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The Relationship Between Gender Differences and Stress

Stephanie K. Kania

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Abstract

The relationship between gender and stress levels was examined in this study. It was hypothesized that females would express more stress than males, that females would experience more stress on the math task than the spelling task, and that males would not experience a large difference in stress levels on the math and spelling tasks. A math task and a spelling task were used to create stress and a 10-point stress scale was used to measure stress levels of the participants. The experiment was a within-subjects design. The results were insignificant and did not support the hypothesis, revealing almost no difference between stress levels of males and females on both tasks.

Key words: Gender, stress, math, spelling.

Stress is a very important factor in the lives of university students. Stress can be defined as, “A state of mental or emotional strain or tension resulting from adverse or demanding circumstances” (Oxford Dictionaries, 2014). It is likely that most people have experienced stress or anxiety at some point in their lives, especially university and college students due to the many pressures that exist in the academic world. Numerous studies have been conducted to examine the anxiety of university and college students and the factors that influence their stress levels. Dusselier et al. (2005) performed a study examining anxiety and factors that influence stress. These researchers tested undergraduate students in the United States. The results revealed that many personal, health, academic, and environmental variables are able to predict the stress of the students. They also found that in general, the female students experience stress more frequently in the university setting than the men did (Dusselier et al., 2005).
Furthermore, a study was conducted by Brougham et al. (2009) to assess the stress, sex differences, and coping strategies of college students. These researchers also tested undergraduate students attending college in the United States. The results of this study revealed that female college students reported feeling larger amounts of stress than college men (Brougham et al., 2009). This is consistent with the article referenced by Brougham et al. (2009) in which Misra et al. (2000) revealed that college women are more stressed by pressures in relation to academics than men are. A similar study conducted by Misra and McKean (2000) also tested undergraduate American students and found results that were consistent with previous studies; female college students experience higher academic stress and anxiety than men do (Misra & McKean, 2000).

Additionally, a study conducted by Hembree (1990) integrated the research and findings regarding mathematic anxiety and its nature. The results revealed that there is a gender difference in regards to mathematic anxiety. Regardless of grade, all female students had higher math anxiety measures than the males did. Hembree concluded that this could be because either females are more willing to admit their anxiety or because females have better coping mechanisms for their anxiety (Hembree, 1990). An additional study was conducted by Maloney et al. (2012). This study further examined the reason for the difference in mathematics anxiety between males and females. The results revealed that math anxiety is negatively correlated with spatial processing ability, suggesting that women may experience more math anxiety than men because they are worse than men at spatial processing (Maloney et al., 2012).

Lastly, a study done by Shessel (2003) examined the performance of university students on spelling tasks and mathematics tasks with time limits or unlimited time to
complete the task in relation to stress. The results revealed that there was no significant
difference between the mathematics and spelling tasks in relation to stress but there was a
significant difference between time limit tasks and unlimited time tasks. The time limit
tasks tended to produce more stress than the unlimited time tasks (Shessel, 2003).

This study will further expand on the study done by Shessel (2003) but will
abandon the unlimited time variable and examine gender as an independent variable
instead. The hypothesis of this study is that there will be a main effect of gender with
females experiencing higher levels of stress than males, a main effect of task with math
producing higher levels of stress than spelling, and an interaction between gender and
task, with women reporting a bigger difference in stress levels of each task and men
reporting little difference in stress levels of each task.

Method

Participants

Twenty participants were used in this study. Ten of them were female and ten of
them were male. All of the participants were friends or family of the researcher and a
majority of them were students attending Western University. The ages of the
participants ranged from 16 to 56.

Materials

The materials used in this study consisted of a mathematics sheet, a list of words
for the spelling task, a stress scale, and a stopwatch. Refer to the study done by Shessel
(2003) for the mathematical problems and the spelling words. The stress scale asked the
participants to report how stressed they felt on a scale of 1-10. The stopwatch was used to
time the participants on each task.
Procedure

Participants were randomly given either the spelling task or the math task first. If the spelling task occurred first, the participant had 5 minutes to correctly spell ten words on a piece of paper. Each spelling attempt for a single word was allotted a time limit of 30 seconds. The researcher would read a word from the word list and the participant would attempt to spell it on a piece of paper. Once the 30-second time limit of a word ended, the participant had to move onto the next word, regardless if they had correctly spelt the last one or not. During the 30 seconds per word, the researcher would inform the participant if they incorrectly spelled the word. If the participant spelled the word correctly before the 30-seconds ended, they would move onto the next word. After the participant had attempted to spell each of the ten words, they were given the stress scale. Once completed, the researcher would wait approximately 1 hour before administering the math test to the same participant. During the math task, the participant attempted to correctly complete each of the ten math questions in a 5-minute time period. After the participant completed the math task, they were again given a stress scale and asked to complete it.

Other participants were randomly given the math task first, waited for approximately 1 hour, and were then given the spelling task.

Results

The results of a 2x2x2 ANOVA revealed no main effect of the order of the two tasks, $F(1,16) = 1.191, p > 0.05$. No significant interaction between the order the participants completed the two tasks in and the stress reported after the two tasks was found either, $F(1,16) = 0.645, p > 0.05$. A 2x2 ANOVA revealed no significant main
effect of gender, $F(1,18) = 0.538$, $p > 0.05$, and no significant main effect of the tasks, $F(1,18) = 1.658$, $p > 0.05$. Furthermore, no significant interaction was found between the tasks and gender, $F(1,18) = 0.342$, $p > 0.05$. Figure 1 demonstrates the results of the 2x2 ANOVA. Refer to appendix A for the 2x2x2 ANOVA source tables and the 2x2 ANOVA source tables.

Discussion

The results of this study did not support the hypothesis. This could have occurred because the sample was not large enough. With a larger sample, a larger range of data could have been collected which may have shown significant results. Additionally, the presence of the observer may have influenced the amount of stress the participants reported. The participants may have felt more or less stress because of the presence of the observer, as opposed to the amount of stress they may have felt with no observer. Having no observer would have added more control to the study. It would have ensured that the reported stress was a result of the two tasks and not anything else. Furthermore, the observer was female which also may have influenced the stress reports of the participants. The stress reports may have been different if the observer was male, and may have differed depending on the gender of the participant.

Regardless of the results, the measures of the study were reliable and valid. The validity of the stress scale was accurate because it correctly measured only the stress levels of the participants. The reliability of this study was accurate as well because the stress scale consistently measured stress across all participants.

In the future, this study can be performed without the presence of an observer to control for the effect the observer may have on the participants’ stress levels.
Figure 1. This graph demonstrates the 2x2 ANOVA. It analyzed the resulting average stress levels of males and females after they completed the spelling and math tasks.
Additionally, this study can be done again with alterations to the design, to test whether the gender of the observer has an impact on the reported stress levels of the participants. Lastly, to correct this study in the future, it is recommended that a 5- or 7-point scale be used to measure stress, allowing the participants to have a middle option between stressed and not stressed at all.

Additional studies that can expand on this one may examine different tasks as opposed to math and spelling, and their relation to stress. Examples of other tasks that could be used include strategic tasks, abstract-thinking tasks and concrete thinking tasks, mental imagery tasks, and recall tasks. Future research can also examine the difference in stress levels of young adults, ages 18-25, and older adults, ages 65 and over. If significant results were found, a further examination of the stress coping measures of young and old adults would be interesting.

In conclusion, the results did not support the hypothesis. There was no main effect of gender or task, and no significant interaction between gender and task. This study can be conducted again in the future with some adjustments. Future research that can expand on this study can also be performed, examining stress in relation to different tasks or in relation to age.
References


Appendix A

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<tr>
<th>Source</th>
<th>SS</th>
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<th>MS</th>
<th>F</th>
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2x2x2 ANOVA – test of within-subjects effects.

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2x2x2 ANOVA – test of between-subjects effects
### 2x2 ANOVA – test of within-subjects effects.

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### 2x2 ANOVA – tests of between-subjects effects.

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