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Expectation Versus Reality: Perceived Differences in Cognitive Ability Between Men and Women

Lily Chiu

Binghamton University--SUNY

Julia Smargiassi

Binghamton University--SUNY

Lauren Rothman

Binghamton University--SUNY

Kimberly Burns

Binghamton University--SUNY

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References

What Do You Know About Brain Differences?

Asking Binghamton Undergraduate Students What They Think About Stereotypes Regarding Female and Male Abilities

Kimmy Burns, Lily Chiu, Lauren Rothman, Julia Smargiassi

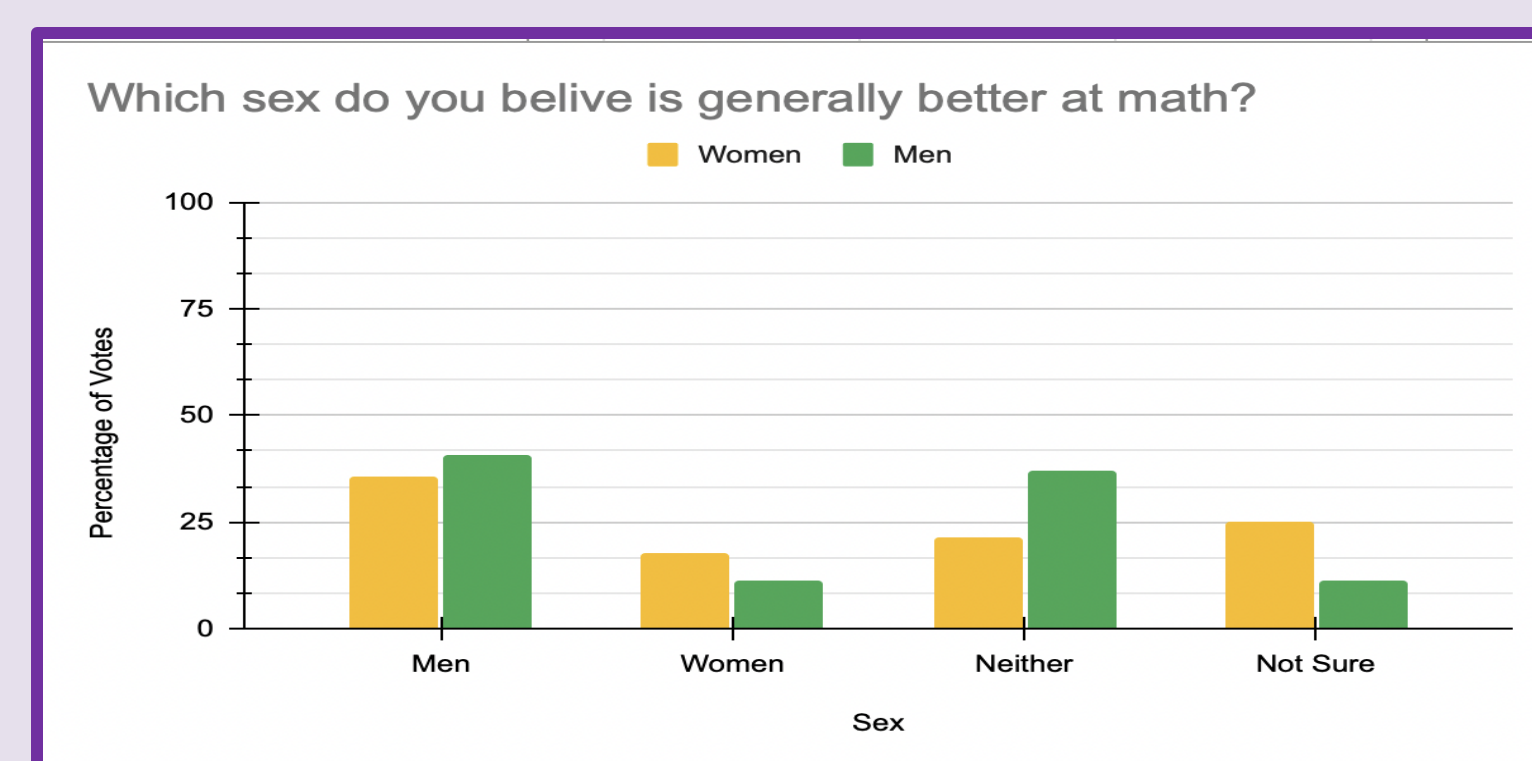
Introduction

In Western society there is a widespread belief that there exist extreme differences in the cognitive abilities of men and women. While some differences exist, they are greatly overestimated by most people. The goal of our research was to see if Binghamton students we polled overestimated cognitive differences between men and women. The graphs represent responses of Binghamton students on each topic, while the results of a meta-analysis of peer-reviewed research regarding each topic are summarized below.

Respondents: ■ Women ■ Men

*No respondents chose non-binary or self-identified gender

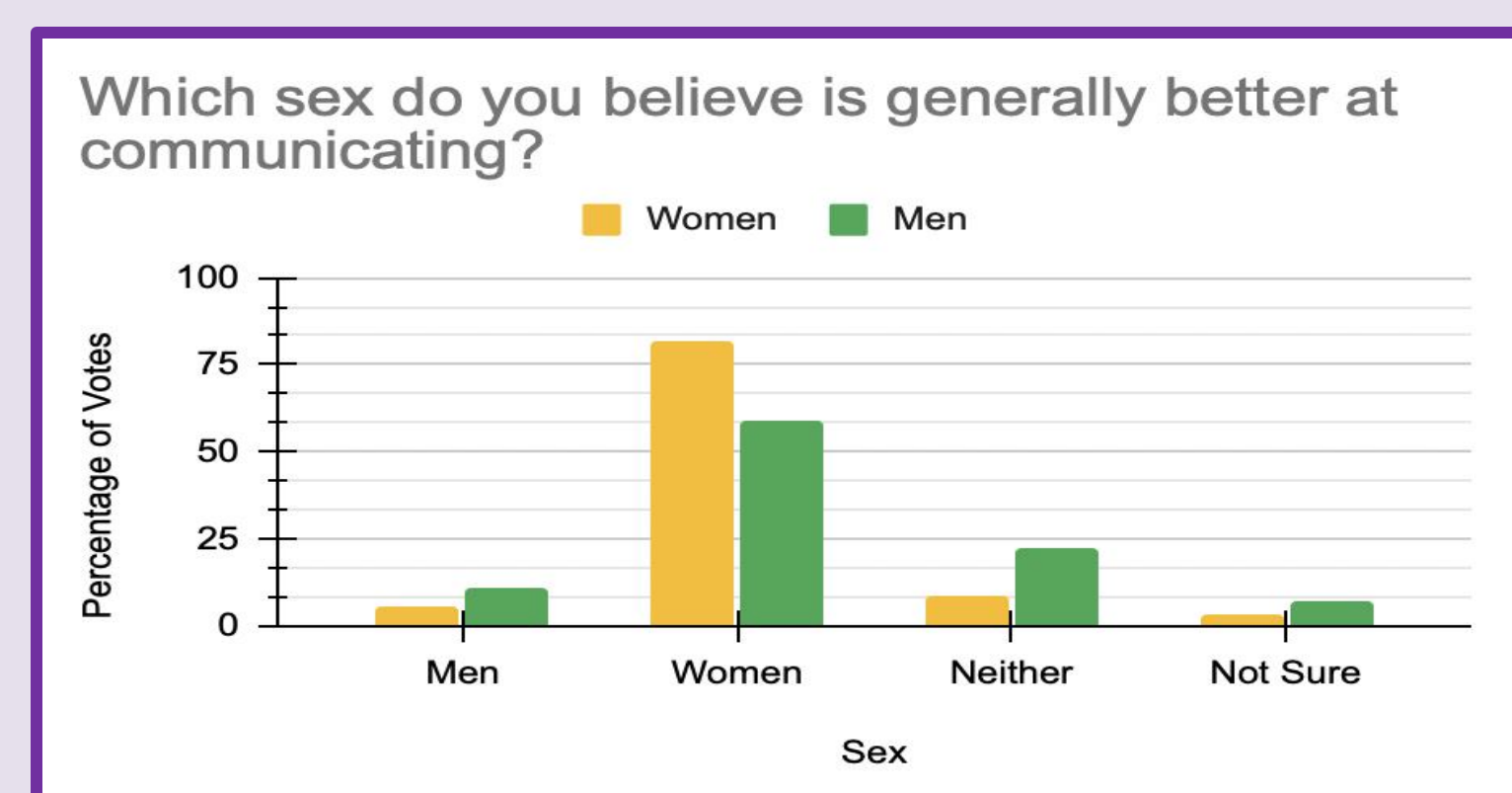
Math



Research shows:

- Although males showed significantly higher levels of motivation, confidence, and interest in mathematics than females, they performed similarly on mathematics assessments.^{16, 18}

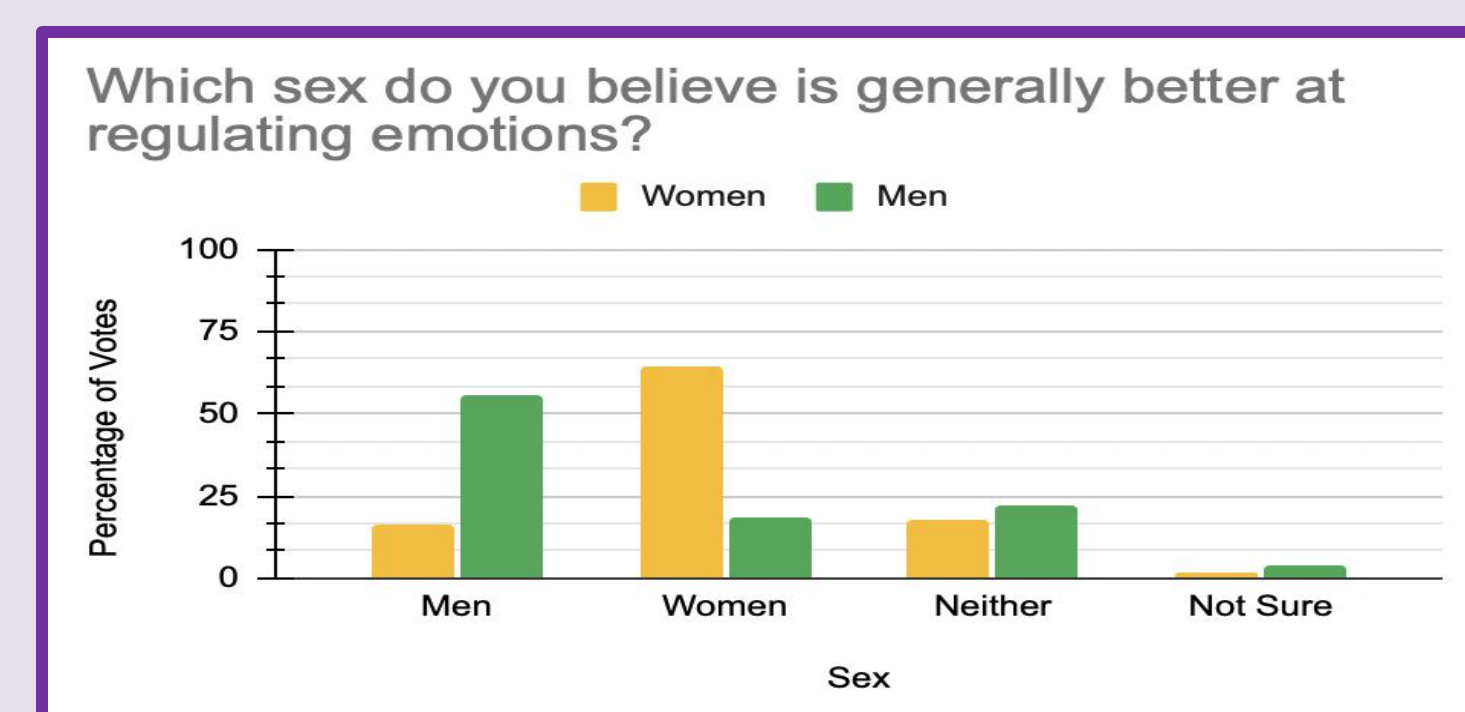
Communication



Research shows:

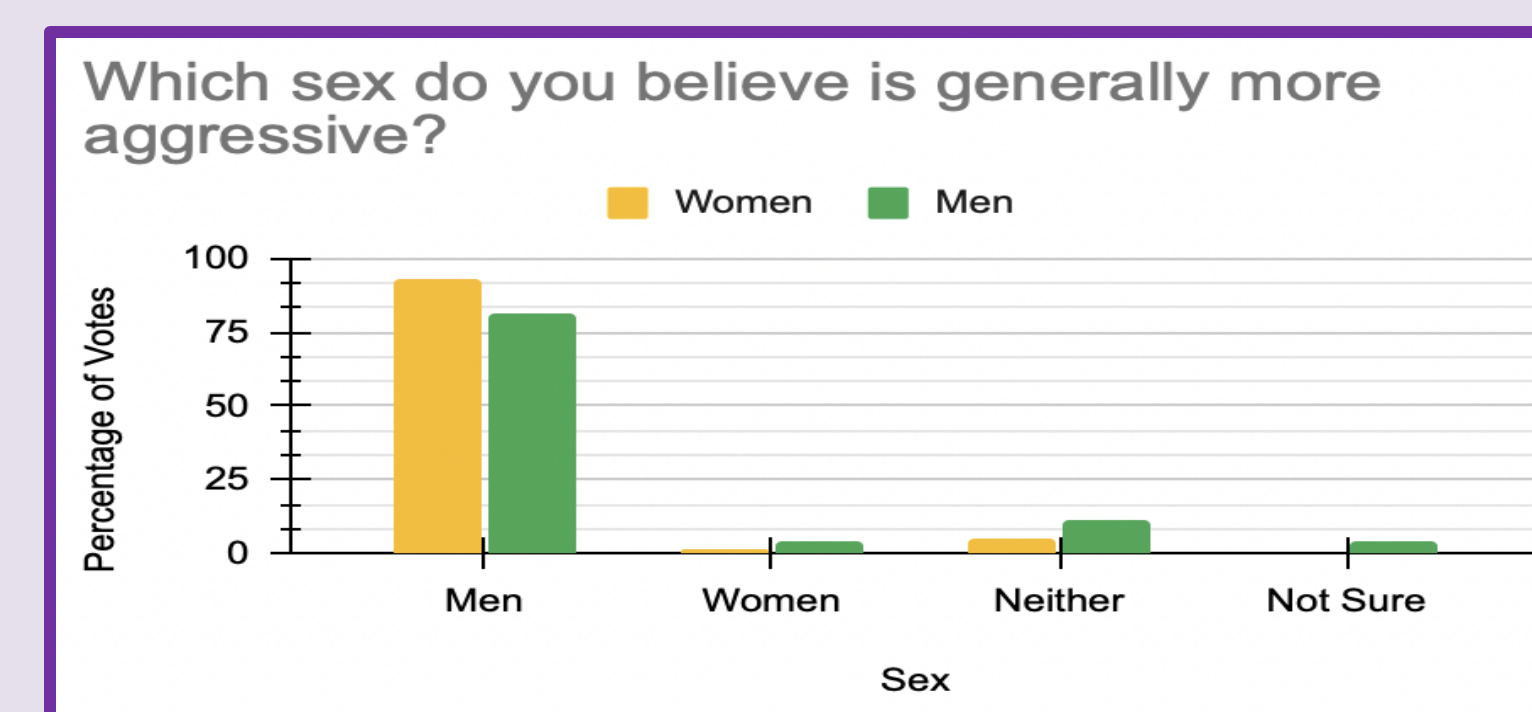
- Women tended to score slightly higher on language tests which may be explained by their slightly larger Broca's areas and corpora collosa¹⁹
- Language and communication are largely impacted by culture therefore it is difficult to determine if these differences are innate

Aggression and Emotion

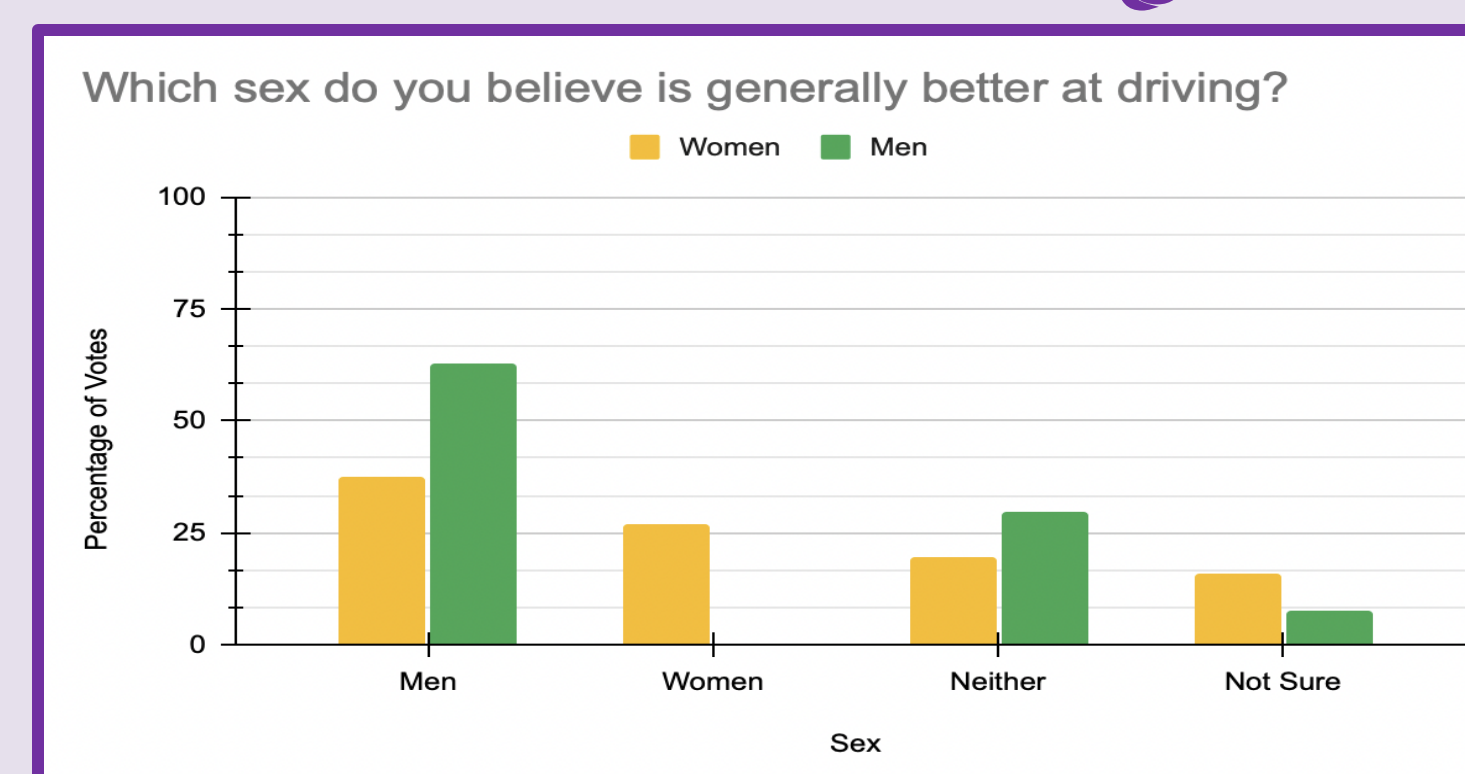


Research shows:

- "Indirect" aggression was once thought of as being "female aggression"; however, males also exhibited indirect aggression more frequently than most females in one study²⁰
- Males were overall more physically aggressive^{21, 22}
- In terms of total aggression (physical, verbal, and indirect), males were more aggressive than females²³

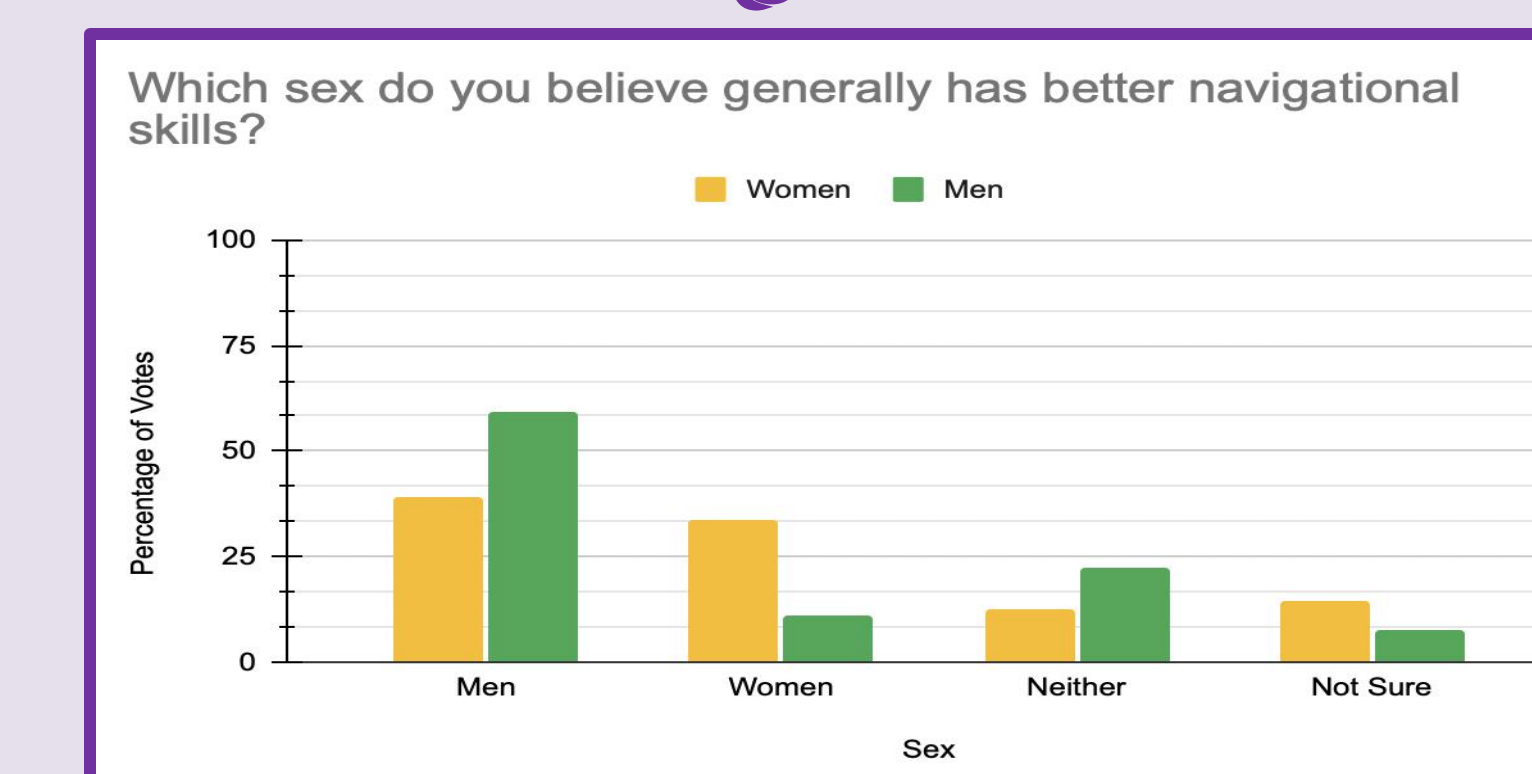


Navigation and Driving

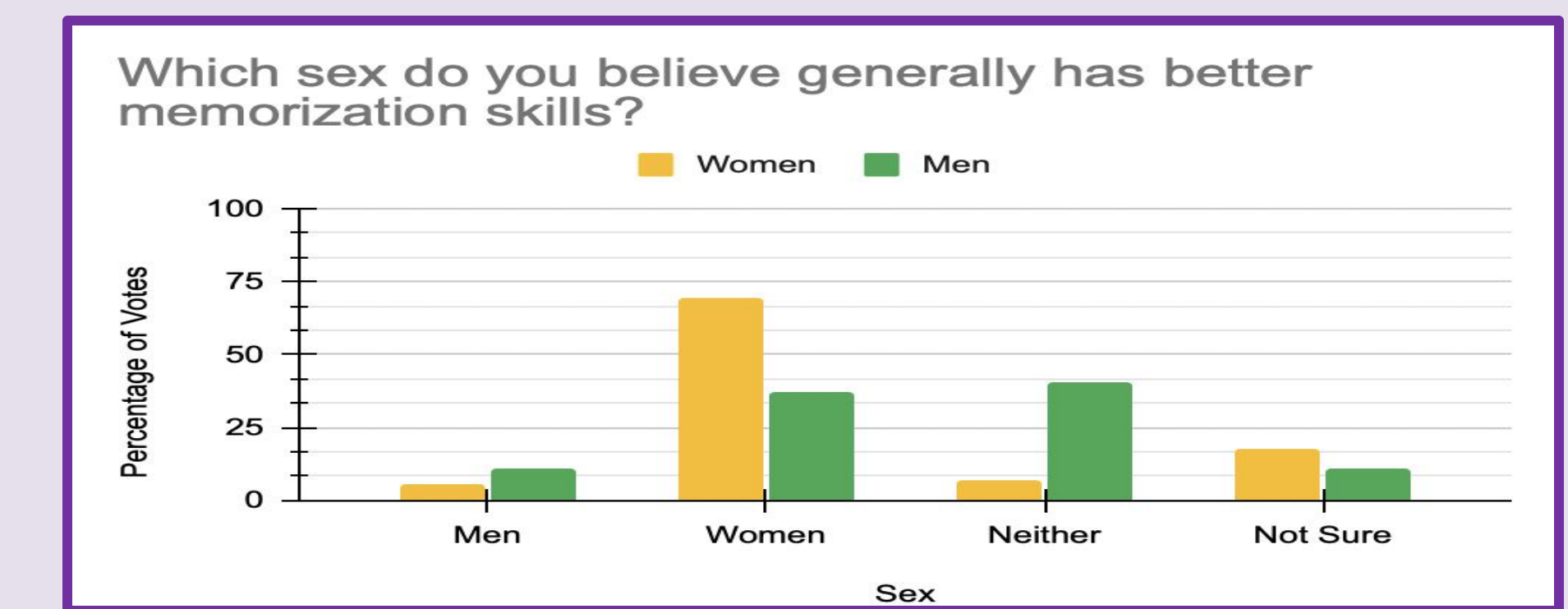


Research shows:

- Women had more connections in their frontal lobe, affecting their working memory and allowing them to remember landmarks well, whereas males used their hippocampus more while driving, a part of the brain that allows for the visualization of mental maps²⁴



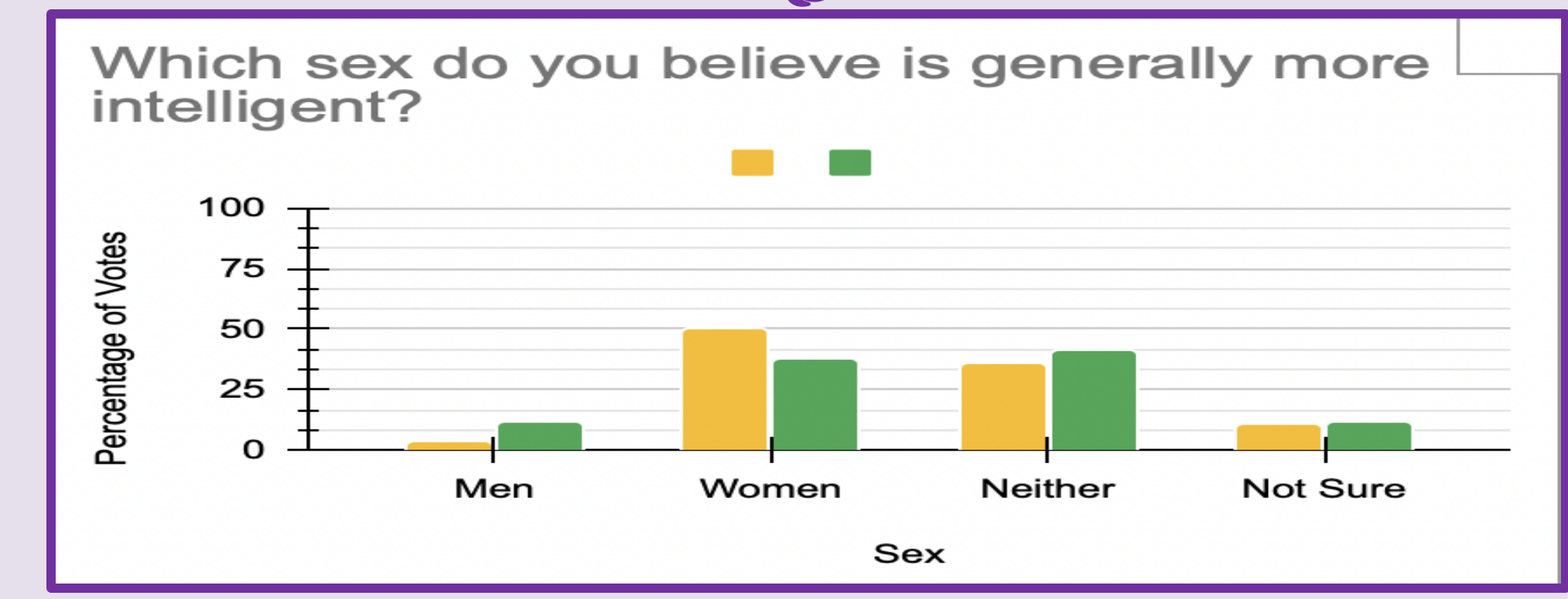
Memorization



Research shows:

- Males outperformed females on spatial memory tasks^{25, 26}
- Females typically excelled in memory tasks regarding verbal items and episodic-memory tasks²⁷

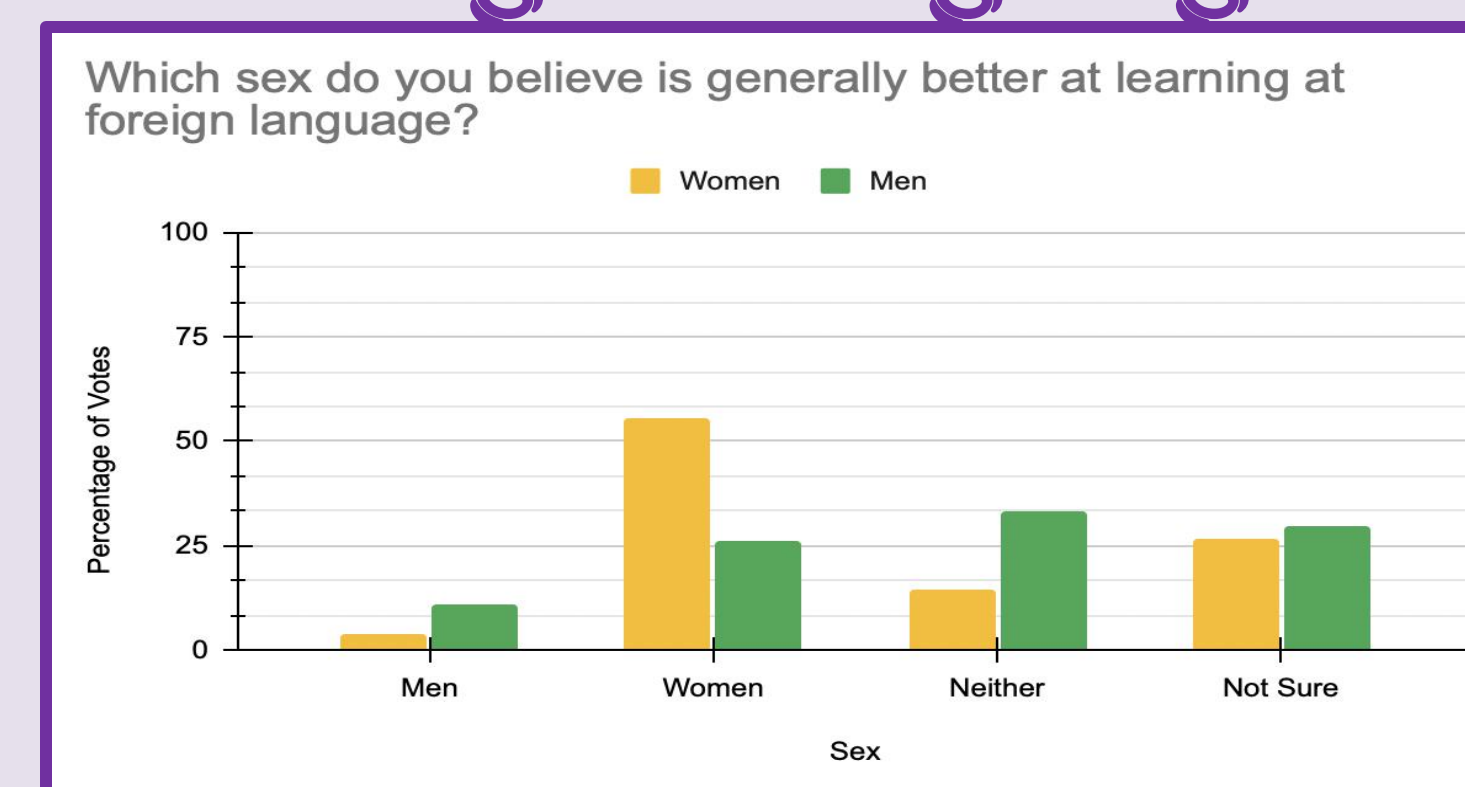
Intelligence



Research shows:

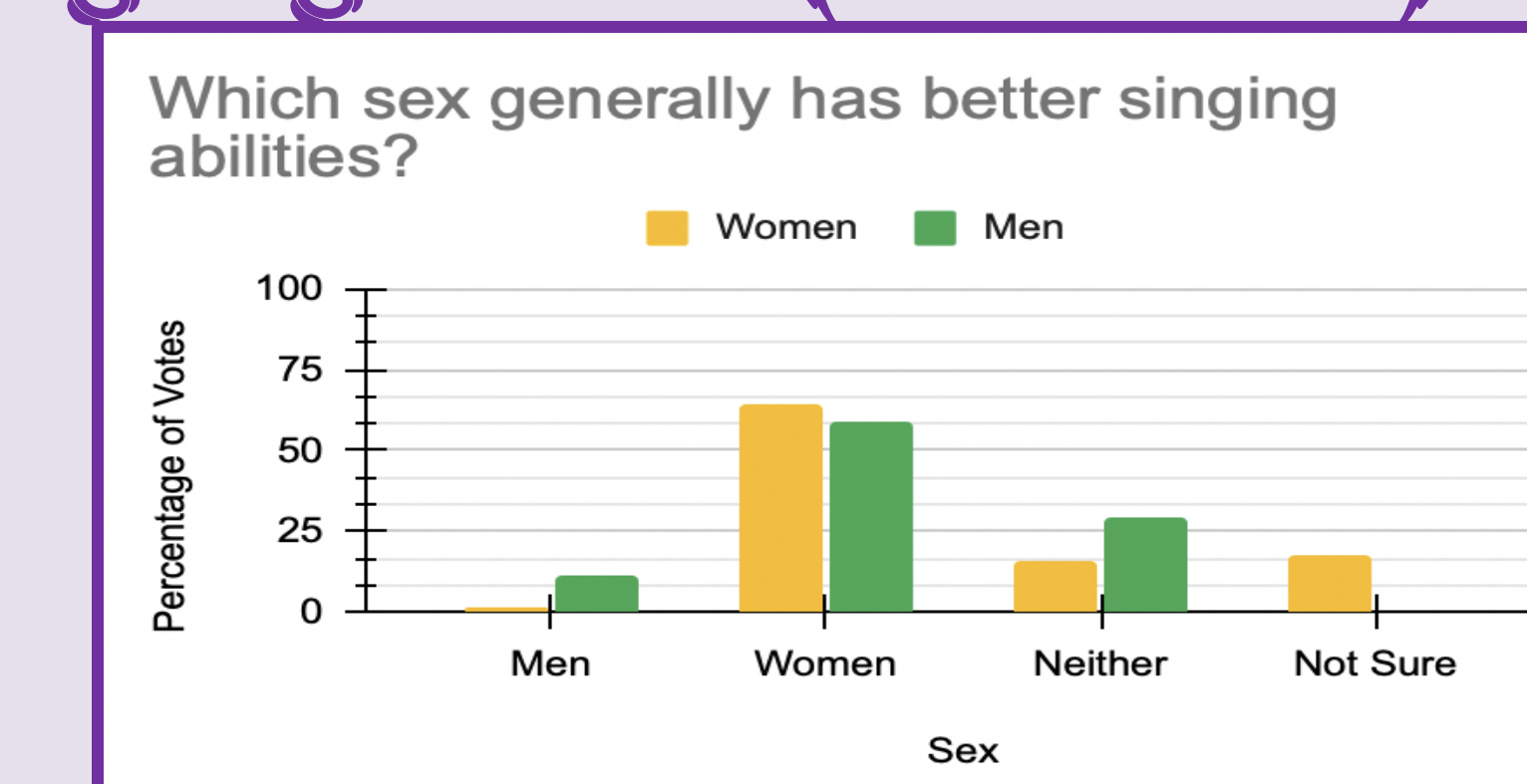
- Males had, on average, a total brain volume 10.8% greater than women in relation to body size. Larger brains are positively correlated with higher IQ scores, but IQ scores are not a proxy for intelligence²⁷

Foreign Language/Singing Skills (Controls)

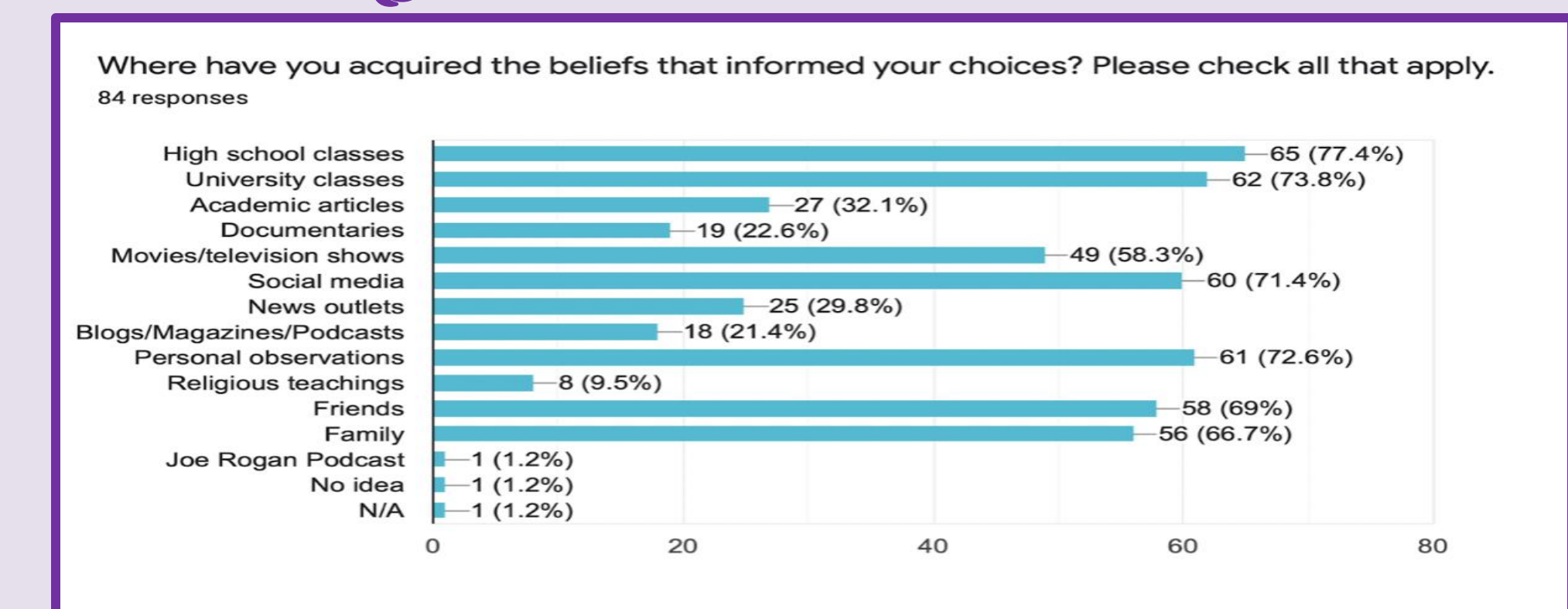


Research shows:

- No evidence supports differences in singing skills or foreign language acquisition between the sexes, yet Binghamton University students still had opinions on the topic^{28, 29}
- The fact that women were chosen the most by both men and women for both questions supports the fact that differences in cognitive abilities are widely overestimated



Origins of These Ideas



- Respondents reported that university and high school classes influenced students' answers the most followed by personal observations, friends, family, and social media
- Since students tended to overestimate the differences between males and females, it can be concluded that Western society overestimates these differences as well

Conclusions

Although slightly varying brain structures may account for a percentage of cognitive differences measured through research, we cannot neglect the effect of culture and environment on the average differences in cognitive abilities. Male and female brains still produce equally intelligent sexes on average, and the most difference is found between individuals. Our respondents largely agreed with common Western stereotypes about cognitive ability, though each sex had slightly more positive views of their own sex. It is impossible to separate biology and culture in developing cognitive ability, and we hope that researchers will devote more effort to the impact of society on cognitive differences.