

# Navigating Stereotypes: The Influence of Gender Stereotype Threat on Heading Recall Performance

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## Research Question

How does gender stereotype threat impact performance on a heading-recall task?

## Introduction

- **Stereotype threat** has been shown to impair performance in different domains when members of the stereotyped group are made aware of the stereotype [1].

- When the task is sufficiently difficult, gender stereotype threats have impaired performance in spatial orientation tasks [2].

- **This finding has not been extended to sense-of-direction tasks, specifically heading-recall tasks.**

- **Sense of direction** refers to the framework that keeps track of the body's facing direction relative to its environment. **Heading-recall refers to the ability to retrieve the body's orientation given a learned scene** [3].

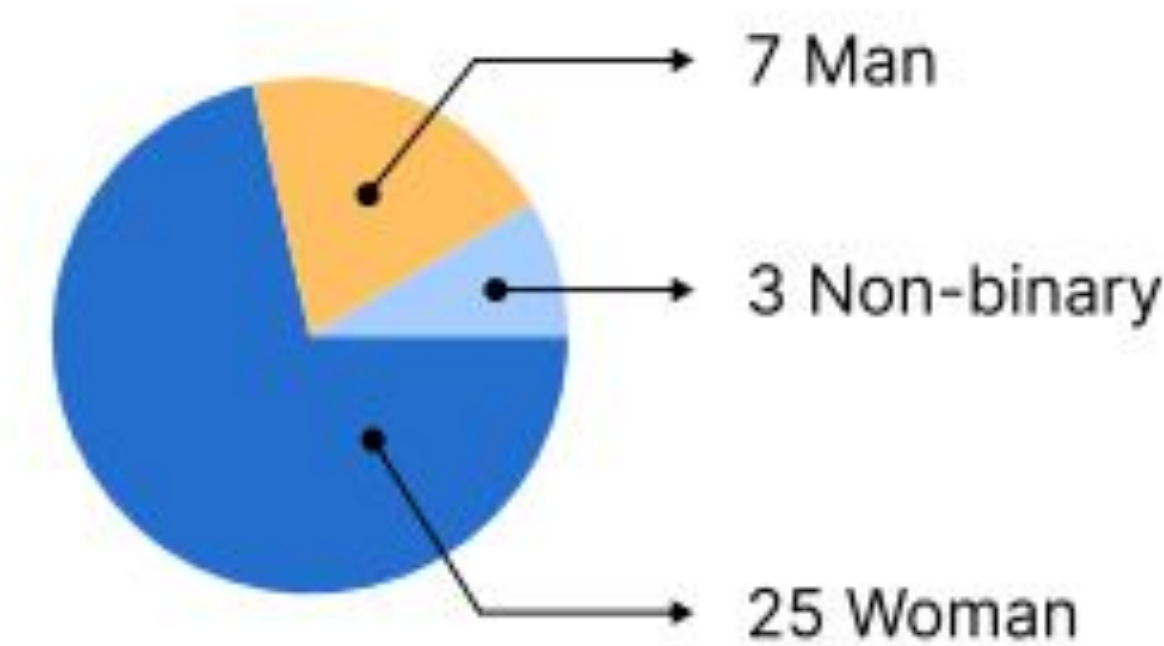
## Hypothesis

Because of the existing stereotype that men outperform women in navigational and spatial orientation tasks, **we hypothesized that exposure to the gender stereotype will increase men's accuracy on the heading-recall task and decrease women's accuracy.**

## Methodology

### Participants

35 undergraduate students from Carnegie Mellon University



### Procedure

#### Experimental Conditions

No Priming Condition No script presented

Priming Condition 1: Men > Women

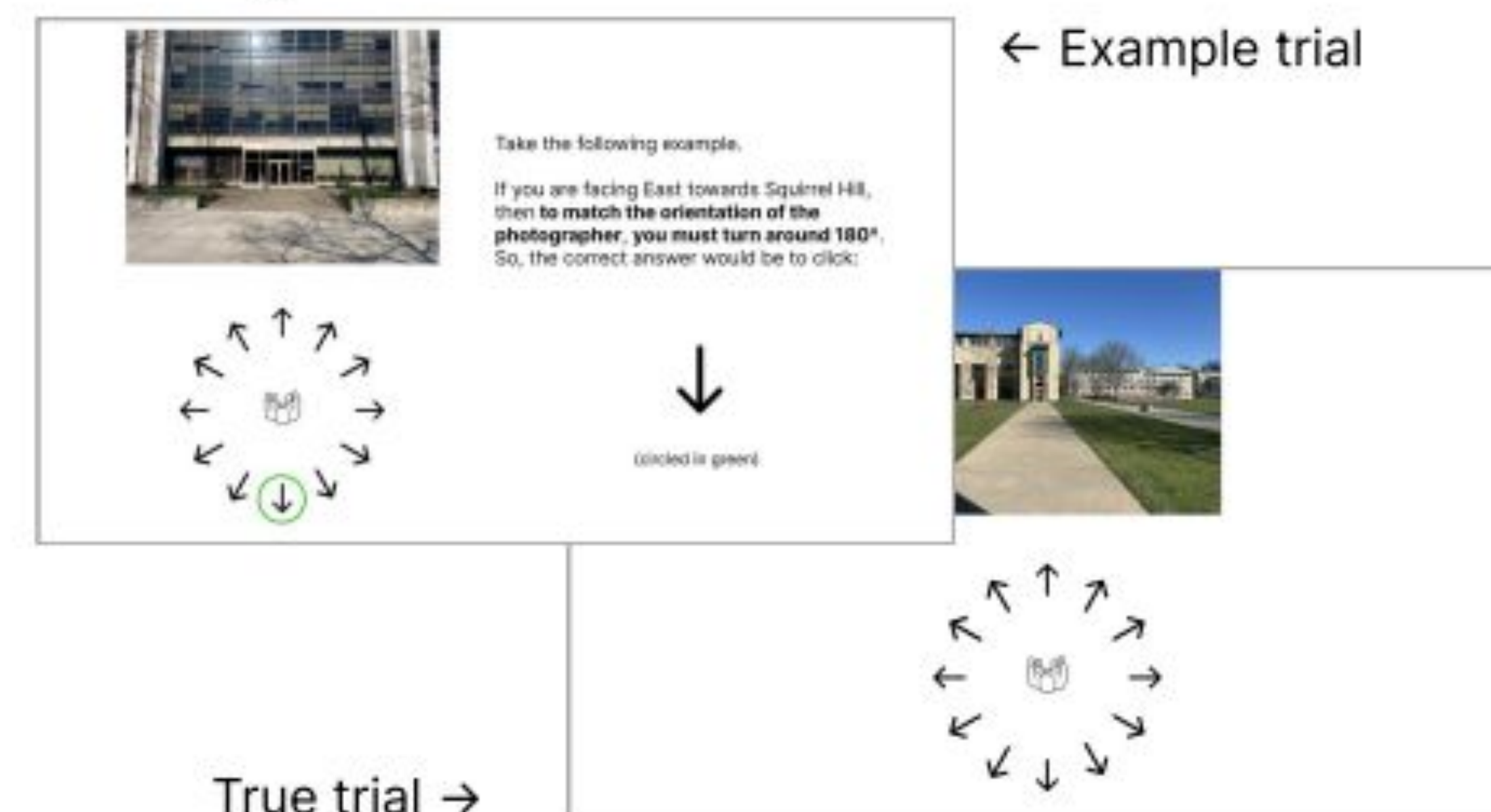
Priming Condition 2: Women > Men

Participants read the following a priming text before completing the experimental tasks:

It has been found that males and females use different strategies when navigating, although males are often found to outperform females on sense of direction tasks.

Men > Women Example Script

### Heading Recall Task

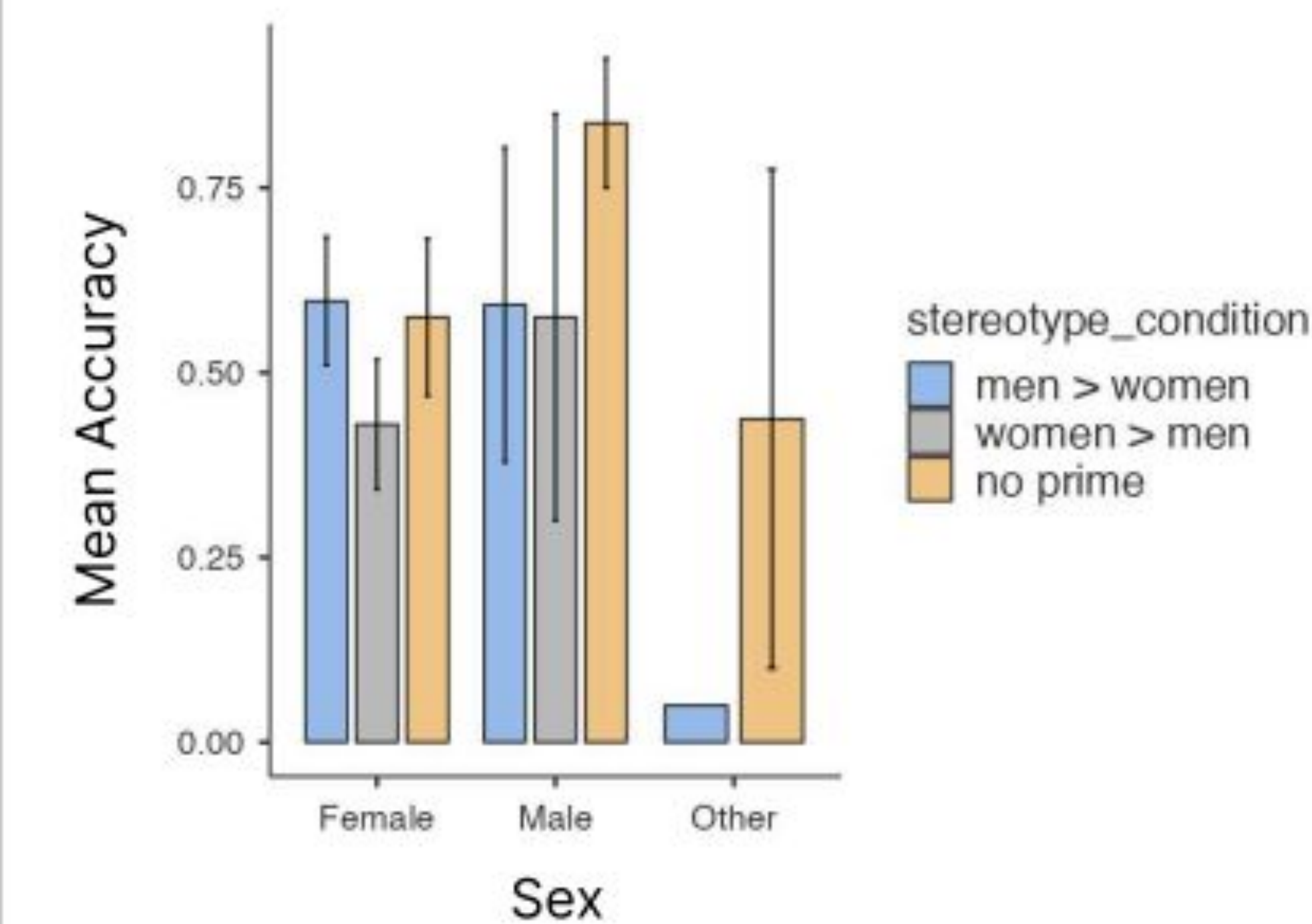


- Participants conducted the experiment on campus, initially facing one of the cardinal directions (N, S, E, W).
- They viewed a series of campus photos and select the arrow indicating the direction necessary to align with the photographer's orientation.
- **Practice:** 8 trials with immediate feedback on accuracy.
- **Experiment:** 40 trials without feedback.

**Surveys** Gender Difference Beliefs  
Self-reported Sense of Direction

## Results

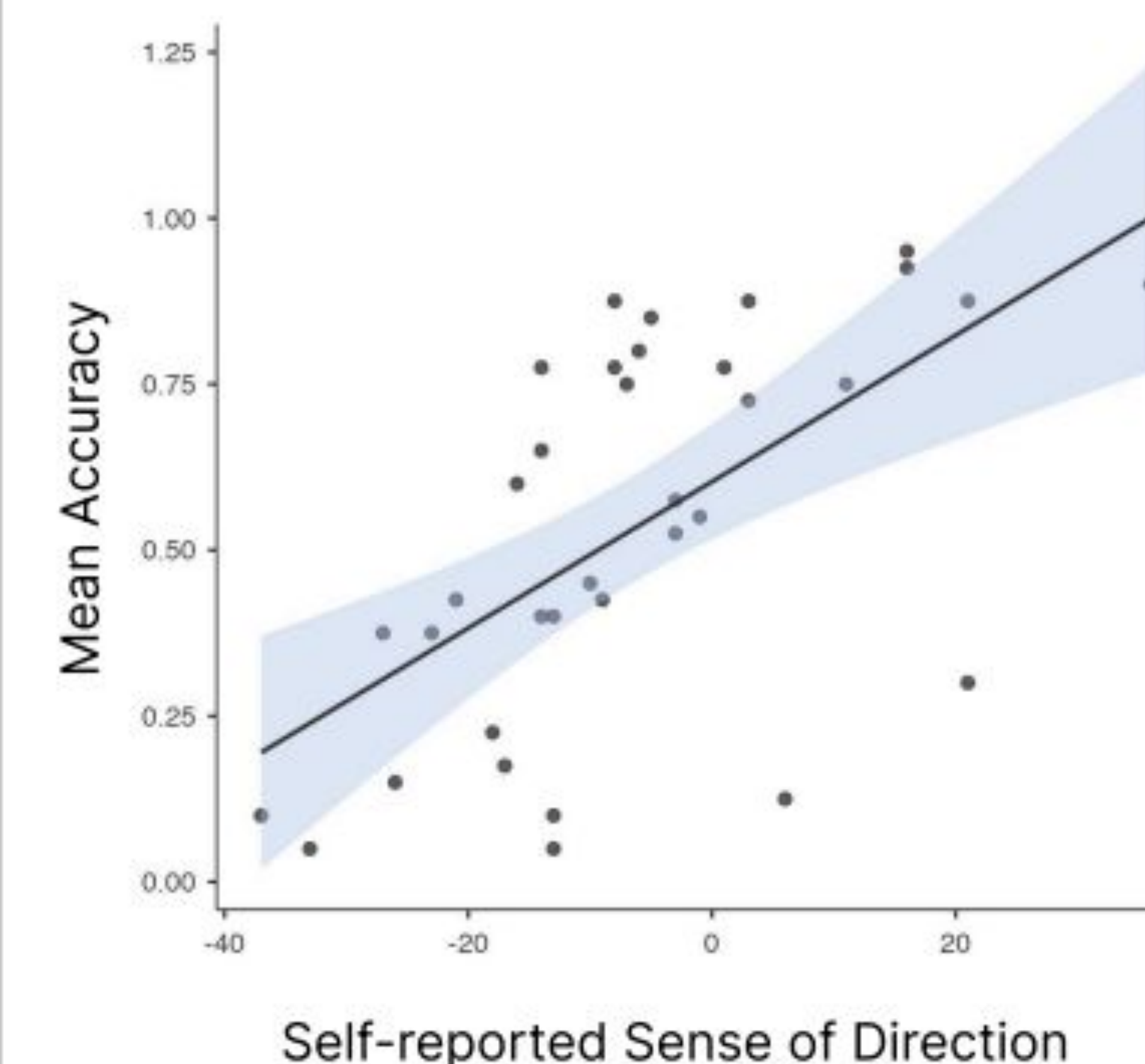
Mean Accuracy by Sex and Stereotype Condition



### ANOVA

- No significant main effects of sex ( $p = 0.256$ ) or stereotype condition ( $p = 0.201$ ) on mean accuracy.
- There was also no significant interaction between the two factors ( $p = 0.657$ ).

Mean Accuracy by Self-Reported Sense of Direction



### Linear Regression

- Self-reported SOD significantly predicted mean accuracy scores ( $R^2 = .37$ ,  $t(33) = 4.39$ ,  $p < .001$ ).

## Discussion

- Failed to confirm our hypothesis. **Stereotype threat did not reliably impair performance.**
- Successfully replicated Sholl et. al's finding: self-reported sense-of-direction is highly predictive and correlated to heading-recall task performance.

### Limitations:

- Recruited significantly more women (25) than men (7), causing a gender imbalance.
- Some reported unfamiliarity with locations in photographs, affecting their ability to determine directions.
- A large proportion of responses were incomplete, attributed partly to technical issues and partly to the task's perceived difficulty.

### Future Directions:

- Testing a more diverse participant pool
- Vetting location familiarity
- Examining salience of stereotype threat priming

## References

- [1] Allison, C., Redhead, E. S., & Chan, W. (2017). Interaction of task difficulty and gender stereotype threat with a spatial orientation task in a virtual nested environment. *Learning and Motivation*, 57, 22–35. <https://doi.org/10.1016/j.lmot.2017.01.005><https://doi.org/10.1037/0022-3514.69.5.797>
- [2] Aronson, J., Lustina, M. J., Good, C., Keough, K., Steele, C. M., & Brown, J. (1999). When White Men Can't Do Math: Necessary and Sufficient Factors in Stereotype Threat. *Journal of Experimental Social Psychology*, 35(1), 29–46. <https://doi.org/10.1006/jesp.1998.1371>
- [3] Sholl, M. Jeanne, et al. "Allocentric-Heading Recall and Its Relation to Self-Reported Sense-of-Direction." *Journal of Experimental Psychology: Learning, Memory, and Cognition*, vol. 32, no. 3, May 2006, pp. 516–33. PubMed, <https://doi.org/10.1037/0278-7393.32.3.516>.