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].

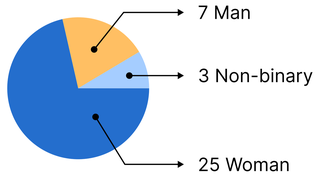
Hypothesis

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

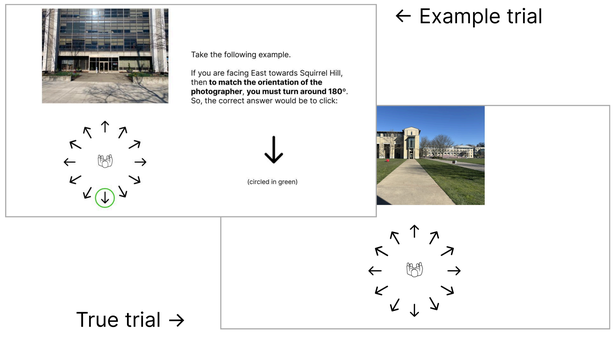
No Priming Condition No script presented
Priming Condition 1: Men > Women
Priming Condition 2: Women > Men

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

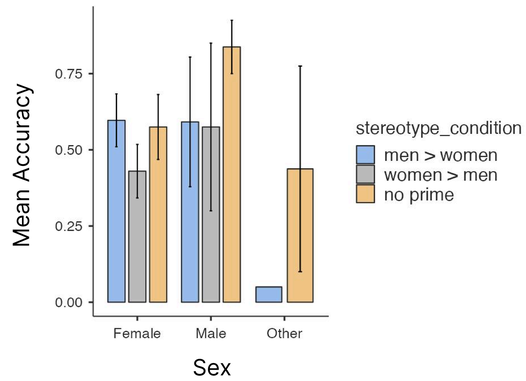


- Participants conducted the experiment on campus, initially facing one of the cardinal directions (N, S, E, W).
- They viewed a series of campus photos and select the arrow indicating the direction necessary to align with the photographer's orientation.
- **Practice:** 8 trials with immediate feedback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

Surveys Gender Difference Beliefs
Self-reported Sense of Direction

Results

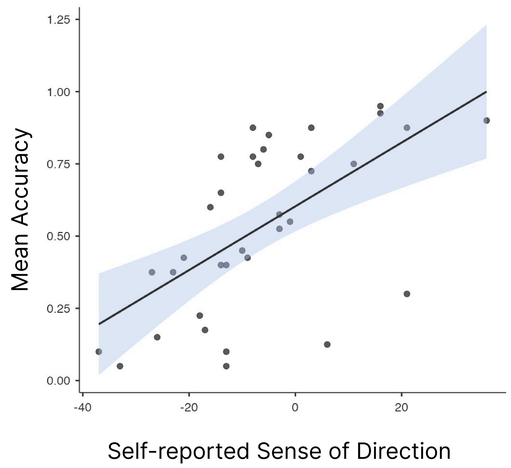
Mean Accuracy by Sex and Stereotype Condition



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 ($R2 = .37$, $t(33) = 4.39$, $p < .001$).

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.2017.01.005https://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.