



# Predictors of Working Memory

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## Abstract

An online multiple regression study was conducted to analyze the relationship between gender and stress and working memory. It is important to understand how stress and gender relate to working memory since past research has shown that stress can interfere with memory, but that women under high stress tend to perform better than men under high stress. The study included approximately 100 participants, with California Lutheran University students accessed through campus sign ups and adults from the researcher's social media posts. Participants answered several questionnaires, including the Perceived Stress Scale (Cohen et al., 1983), which asked multiple questions regarding thoughts and feelings within the past month, and demographic questions on gender, age, and race/ethnicity. Participants also completed a working memory task which consisted of looking at a grid of 10 randomly numbered objects for 30 seconds and then listing how many they could recall. I hypothesized that women with high stress levels would perform significantly better than men with high stress levels, but that overall high stress levels would hinder performance compared to those with lower stress levels.

## Introduction

Chronic stress is experienced both by men and women in relation to life events and their impact. However, women have shown to be more impacted by life events and experience higher perceived stress levels due to the nature of the life events that women seem to experience more and deem more impactful, such as health related life events (Matud, 2004). Women seem to experience more daily stress due to chronic issues and problems. Research has also shown that life and daily stress tend to significantly impair working memory capacity, however it has also been shown that women may benefit more from chronic stress and increased cortisol levels when it comes to working memory (Bowman et al., 2003).

## Hypotheses

There will be a significant main effect for levels of stress such that higher stress levels will predict lower performance levels.

Gender and level of stress will interact significantly such that females with high stress levels will perform better than males with high stress levels.

## Method

### Participants

- 60 adults and undergraduates at California Lutheran University. This sample was doubled to obtain higher statistical power.
- 50% White, 32.1% Hispanic/ Latino, 3.6% Black/ African Am., 7.1% Asian/ Pacific Islander, 3.6% Other
- 89.3% female, 7.1% male
- 18 – 46 years of age ( $M = 29.59$ ,  $SD = 5.08$ )

### Materials

- Informed Consent Form
- Working Memory Task
- Stress Questionnaire
- Demographics Questionnaire

### Procedure

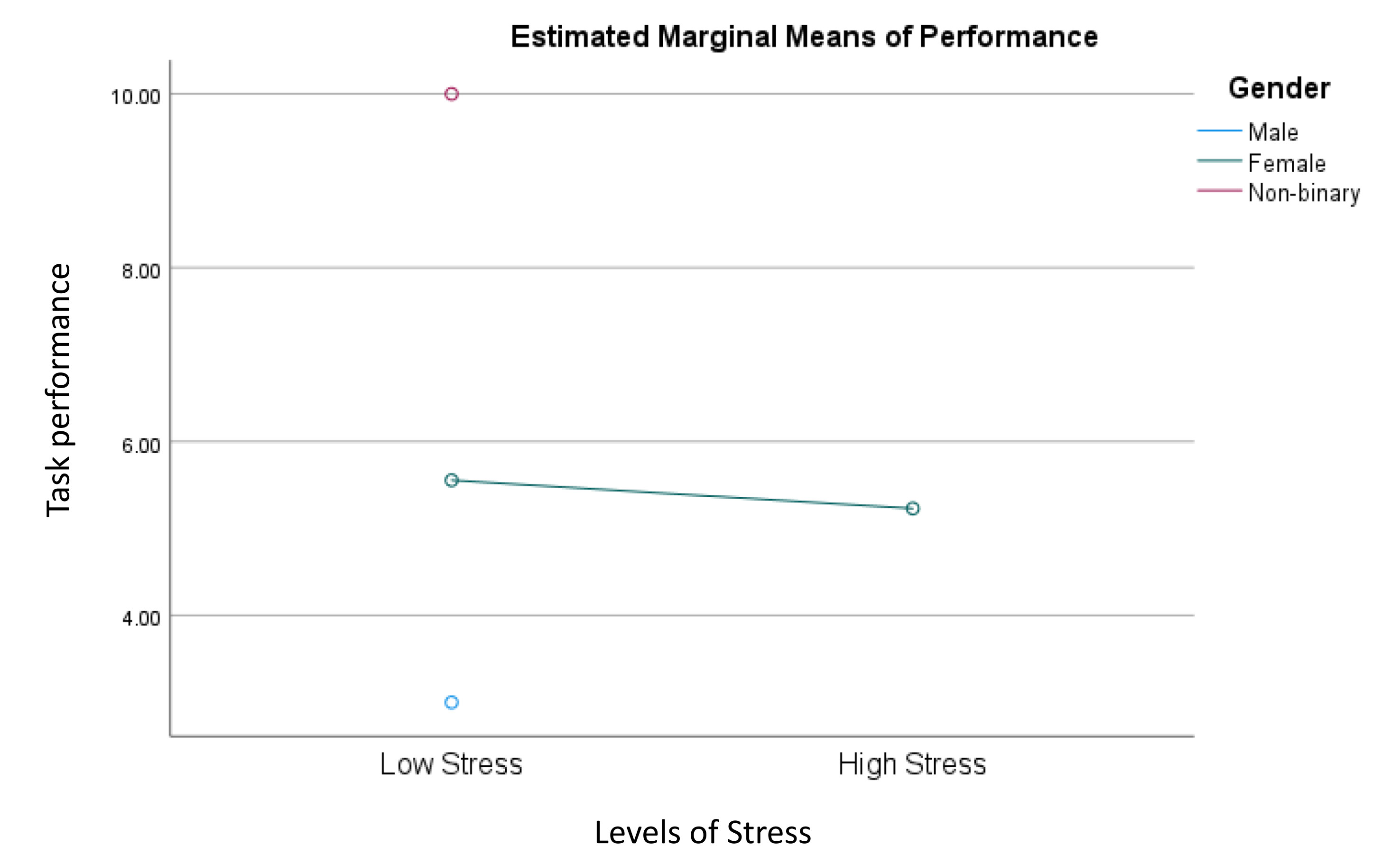
1. Informed consent form signed.
2. Participants asked to memorize a grid of 10 objects for 30 seconds.
  - Participants were then asked to list which objects were in specific numbered spots.
3. Perceived Stress Scale completed.
4. Demographics questionnaire completed.

## Results

• A significant main effect was found for gender,  $F(1, 48) = 3.95$ ,  $p = .026$ , partial  $\eta^2 = 0.15$ , with a large effect size. Females ( $M = 5.36$ ,  $SD = 2.60$ ) outperformed males ( $M = 3.00$ ,  $SD = 0$ ) on the working memory task.

• No other significant differences were found.

## Findings



## Discussion

Hypotheses were not supported. Possible reasons include:

- Characteristics of sample; only one male's performance was included in the final analysis. Since the sample was doubled, the same male's score was included twice.
- Questionnaires relied on participant self-reporting, which may not always be reliable for the most accurate responses.
- Small sample size; 12 of the 60 cases did not complete all the measures, so the resulting sample may have been unusual.
- No interaction was found between stress levels and gender due to only one male being included in the data, leaving no males in the high stress categories.

Future research should address the above issues and could explore the relationship between gender and performance/test anxiety to further explore how different forms of stressors could affect working memory capacity. It would also be beneficial overall to redo this study in hopes of fixing the gender disparity.

References are available upon request.