

Performance Feedback, Individual Personality Differences, and Short-Term Memory Performance

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Introduction

- Previous research suggests that short-term memory (STM) can be affected by a person's mood, fatigue, and rehearsal interference (Goldstein, 2011)
- However, no studies have examined the effects of memory performance feedback on STM and whether different personalities are susceptible to these feedback influences on STM
- In this study, we explored the effects of feedback and personality on STM performance

Hypothesis

1. Negative feedback will significantly hinder short-term memory performance for high-conscientious people.
2. Self-efficacy will be positively correlated with self-esteem, short-term memory performance, and emotional stability.

Method

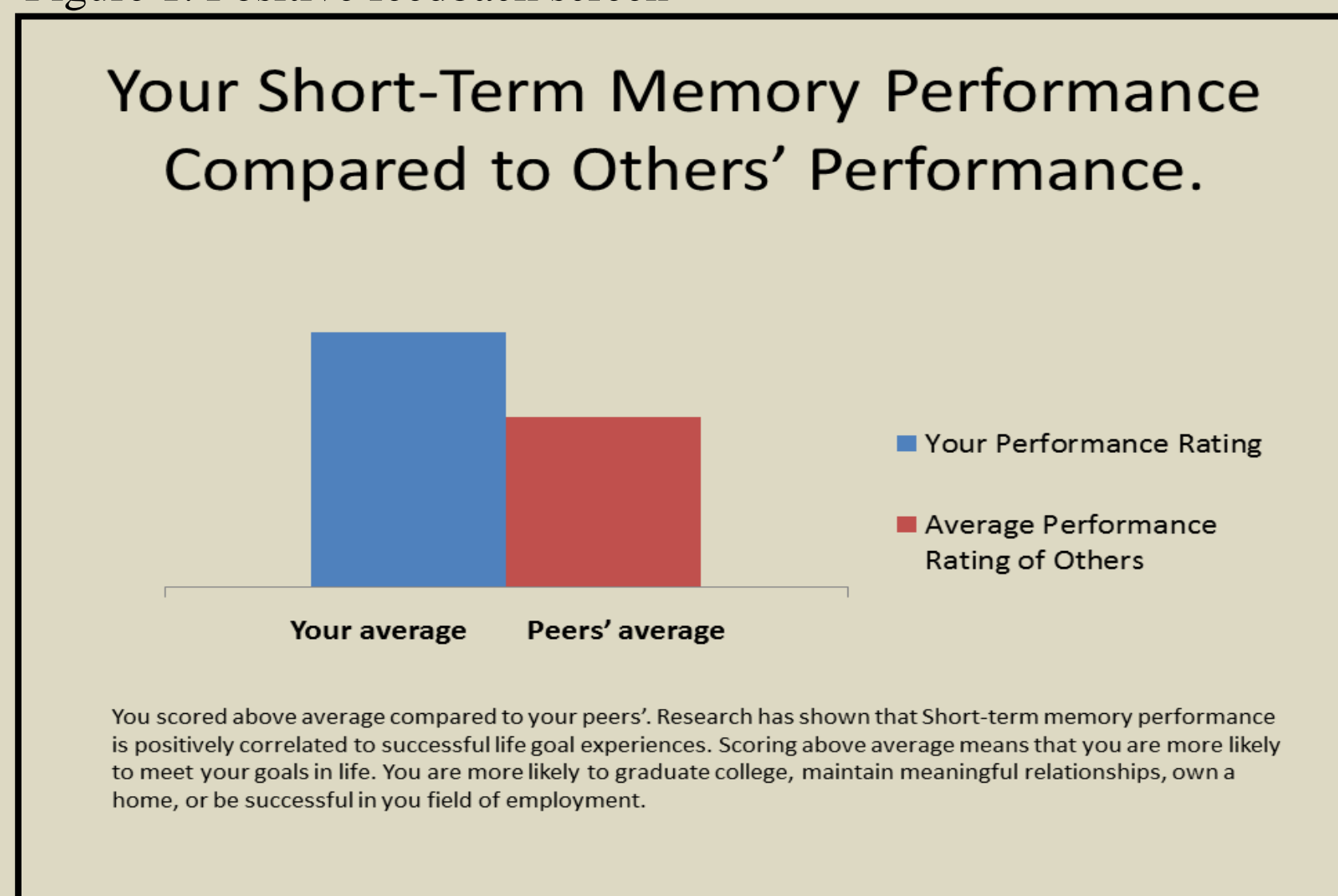
Participants

- N = 87 (61 female) were recruited from the IUPUC campus and the surrounding community
- Mean age = 25.3, SD = 9.5; range 18-58 years

Procedure

- Participants were randomly assigned to 1 of 3 feedback conditions by means of rolling a die; 1 or 2 = negative; 3 or 4 = positive; 5 or 6 = no feedback
- Pen and paper personality measures were administered
- Simple letter span task (pre-test)
- Measured self-evaluation of performance
- Subjects received feedback or took a break
- Simple letter span task (post-test)
- Debriefed participants

Figure 1. Positive feedback screen

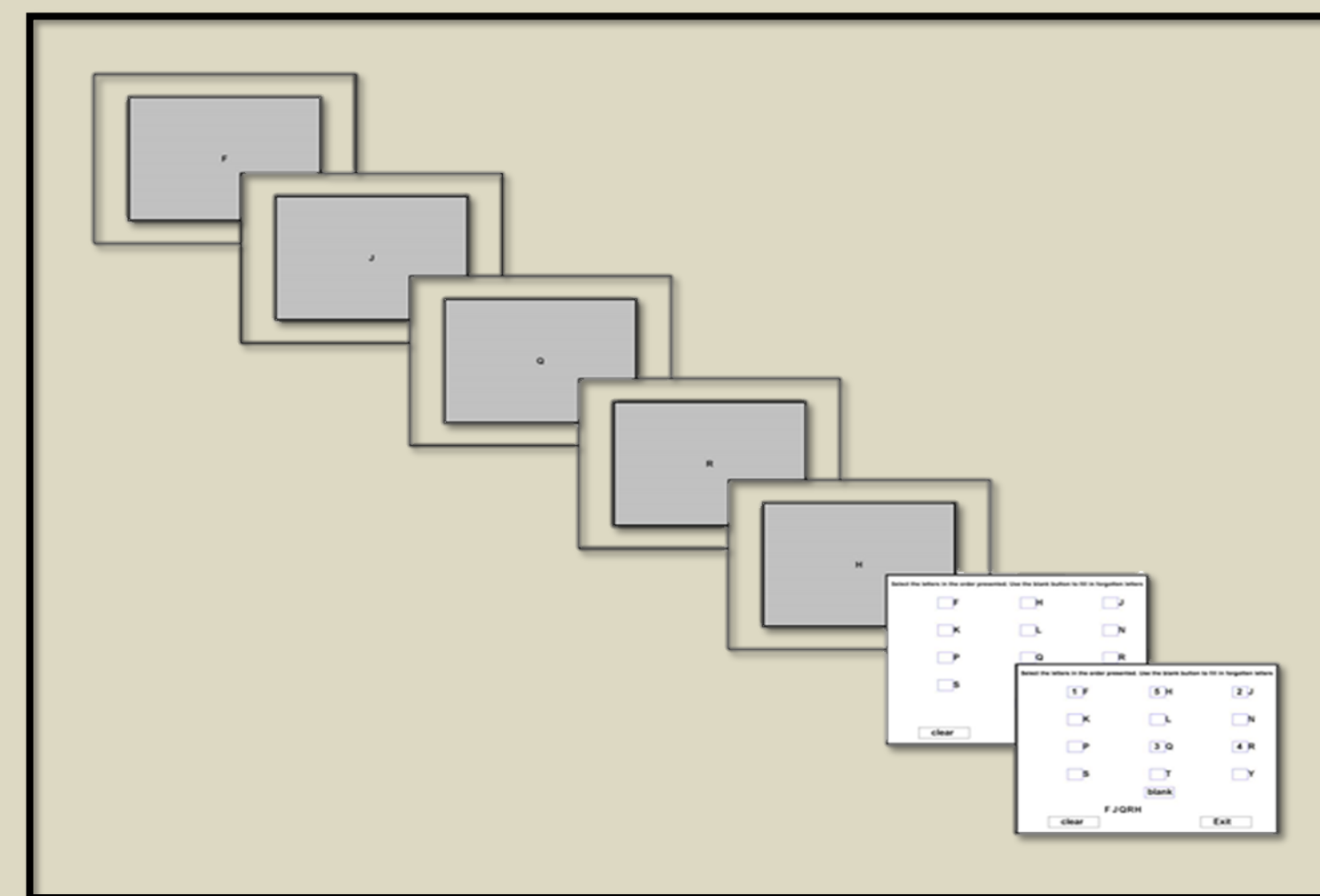


Measures

Letter-Span Task:

- Used E-Prime 2.0 software
- Letter sequences ranged between 3-9 letters. Letters were presented one at a time in 1 second intervals
- Participants had to choose the correct letters and sequence in which they were presented (see Figure 2)
- Each series length (3-9) appears twice per test; giving a total possible score of 84 letters correct per test.
- Change score = Post-test score minus Pre-test score

Figure 2. Simple Letter Span Task



Personality:

- 50 item International Personality Item Pool (IPIP) Big 5 Personality Assessment (Extraversion, Agreeableness, Conscientiousness, Emotional Stability, and Openness)
- 10 item Rosenberg Self-esteem assessment

Results

Short-Term Memory Performance and Feedback

- Main effect of Time (pre/post-test) was marginally significant:
 - $F(1,84) = 4.13, p = .05, \eta_p^2 = .05$
- Interaction of Feedback and Time was not significant:
 - $F(2,84) = 1.13, p = .33, \eta_p^2 = .03$

Short-term Memory Performance and Personality

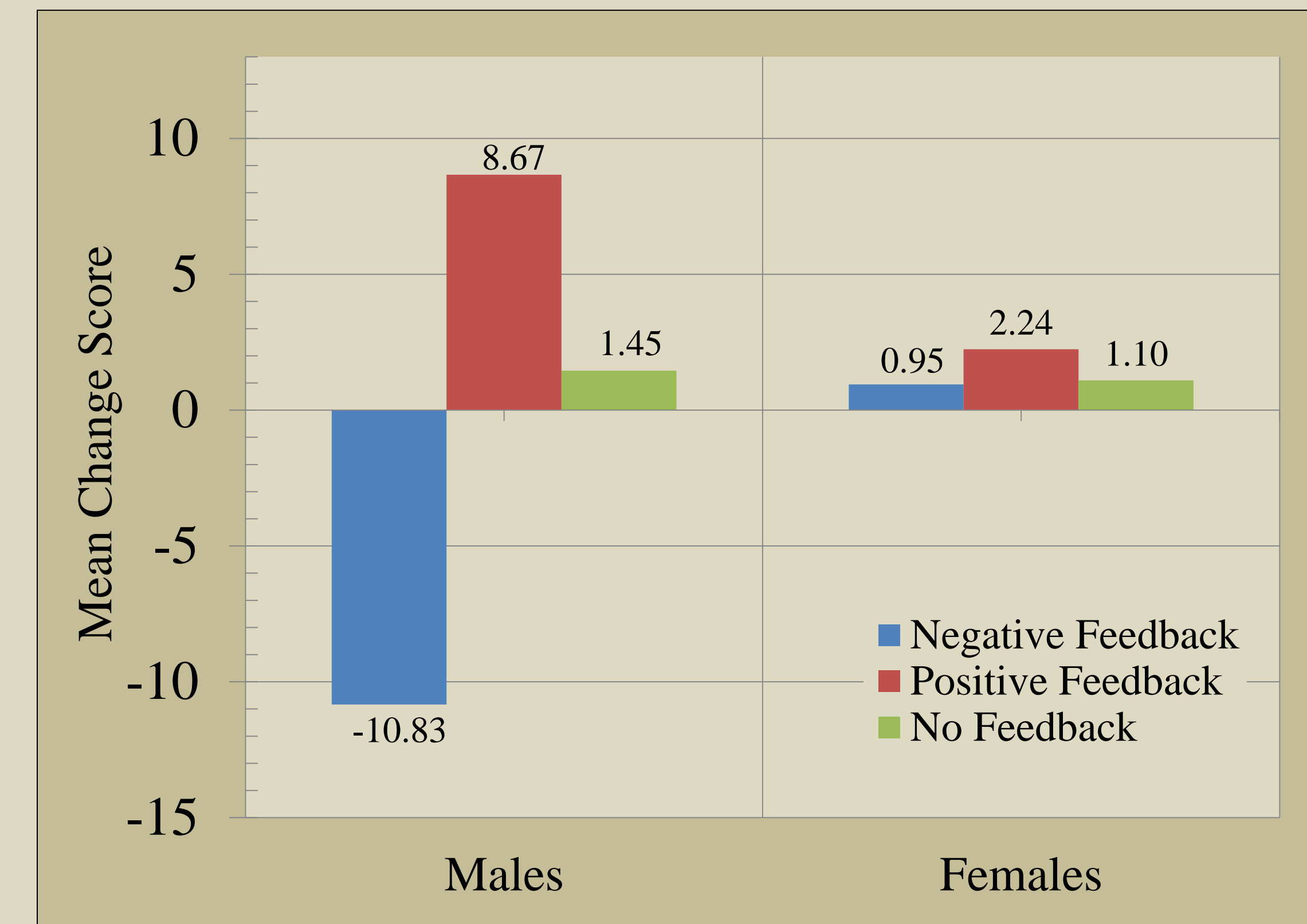
- Subjects' change scores and conscientiousness were positively correlated, $r(85) = .23, p < .03$
- Subjects' pre-test scores and their self-evaluations (before feedback) were positively correlated, $r(85) = .26, p < .05$
- Subjects' self-evaluations (before feedback) and their self-efficacy were positively correlated, $r(85) = .26, p < .05$

Post-Hoc Analyses

Short-Term Memory Performance and Sex Differences:

- Main effect of Feedback was significant:
 - $F(1,84) = 5.03, p = .01, \eta_p^2 = .11$
- Interaction of Feedback and Sex was significant:
 - $F(1,84) = 3.90, p = .02, \eta_p^2 = .09$

Figure 3. Graph of Change Scores by Feedback & Sex



Conclusion

- Variability and large standard deviations on the STM performance scores may be affecting the initial data analyses, thus preventing a statistically significant difference from appearing. Therefore, I believe a larger sample size would be imperative for future studies.
- The use of positive or negative feedback doesn't appear to alter subsequent test performance for everyone. However, it did affect males more than females in this study.
- Although sex effects were observed, this study didn't have equivalent number of sexes, as that was not originally a hypothesis for the study.
- It is important to note that overall, males and females are far more similar than different.
- Correlations suggest that people can accurately evaluate their own short-term memory performance without receiving feedback.

References

Goldstein, E. (2011). *Cognitive psychology: Connecting mind, research, and everyday experience* (4th ed.). Stamford, CT: Cengage Learning