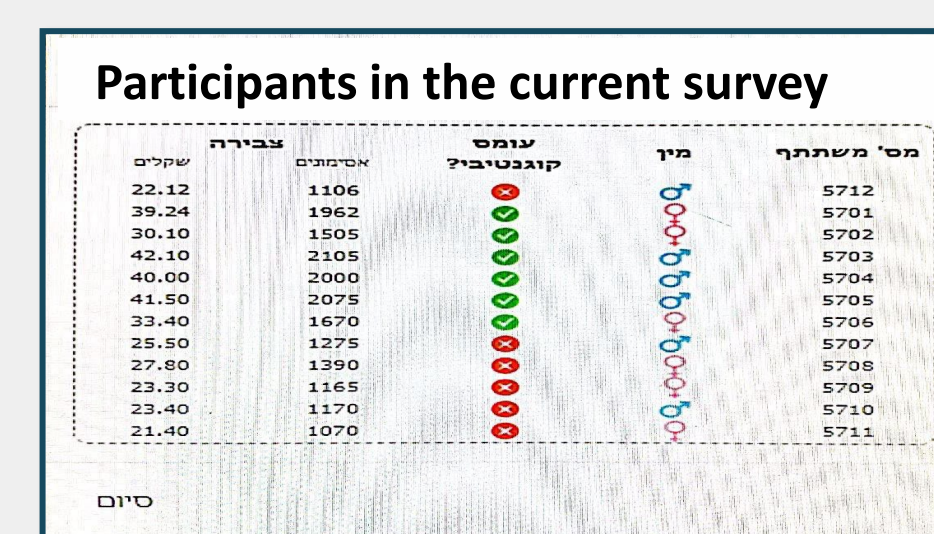
Placing the bet: The screen to enter number of tokens between 0 and 100



Cognitive load – The screen to enter the number that participants under cognitive load had to remember



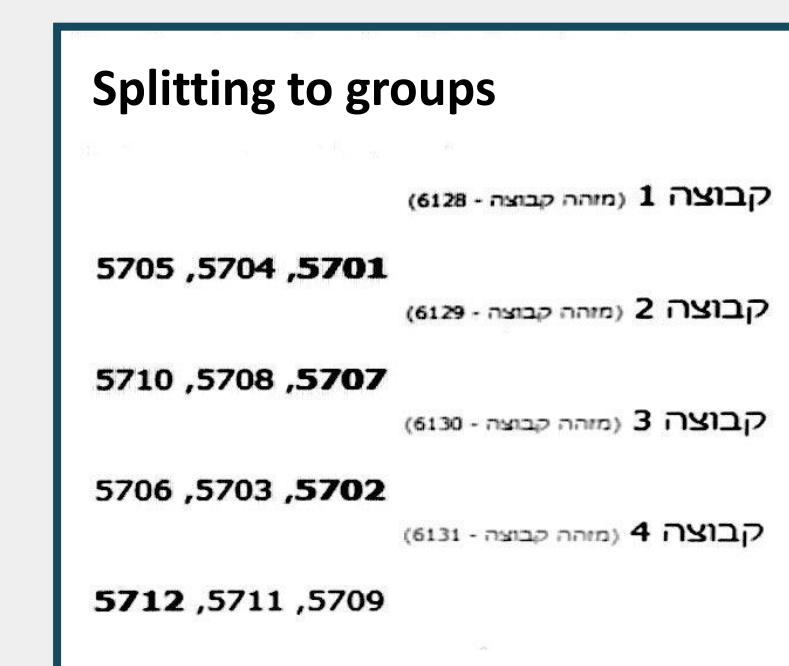
The amount of winnings in tokens and shekels – (cluster 1)



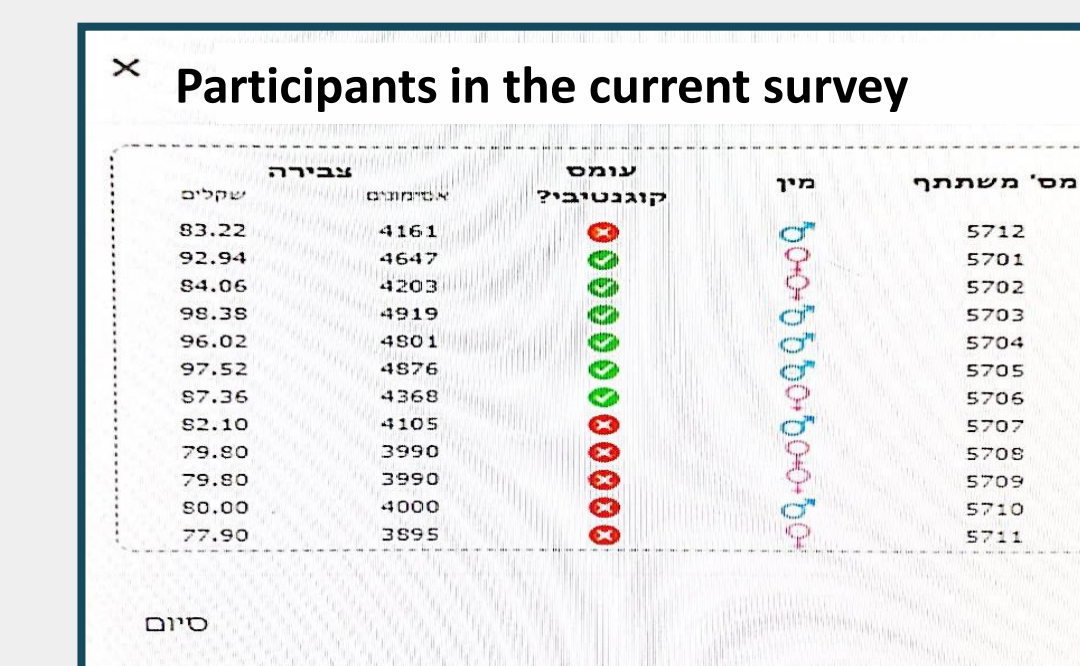
Cluster 3 (Rounds 19-27) - Individuals were assigned to heterogeneous groups of 3.

The 12 participants were randomly assigned by the computer into 4 gender-heterogeneous groups of 3 members each, including two groups of two men and one woman and two groups of two women and one man. Members of one of each type groups were put with cognitive load.

The system divided the participants into gender heterogeneous groups



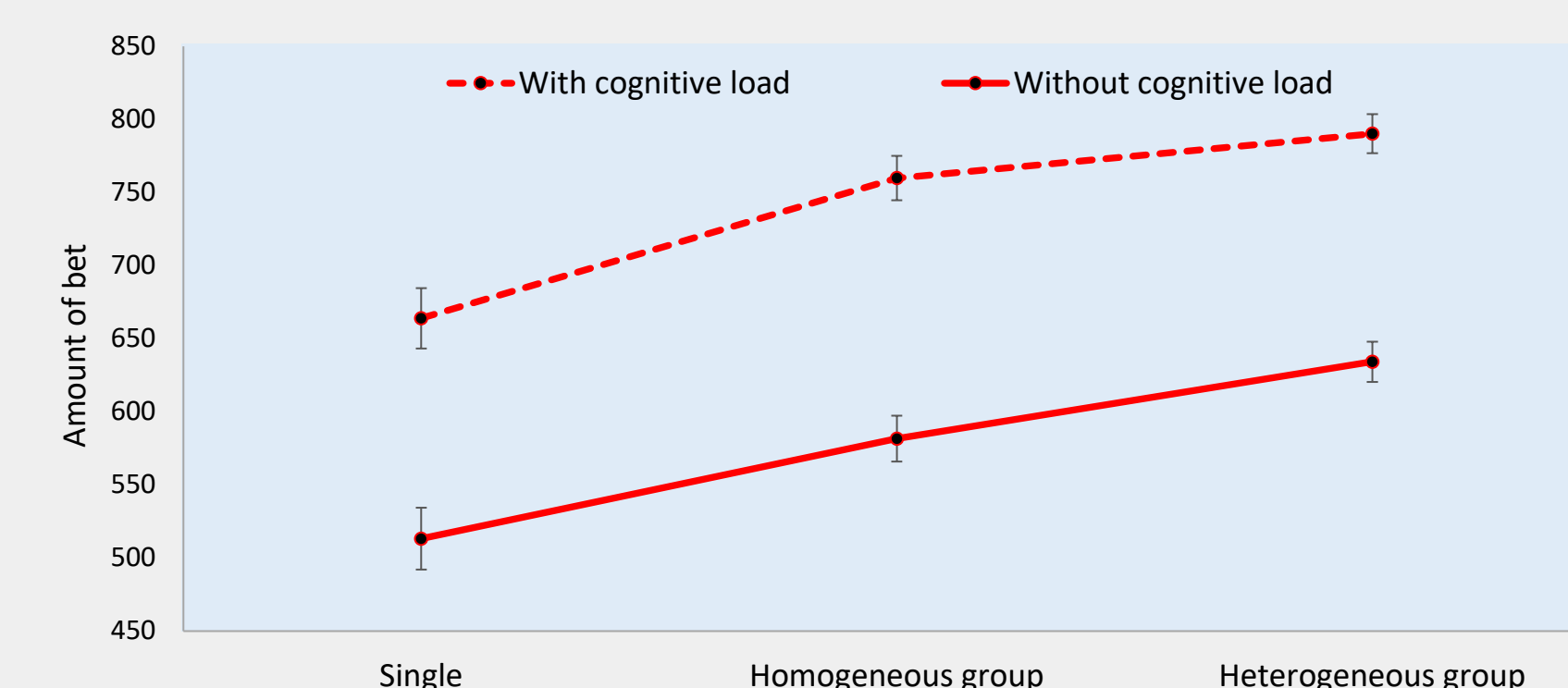
Presentation of the amount of winnings in tokens and shekels at the end of the experiment displayed are the total amounts distributed to participants (Cluster 1+2+3)



Results

| Interaction Composition of the group *Cognitive load | | Interaction Cognitive load+Gender | | Cognitive load | Gender | Composition of the group | Amount of bet |
|--|---------------------------|--------------------------------------|---------------------------|---|----------------|-----------------------------|------------------|
| Without cognitive load | With cognitive load | Without cognitive load | With cognitive load | | | | |
| <Hetro <Homo Single | Homo=Hetro >Single | Women = Men | Men = Women | With cognitive < load Without cognitive load | Women = Men | Single | All |
| | | Men < women | Men = Women | | | Homogeneous | |
| | | Men = Women | Men = Women | | | Heterogeneous | |

Cognitive load and the structure of the group: Separating participants with/without cognitive load and showing the impact of moving from single, to gender-homogeneous to gender-heterogeneous groups on the amount of the bet they place.



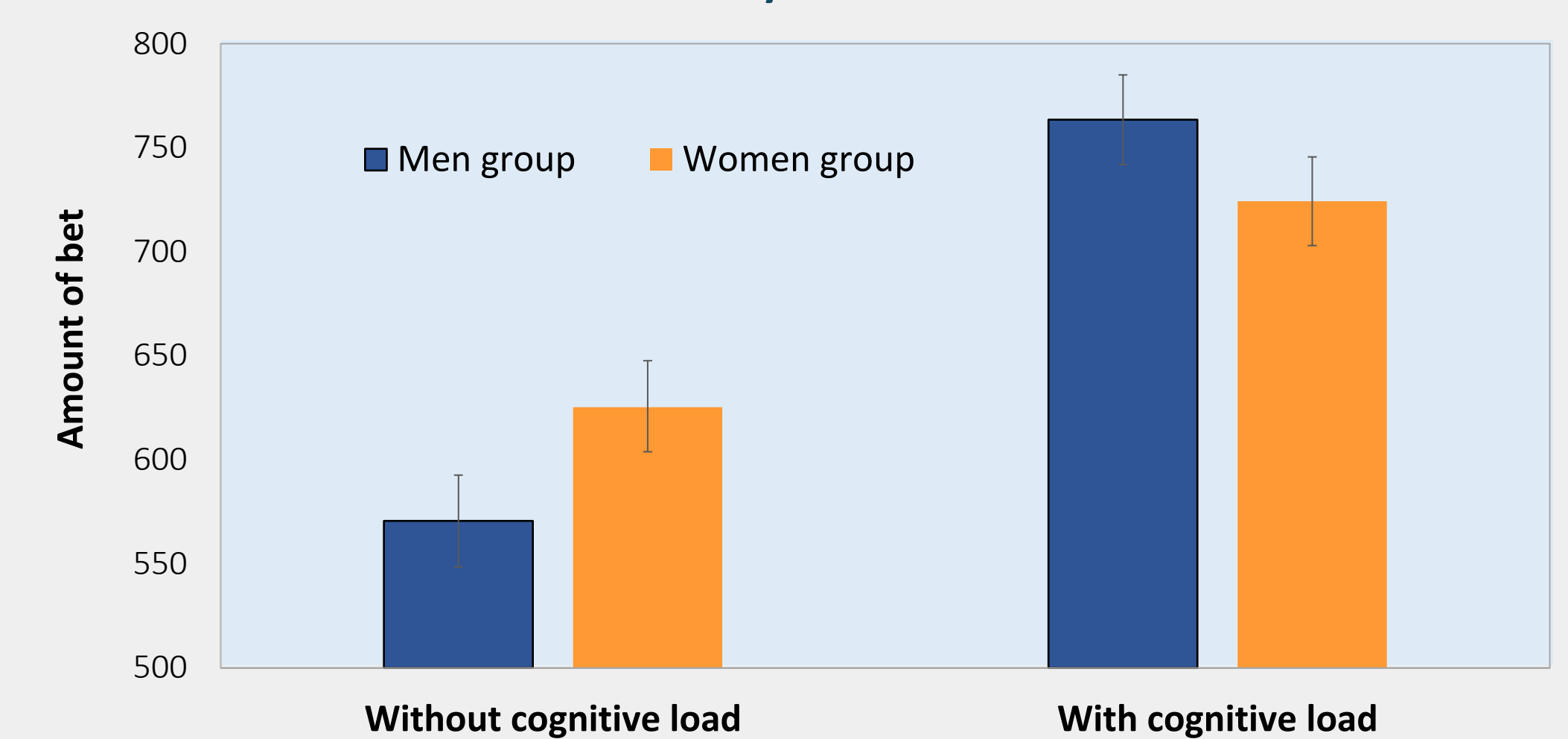
Significant differences were found between the three types of groups (single, homogeneous, heterogeneous) in terms of the amount of bets placed by participants.

For participants under cognitive load (dotted line) the bet amount in the 'single' condition is significantly lower than the bet amount under group conditions (homogeneous and heterogeneous). However, although the amount of bet is higher under the 'heterogeneous' condition compared with the 'homogeneous' condition, the difference is not significant.

Similarly, for participants with no cognitive load (solid line) the bet amount in the 'single' condition is significantly lower than the bet amount under 'homogeneous' condition which, in turn, is significantly lower than the bet amount with the 'heterogeneous' condition.

Moreover, regardless of the composition of the group (single, homogeneous or heterogeneous), the bet amount was significantly higher for participants with cognitive load relative to those without cognitive load. Worth noting however, is that the difference in the bet amount between participants with cognitive load versus those without such load, was largest when participants were put with the 'homogeneous' condition.

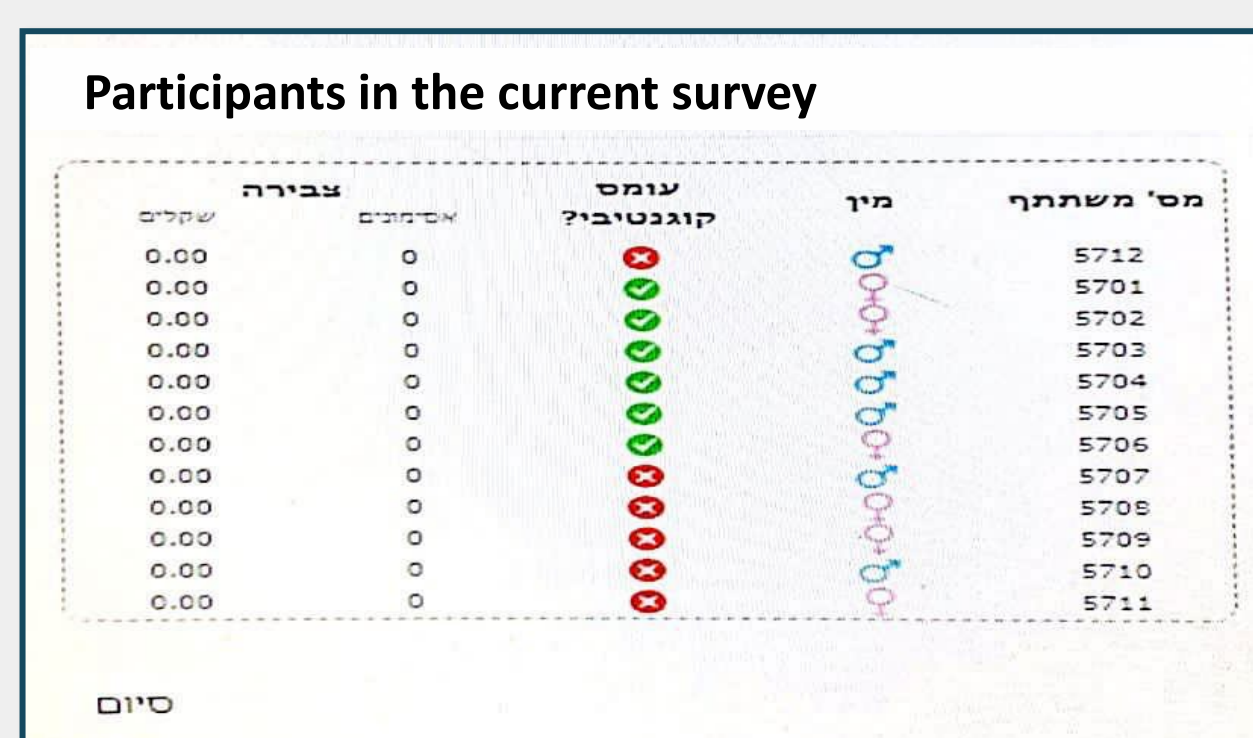
Men only versus Women only groups, cognitive load and tendency to take risk



In the case of participants with cognitive load (RHS of graph), there is no significant difference in the bet amount between men and women. In contrast, in the case of participants without cognitive load (LHS of graph), the bet amount is (marginally) significantly higher for women compared with men.

Participants

The study sample included 108 participants, of whom 50% were women. Participants were sampled for the study using a lid sampling method. The sample was collected by sending an e-mail to all first-year undergraduate students studying at the College of Management, in the accounting or economics track. Each trial model 6 women and 6 men and half of each gender were under manipulation of cognitive load.



Method

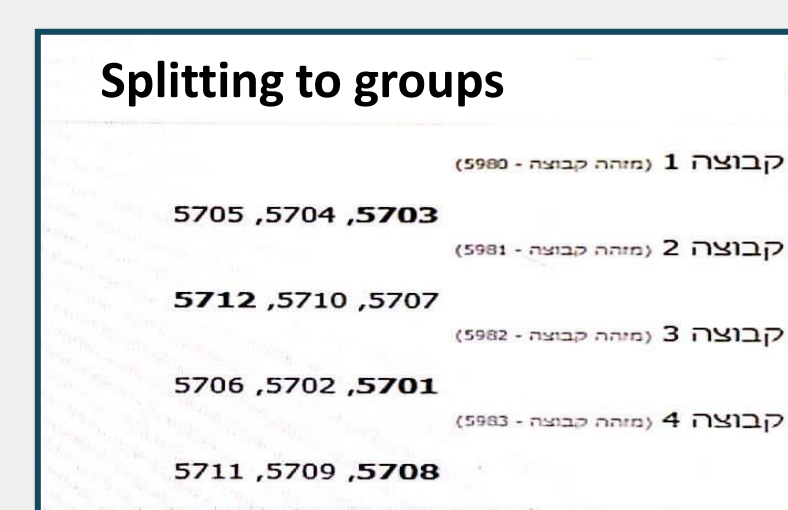
- The research experiment is based on an investment game as in Gneezy & Potters.,(1997).
- Nine trials were performed at nine different times over a period of 3 months.
- Each trial included 12 participants (6 men and 6 women).
- Each participant made decisions under 3 scenarios (as an individual, as a member in a gender homogeneous group, as a member in a gender heterogeneous group).

Cluster 2 (Rounds 10-18) – Individuals were assigned to homogeneous groups of 3.

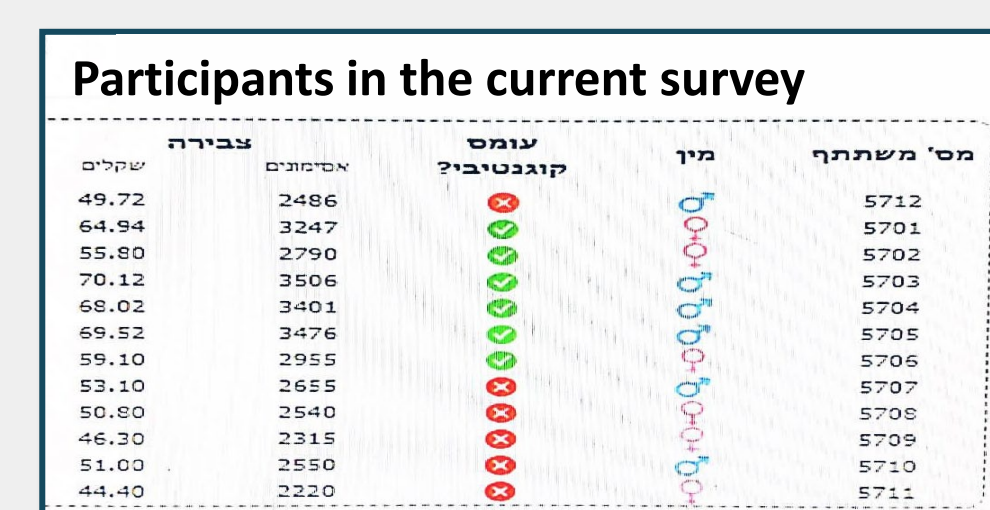
The 12 participants were randomly assigned by the computer to 4 groups of 3 members of the same gender.

The screen illustrates the assignment of participants into groups (3 women with cognitive load; 3 men with cognitive load; 3 women without cognitive load; and 3 men without cognitive load).

The system divides the participants into gender homogeneous groups



The amount of winnings in tokens and shekels- (cluster 1 + 2)



Conclusions and research contribution

In this study we examine the impact of three independent variables (cognitive load, group composition and gender) on risk taking. We also assess the impact of interactions between these variables. Our findings challenge some of the existing literature relating to risk taking. For example, exiting literature indicates that a group of men (e.g., a men-only board of directors or a men-only pension fund management team) tends to take more risk compared with a similar but mixed-gender group (Bogan et al., 2013; Castillo et al., 2015). In contrast, our findings suggest that mixed-gender groups tend to take more risk than homogeneous groups. Here are the key findings of the study:

- Cognitive load increases risk-taking (measured in our study as the amount of bet placed by participants).
- The amount of the bet placed by an individual is lower than the amount placed by a gender homogeneous group, which in turn is lower than the amount placed by a gender heterogeneous group.
- Gender does not affect risk-taking.

Our findings are relevant to those in charge of determining the composition of decision-making bodies. They shed light on conditions that may affect the decision-making process. For example, the cognitive load under which decision makers take decisions, matters. Thus, designing tools and conditions that reduce cognitive load should be considered.