

**The Effect of Anxiety on Choice of College Major**

By

Allison Taylor Gilbert

Senior Honors Thesis

Submitted to the Department of Psychology

Of Lenoir-Rhyne University

For graduation with Honors in Psychology

Approved:

---

Professor Directing Honors Thesis

---

Department Examiner

---

Non-Department Examiner

---

Dean School of Humanities and Social Science

### **Abstract**

Anxiety is a prominent issue that is faced by college students. Another important issue that is faced by college students is the decision of college major. Many factors have been found to have an impact on a student's choice of major including gender, race, and socio-economic status. Anxiety is not a factor that has been studied much in the past in relation to choice of a major. Given the large number of students who have been found to struggle with anxiety, this is a relationship that should be examined. Based on previous literature, it was hypothesized that students with higher levels of trait anxiety would be more likely to choose majors that would offer more career variability. The present study consisted of 42 participants from a convenience sample of college students. Participants completed the HAM-A to examine their levels of trait anxiety and the GAD-7 to examine state anxiety. Participants also noted any major or minor that they were enrolled in. A correlational analysis was performed on the data showing that, although the data was trending in the direction consistent with the hypothesis, it was not statistically significant. Further analysis was done showing that, in this sample, female participants chose more difficult majors than male participants, while male participants had more variability in both major difficulty and major career variability. These findings are important in furthering our understanding of choice of major and how best to guide students in their choice of major.

## **Overview of Anxiety and Choice of Major**

### **Anxiety**

Anxiety, as described in an article in Psychology Today (2019, para. 1), is a “mental and physical state of negative expectation.” Anxiety is a feeling that most people will experience during their lives, whether it be provoked by specific events or not directed toward a specific situation. The feeling of anxiety is characterized by several physical, emotional, and cognitive responses.

The expression of anxiety can result in several physical experiences. When the body is experiencing anxiety, the hormone adrenaline is released. Adrenaline prepares the body to respond to the high-intensity environment (Cleveland Clinic, 2022). This, in turn, leads to several physiological responses, such as dilation of the pupils, dilation of blood vessels, mobilization of glycogen, increased heart rate, inhibited intestinal function, and increased respiratory action. In moments of stress that are not necessarily emergent, some level of adrenaline is still released along with cortisol. Cortisol affects behavior and leads to inhibition in unfamiliar situations (Sherman & Mehta, 2020).

Along with these physical symptoms of anxiety, there are also emotional and cognitive symptoms. According to the American Psychological Association (2022), the main indicator of anxiety is excessive worry, even in the absence of a stressor. People experiencing anxiety are often unable to think of anything aside from their worries, which can impair their regular functioning. Some other symptoms of anxiety include difficulty concentrating and irritability.

### **Anxiety vs. Fear**

Although there are some similarities between fear and anxiety, they are not the same emotion. According to the American Psychiatric Association (2022, para. 3), fear is an

“emotional response specific and immediate threat or danger.” Fear is characterized by the onset of a “fight or flight” reaction to a threat, aiding in survival. In situations where danger is present, fear helps the individual survive the danger. The “fight or flight” response is the way that the body responds to the danger, either fighting it off or trying to get away and escape the danger. Fear is also a very intense feeling that leads to a strong physical response. Fear will usually disperse after the danger has passed and is not likely to persist far beyond the threat's removal.

Anxiety, on the other hand, is not a response to an immediate threat but is an emotional state in which an individual is worried about future events. Anxiety is not caused by any present physical danger but can have several different causes. Individuals can have anxiety surrounding different situations or just a general presence that does not surround a particular situation.

Fear and anxiety also have different physiological responses, as noted by McNaughton and Corr (2004). Fear can lead to heightened heart rates, alertness, and rapid breathing. Anxiety can lead to muscle tension, restlessness, and sleep disturbances due to chronic heightened arousal. The physical symptoms of each of these topics also show the differences between the two. The physical symptoms of fear are short-term and would not be expected to have any long-term effects. The symptoms of anxiety, however, are long-lasting. While fear may lead to more intense physical responses, anxiety can be accompanied by long-lasting physical reactions.

In summary, fear is a response to a current danger, and anxiety is worry about potential future events. Fear is also likely to present for a shorter duration than anxiety but be more intense. In contrast, anxiety can be less intense physically but can last for a much longer period, even being consistently present for some people in the form of an anxiety disorder.

### **Types of Anxiety**

Two distinct types of anxiety are examined in an article by Endler and Kocovski (2001). One of the types of anxiety discussed in the article is state anxiety, which is a temporary state of anxiety in response to some external stimuli. This is similar to the experience of fear, but state anxiety is different from fear in several ways, with the main difference being that fear is more based on a present physical danger, while state anxiety is more likely to be based on an emotional stressor.

The other type of anxiety that the article discusses is trait anxiety. This is a continuous trait that is stable across different situations. Rather than an emotional state, trait anxiety is a personality trait. Trait anxiety can be experienced at various levels and was described in the article as a continuum. This means that it can be experienced to different degrees, depending on the individual. If the level of anxiety is causing distress to the individual, it is possible that it could be classified as an anxiety disorder, but some level of anxiety is normal for individuals to experience.

Both types of anxiety are multidimensional. The dimensions of state anxiety that are mentioned in the article are cognitive-worry and autonomic-emotional. The dimensions of trait anxiety are social evaluation, physical danger, ambiguity, daily routines, and other undetermined factors. Both types of anxiety present with similar feelings and physical symptoms, but they stem from several factors. Similar to fear, state anxiety is likely to be more intense than trait anxiety but lasts for a shorter duration, as it would subside when the stressor is removed. Both state and trait anxiety can vary in intensity depending on the situation and the individual.

### **Anxiety in College Students**

The highest prevalence of mental disorders is among youths, ages 16 to 24 (Amir Hamzah et al. 2019). There are many varied reasons why this is the case, most of them revolving

around the changes that individuals face during this time. One factor is the level of brain development that goes on at this time. Rapid changes happen in important brain regions, such as the prefrontal cortex. There are also other physical changes happening during that period of development, including hormonal changes post-puberty. There are also many stresses that individuals are likely to experience during this time period, including academic, peer, familial, and future-oriented pressures. All of these factors make it clear why people between the ages of 16 and 24 are more likely to experience mental health issues than people in other age groups.

Anxiety, stress, and depression are the most prevalent mental disorders among university students. Amir Hamzah et al.'s study (2019) at the University of Malaya in Malaysia examined 3075 first-year students in the areas of depression, anxiety, and stress. The results of the study found that nearly 40% of participants experienced normal levels of anxiety: 11% mild, 29% moderate, 11% severe, and 9% extremely severe. The higher than normal levels were much higher in anxiety than in depression and stress. Higher than normal levels of depression were present in 21% of participants, higher than normal levels of stress were present in 12% of participants, and higher than normal levels of anxiety were present in 60% of students. The results of this study point to the assumption that anxiety is an issue for undergraduate students.

### **Choice of Major**

For many college students, the choice of major seems like an extremely daunting task. Students feel that their choice of major will determine the course of the rest of their lives, and as young adults, this can be a stressful thought. A college major can be a determining factor in the career path that students can take once they graduate. Many jobs require degrees in a specialized field to be hired, so the major a student gets their degree in can be a crucial factor in the job they can get once they have left school. It also feels especially important for students to choose the

correct major as soon as they get into college because they do not want to spend more time or money than they must in order to earn a degree in the field that they want to find a career in. Although it is possible to earn a degree and go back for another if an individual finds that the career they want requires specialization in a different field, this is a very expansive task that many people cannot afford to complete.

There are several factors that have been shown to contribute to the choice of college major. One of these contributing factors is gender (Mullen, 2014). Historically, there have been certain majors that are male-dominated and certain that are female-dominated. Some of the fields that have historically been more male-dominated are those of science, technology, engineering, and mathematics (STEM). Mullen's study found that women were more likely to choose majors that were in line with their intellectual passions, while men chose to stay away from majors that were related to traditionally feminine traits, even when they were intellectually interested in those fields. Mullen also found that men were more likely to pursue a field based on anticipated salary than women, who are more likely to choose a major based on interest.

Another factor in major choice is race (Niu, 2017). Niu found that Black students were more likely than white students to choose majors in the STEM field. Another factor that Niu found to influence major choice was socioeconomic status (SES) in female and Black students. When a female or Black student comes from a family with a higher SES, they are more likely to choose to major in a STEM-related field. Niu found that SES had no effect on the choice of a STEM major in male students.

### **How does Anxiety influence choices?**

Yang and Freling (2015) examined the relationship between anxiety and decision-making. In their literature review, Yang and Freling found several ways that anxiety influences

decision-making. First, because anxiety leads an individual to fear future events, that person will make decisions about those events from a pessimistic point of view. Other factors that were found to be impacted by anxiety in decision-making were “[processing] persuasive arguments less thoroughly, [scanning] alternatives in a more haphazard fashion, [exhibiting] lower recall and organization of information in memory” (Yang & Freling, 2015, p. 1791).

Using this information, Yang and Freling (2015) conducted several studies to examine the impact of anxiety on decision-making. In study two of their paper, Yang and Freling randomly assigned participants to three groups: control, sadness, and anxiety. The participants in the anxiety and sadness groups discussed memories that brought up their perspective on emotions. The participants were then presented with a task in which they had to decide between a letter that was statistical and a letter that was anecdotal. The people in the anxiety group were much more likely to choose the anecdotal letter than the statistical letter when compared to the control and sadness groups.

### **Anxiety and Choice of Major**

In a study by Brown and Strange (1981) that examined first-year college students who had either chosen their majors or were undeclared. The study found that students who had both decided on a major and a career path had lower state anxiety scores (36.24) than students who had declared a major but were undecided about a career path (45.70), students who decided on a career path but not a major (36.37), and students who had not decided on a career path or major.

Amir Hamzah (2019) also looked at a field of study in relation to depression, anxiety, and stress, noting if participants were in a scientific or non-scientific field of study. Amir Hamzah found that participants in non-scientific fields of study were more likely to have higher than



normal levels of anxiety than those in scientific fields. Among the participants, 56.5% were in non-scientific fields of study, and 43.5% were in scientific fields of study.

### **The Present Study**

The present study examines the effect of trait anxiety's impact on a student's choice of college major. Based on the research, it was hypothesized that students with higher levels of trait anxiety would be more likely to choose majors that offer a wide range of career choices. Because most of the issues surrounding choice of college major seem to be targeted toward the job opportunities that the degree will give you. Along with anxiety being targeted toward future events, it was hypothesized that people with higher levels of trait anxiety are going to worry more about the job outlook that their major offers compared to people who have lower levels of trait anxiety.

### **Methods**

#### **Participants**

Participants consisted of 42 students, including 32 undergraduate students (76.19%) and 10 graduate students (23.81%). Participants in this study consisted of 30 females (71.42%), 10 males (23.81%), and 2 non-cis people (4.72%). Participants' ages ranged from 19 to 49, with a mean of 23.71. The majority of participants were Caucasian (78.57%), with the rest of the population consisting of 9.52% Black/African American, 4.76% Hispanic, 2.38% Asian/Pacific Islander, and 4.76 indicated none/prefer not to answer. Participants also had 14 distinct undergraduate majors that were separated into 4 distinct categories. Due to the fact that graduate majors are more specialized toward a specific career, graduate students were not factored into the

analyses involving major variability and major difficulty. These demographics can be broken down further in Tables 1 and 2.

### **Instruments**

**Informed Consent.** Participants were given an informed consent form describing their rights as participants and what the study would consist of. It also explained that their participation was voluntary (see Appendix A).

**Demographics Questionnaire.** Participants were also given a demographic questionnaire asking them to indicate their age in years, year in school: freshman, sophomore, junior, senior, gender identity, ethnic identity, and college major or minor. This will allow for the sample to be accurately described (see Appendix B).

**Hamilton Anxiety Rating Scale.** The Hamilton Anxiety Rating Scale (HAM-A) was used as a measure of trait anxiety. The HAM-A is a 14-item interview-based scale designed to examine the severity of an individual's anxiety. The items measure mental and physical symptoms of anxiety. The HAM-A is a scale with answers including not present, mild, moderate, severe, and very severe. For each question, scores can range from 0-5. An overall score greater than 17 indicates mild anxiety; 25–30 indicates moderate to severe; and 31 or greater indicates very severe. The reliability and validity of the HAM-A were examined in a study by Maier et al. (1988). The study found that the HAM-A was both valid and reliable (see Appendix C).

**General Anxiety Disorder-7.** The General Anxiety Disorder-7 (GAD-7) was used to measure participants' trait anxiety. The GAD-7 is a self-report questionnaire that was developed as a measure of the severity of anxiety. Questions are answered on a 4-point scale ranging from 0-3. The questions ask about the frequency of different feelings and thoughts over the last 2 weeks, with the answers being not at all, several days, more than half the days, and nearly every

day. A score of 4 or less indicates minimal anxiety, 5–9 mild anxiety, 10–14 moderate anxiety, and 15–21 severe anxiety. The reliability and validity of the GAD-7 were examined in a study by Löwe et al. (2008). The results of the study showed that the GAD-7 is both valid and reliable (see Appendix D).

### **Procedure**

Participants in this research were recruited both on campus at Lenoir-Rhyne University and on social media. Allowing for a larger population of students from other universities to participate, giving more variability in the possible majors that participants were enrolled in. Participants were first given the informed consent form to read and sign, indicating that they understood their rights as participants and still agreed to participate. After filling out the consent form, participants completed the demographic questionnaire and then completed the two measures of anxiety, the HAM-A and the GAD-7. The data that was collected was anonymous, though participants' emails were collected separately if they wished to enter the raffle that was used as an incentive.

### **Results**

In order to analyze the data, a group of three undergraduate students who were blind to the purpose of the study ranked each of the undergraduate majors on perceived variability in career options. The ratings were done on a 5-point scale ranging from 1, very limits career variability, to 5, many career options. They also rated each major on their perceived difficulty, again using a 5-point scale, ranging from 1, very easy, to 5, very difficult. The average for each major was calculated, giving them a score of major variability and major difficulty (see Table 3).

Using these rankings, a correlational analysis was performed. Contrary to the hypothesis, there was no significant correlation between major variability and trait anxiety,  $r(30) = 0.17, p >$

0.05. Further analysis showed that there was also no significant correlation between major variability and state anxiety  $r(30) = 0.29$ ,  $p < 0.10$ , major difficulty and trait anxiety  $r(30) = 0.02 > 0.05$ , or major difficulty and state anxiety  $r(30) = 0.16$ ,  $p > 0.05$  (see Table 4).

Two between-subjects' ANOVAs were performed, examining the differences in the means of the HAM-A and GAD-7 between the four different major categories present: social science, humanities, science, and business. The results show no statistically significant difference in the means of the GAD-7,  $F(3, 29) = 0.952$ ,  $p > 0.05$ , and the HAM-A,  $F(3, 29) = 1.101$ ,  $p > 0.05$ , based on the major categories (see Tables 4 & 5).

For further analysis of the data, an independent sample t-test was performed using gender as the grouping variable and examining major variability, major difficulty, HAM-A, and GAD-7 as dependent variables. In the case of major variability, the results were not statistically significant,  $t(28) = 0.788$ ,  $p > 0.05$ . The results in major difficulty were all significant, with females having a higher mean in each category,  $t(28) = 2.056$ ,  $p < 0.05$ , HAM-A  $t(38) = 2.019$ ,  $p < 0.05$ , and GAD-7  $t(38) = 2.469$ ,  $p < 0.05$  (see Tables 6 & 7).

### **Discussion**

The purpose of this study was to examine the relationship between anxiety and choice of college major. The prediction was that participants who had higher levels of trait anxiety would be more likely to choose college majors that allowed for more variability in career options. Unfortunately, there was no significant relationship between major variability and trait anxiety. Although the hypothesis was not supported, there are some changes that could be made to further examine this idea. If I were to examine this topic again, I would further examine the reasoning that participants give for their major choices and look further into each participant's views of the variability in careers relating to their major. It is important to note that, were the trend shown in

the correlational analysis to continue, a larger sample would have found the relationship to be statistically significant. The relationship was pointing in the correct direction meaning that, were it statistically significant it would have supported the hypothesis.

Although this research did not show any relationship between anxiety and major variability, the results did provide information on gender identity and choice of major. Female participants were more likely to choose more difficult majors than male participants. Also looking at the gender breakdown of major difficulty, there was more variation in the difficulty of majors chosen by male participants. Female participants consistently chose more difficult majors, while male participants had much more variance (see Figure 1). The same phenomenon can be seen in major variability (see Figure 2).

Along with a difference in major difficulty based on gender, there was also a difference in scores on both the HAM-A and the GAD-7. Female participants were shown to have higher levels of both state and trait anxiety when compared to male participants. With this information in mind, I feel that it would be interesting to look further into the relationship between gender identity and anxiety, both inside and outside of academic settings.

Looking at just the mean scores of the HAM-A and GAD-7 also has an interesting implication about anxiety in college students, both graduate and undergraduate. Based on the scoring criteria for the GAD-7, the mean GAD-7 score of 9.714 is indicative of mild to moderate anxiety, falling well above the score of 4, which would indicate minimal anxiety. The mean score for the HAM-A of 16.476 falls barely below the score of 17 that would indicate mild anxiety.

This research did face some limitations, the most notable of which was the small number of participants. Along with this, most of the participants in the study were white and identified as

female, skewing the data to represent that population. Ideally, if this research were to be replicated in the future, a larger and more diverse sample would be used. Of the 14 majors that were represented in this study, most of them only had 1–3 participants. A larger number of participants from each major would also be more representative of each major. Another limitation of this research was finding a way to accurately rate the variability of career options for each major. Having blind raters was not the most ideal way to produce these scores because of their lack of knowledge about majors outside of their own. One possible fix for this problem would have been to have participants give their own rating on what they perceive the career variability and major difficulty to be. Along with this, interviewing participants about why they chose their major and any future career plans they have would also give more insight on how to score major variability and difficulty, as well as factors that may affect choice of major.

In line with previous research, the results of this study found that anxiety is a prominent issue that is faced by college students. Unexpectedly with the previous research, the present study found that male students were likely to choose majors that were not in the STEM field. These findings can be used in the future in aiding school counselors in understanding how best to help students choose their majors.

### **Conclusion**

Although the research did not support the hypothesis, it did give a lot of information about several different aspects related to anxiety and the choice of major separately. Looking back at the literature review in the section Choice of Major, although gender identity was found to influence choice of major (Mullen, 2014), the present study showed that female participants chose more difficult majors. Also, in alignment with the literature from the section Anxiety in College Students, the results of the present study showed that, on average, participants were

likely to have higher than normal levels of anxiety. Overall, a lot was learned through this research, and it was eye-opening to see some of the factors that may play a role in the choice of college major. The result of this study, and any similar studies that may be conducted in the future, have important implications for how best to guide students through the process of choosing a major, as well as the relationship between anxiety and decision making.

### References

- American Psychiatric Association. (2022). Anxiety Disorders. In: Diagnostic and statistical manual of mental disorders. (5th ed. Text Revision.). *American Psychiatric Association*, 215-231.
- American Psychological Association. (2022). What's the difference between stress and anxiety? *American Psychological Association* <https://www.apa.org/topics/stress/anxiety-difference>
- Amir Hamzah, N. S., Nik Farid, N. D., Yahya, A., Chin, C., Su, T. T., Rampal, S. R. L., & Dahlui, M. (2019). The prevalence and associated factors of depression, anxiety and stress of first year undergraduate students in a public higher learning institution in Malaysia. *Journal of Child and Family Studies*, 28(12), 3545–3557.  
<https://doi.org/10.1007/s10826-019-01537-y>
- Brown, G. S., & Strange, C. (1981). The relationship of academic major and career choice status to anxiety among college freshmen. *Journal of Vocational Behavior*, 19(3), 328–334.  
[https://doi.org/10.1016/0001-8791\(81\)90067-1](https://doi.org/10.1016/0001-8791(81)90067-1)
- Cleveland Clinic. (2022, May 19). Adrenaline: Where the hormone is located & what it does. *Cleveland Clinic*. <https://my.clevelandclinic.org/health/body/23038-adrenaline>
- Endler, N. S., & Kocovski, N. L. (2001). State and trait anxiety revisited. *Journal of Anxiety Disorders*, 15(3), 231–245. [https://doi.org/10.1016/S0887-6185\(01\)00060-3](https://doi.org/10.1016/S0887-6185(01)00060-3)
- Hamilton, M. (1959). The assessment of anxiety states by rating. *British Journal of Medical Psychology*, 32, 50–55.
- Löwe, B., Decker, O., Müller, S., Brähler, E., Schellberg, D., Herzog, W., & Herzberg, P. Y. (2008). Validation and standardization of the generalized anxiety disorder screener



(GAD-7) in the General Population. *Medical Care*, 46(3), 266–274.

<http://www.jstor.org/stable/40221654>

Maier, W., Buller, R., Philipp, M., & Heuser, I. (1988). The Hamilton anxiety scale: Reliability, validity and sensitivity to change in anxiety and depressive disorders. *Journal of affective disorders*, 14(1), 61-68.

Mullen, A. L. (2014). Gender, social background, and the choice of college major in a liberal arts context. *Gender & Society*, 28(2), 289-312. <https://doi.org/10.1177/0891243213512721>

Sherman, G. D., & Mehta, P. H. (2020). Stress, cortisol, and social hierarchy. *Current opinion in psychology*, 33, 227–232. <https://doi.org/10.1016/j.copsyc.2019.09.013>

Spitzer, R. L., Kroenke, K., Williams, J. B. W., & Löwe, B. (2006). A brief measure for assessing generalized anxiety disorder: The GAD-7. *Archives of Internal Medicine*, 166(10), 1092–1097. <https://doi.org/10.1001/archinte.166.10.1092>

Psychology Today. (2020). The biology of anxiety. *Psychology Today*  
<https://www.psychologytoday.com/us/basics/anxiety/the-biology-anxiety>

Psychology Today. (2019). The difference between stress and an anxiety disorder. *Psychology Today*. <https://www.psychologytoday.com/intl/blog/addiction-recovery/202105/the-difference-between-stress-and-anxiety-disorder#:~:text=Not%20all%20people%20who%20experience%20stress%20have%20a>  
[n](https://www.psychologytoday.com/intl/blog/addiction-recovery/202105/the-difference-between-stress-and-anxiety-disorder#:~:text=Not%20all%20people%20who%20experience%20stress%20have%20a)

Yang, Z., Saini, R., & Freling, T. (2015). How anxiety leads to suboptimal decisions under risky choice situations. *Risk Analysis*, 35(10), 1789–1800.

**Table 1***Demographics Breakdown for Qualitative Data*

Variable	Category	Frequency	Percentage
Class	Sophomore	5	11.905
	Junior	14	33.333
	Senior	13	30.952
	Graduate	10	23.810
Ethnicity	White/Not Hispanic	33	78.571
	Black/African American	4	9.524
	Hispanic	2	4.762
	Asian/Pacific Islander	1	2.381
	None/Prefer Not to Answer	2	4.762
Gender	Female	30	71.421
	Male	10	23.810
	Non-cis	2	4.762
Major	Psychology	5	11.905
	History	2	4.762
	Nursing	8	19.048
	Anthropology	1	2.381
	Sports Management	1	2.381

**Table 1 (continued)**

Variable	Category	Frequency	Percentage
	Biology	3	7.143
	English	3	7.143
	Secondary Education	1	2.381
	Visual Art	1	2.381
	Pre-Med	1	2.381
	Human and Community Services	1	2.381
	Marketing	3	7.143
	Medical Studies	1	2.381
	Criminal Justice	1	2.381
Major Category	Social Sciences	10	23.810
	Humanities	6	14.286
	Sciences	13	30.952
	Business	4	9.524

*Note.* The variables major and major category consist of only undergraduate students.

**Table 2***Demographics Breakdown for Quantitative Data*

---

Variable	M	SD
Age	23.714	6.283
Ham	16.476	10.275
Gads	9.714	5.615

---

**Table 3***The ratings of Perceived Career Variability and Perceived Difficulty for Each Major*

Major	Perceived Variability	Perceived Difficulty
Psychology	3.33	3.33
History	3.33	2.66
Nursing	5.00	3.66
Anthropology	2.66	1.66
Sports Management	1.33	2.33
Biology	4.33	4.66
English	2.66	4.33
Secondary Education	2.66	2.66
Visual Art	2.66	3.33
Pre-Med	5.00	4.33
Human and Community Services	2.66	3.66
Marketing	1.33	4.00
Medical Studies	4.33	4.00
Criminal Justice	3.66	2.33

*Note.* df= 3, 28

**Table 4***Between Subjects ANOVA*

---

Dependent Variable	MS	F	n <sup>2</sup>
HAM	134.43	1.101	0.102
GADS	33.33	0.952	0.090

---

Note. df= 3, 28

**Table 5***Between Subjects ANOVA*

Group	M			
Variable	Social Science	Humanities	Science	Business
HAM	17.20	23.00	16.38	10.25
GADS	9.30	12.33	11.85	7.25
N=	10	6	13	4

Note. df= 3, 28

**Table 6***Independent Sample t-test*

---

	t	df	p
Variability	0.788	28	0.437
Difficulty	2.056	28	0.049
HAM	2.019	38	0.051
GADS	2.469	38	0.018

---

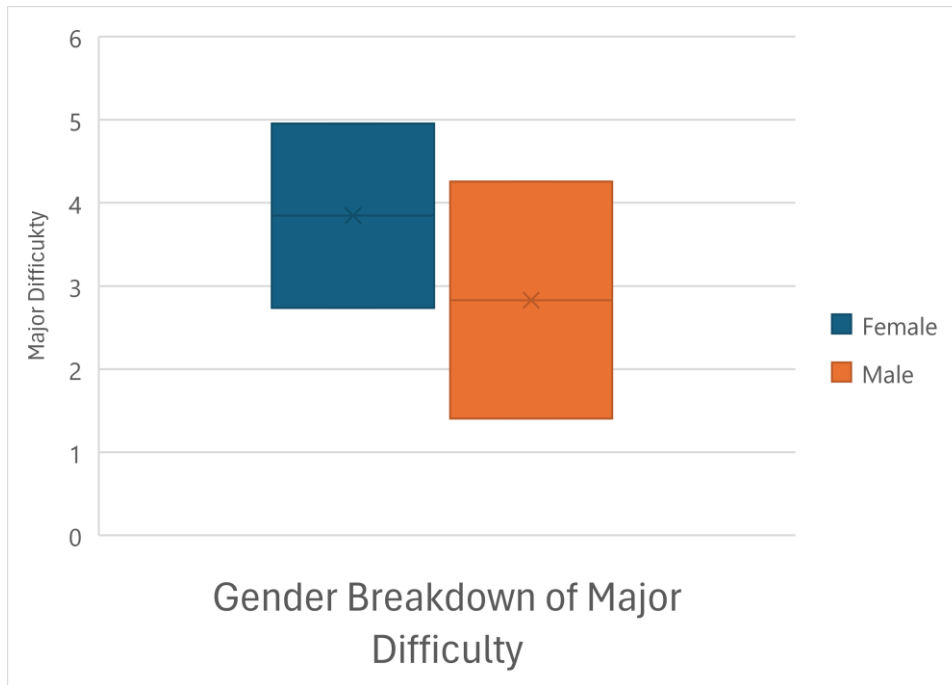


**Table 7***Independent Sample t-test*

	Group	M	SD	SE	Coefficient of variation
Variability	Female	3.647	0.686	0.146	0.188
	Male	3.413	0.812	0.287	0.238
Difficulty	Female	3.845	1.109	0.236	0.288
	Male	2.830	1.426	0.504	0.504
HAM	Female	18.267	10.869	1.984	0.595
	Male	10.800	7.239	2.289	0.670
GADS	Female	10.633	5.660	1.033	0.595
	Male	5.900	3.635	1.149	0.616

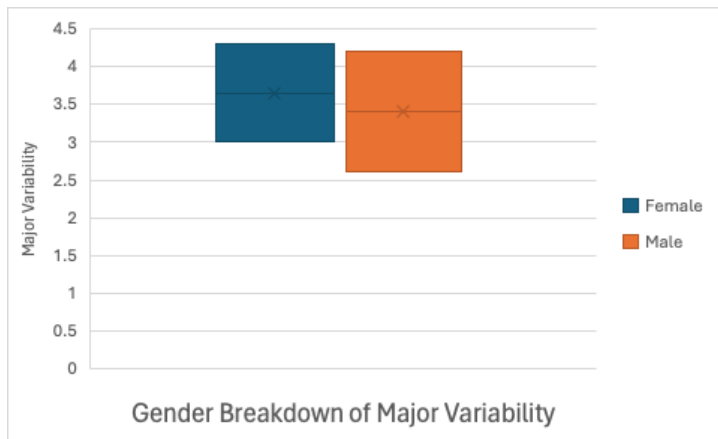
**Figure 1**

Difference in Major Difficulty Based on Gender Identity



**Figure 2**

Difference in Major Variability Based on Gender Identity



## Appendix A

### Informed Consent

PI Name: Allison Gilbert

Faculty Advisor: Gordon Cappelletty

PI Email Address: [allison.gilbert@my.lr.edu](mailto:allison.gilbert@my.lr.edu)

Email Address: [gordon.cappelletty@lr.edu](mailto:gordon.cappelletty@lr.edu)

PI Phone Number: 828-394-7757

Phone Number: 828-328-7753

#### **Purpose:**

You are invited to participate in a research study on anxiety and choice. The purpose of the research is to measure the effect the Anxiety has on choice of college major.

#### **Procedures:**

If you choose to participate you will be asked to complete two measures of anxiety. The first will measure trait anxiety and the second will measure state anxiety. You will also be asked to indicate any major or minor that you are currently enrolled in.

#### **Risk:**

This study involves no foreseeable risks or harm to you beyond those of everyday life and the mild discomfort that sometimes comes from taking a psychological test. If your participation in this research has caused you to feel uncomfortable in any way or prompted you to consider matters about which you are concerned, we encourage you to take advantage of the confidential counseling services offered at Lenoir-Rhyne. You can contact campus counselors at the Cornerstone Student Support and Wellness Center at 828-328-7252

#### **Benefit:**

Participants in this study will be entered in a raffle to win a \$50 Amazon gift card. This research will also benefit others through further development of the role that anxiety plays in the choice of college major.

**Right to Ask Questions:**

You may ask questions about the research or participation at any time. The contact information for the primary investigator and the factual adviser are provided at the top of the page. Should you have questions regarding your rights as a research participant, or wish to obtain information, ask questions, or discuss with someone other than the researcher(s), please contact the chair of the IRB at Lenoir-Rhyne University, Randy Bergman at [Randall.bergman@lr.edu](mailto:Randall.bergman@lr.edu) or 828-328-7788

**Confidentiality:**

All data will be stored anonymously and will not be identifiable as names or other identifiers will not be attached to the measures. Email addresses will be collected separately from the data for participants who wish to be entered into the raffle.

**Right to Withdrawal:**

Your participation in this study is voluntary and you may withdraw at any time prior to submission of your data. You may refuse or discontinue participation at any time without consequence or prejudice.

**Consent:**

I have read the information describing this study. I understand I am free to withdraw from this study at any time without penalty. By signing I am verifying that I am 18 years of age or older and giving my consent to participate in this research.

---

Your Signature

---

Date

---

Investigation Signature

---

Date

**Appendix B****Demographics Questionnaire**

What is your age: \_\_\_\_\_

What Class level are you in?

Freshman

Sophomore

Junior

Senior

What is your ethnic identification? (you may select more than one)

White/Not Hispanic

Black/African American

Hispanic

Asian/Pacific Islander

Other (please specify: \_\_\_\_\_)

None/Prefer not to answer

What gender identity do you most identify with?

Female

Male

Transgender female

Transgender male

Gender variant/Non-conforming

Prefer not to answer

Other (Please specify: \_\_\_\_\_)

Please list any major that you are currently enrolled in (you can list multiple)

---

Please list any minor that you are currently enrolled in

---

### Appendix C

Below is a list of phrases that describe certain feeling that people have. Rate the patients by finding the answer which best describes the extent to which he/she has these conditions. Select one of the five responses for each of the fourteen questions.

	Not Present	Mild	Moderate	Severe	Very Severe
<b>1. Anxious Mood</b> Worries, anticipation of the worst, fearful anticipation, irritability.					
<b>2. Tension</b> Feelings of tension, fatigability, startle response, moved to tears easily, trembling, feelings of restlessness, inability to relax.					
<b>3. Fears</b> Of dark, of strangers, of being left alone, of animals, of traffic, of crowds.					
<b>4. Insomnia</b> Difficulty in falling asleep, broken sleep, unsatisfying sleep and fatigue on waking, dreams, nightmares, night terrors.					
<b>5. Intellectual</b> Difficulty in concentration, poor memory.					
<b>6. Depressed Mood</b> Loss of interest, lack of pleasure in hobbies, depression, early waking, diurnal swing.					



<p><b>7. Somatic (muscular)</b> Pains and aches, twitching, stiffness, myoclonic jerks, grinding of teeth, unsteady voice, increased muscular tone.</p>					
<p><b>8. Somatic (sensory)</b> Tinnitus, blurring of vision, hot and cold flushes, feelings of weakness, pricking sensation.</p>					
<p><b>9. Cardiovascular Symptoms</b> Tachycardia, palpitations, pain in chest, throbbing of vessels, fainting feelings, missing beat.</p>					
<p><b>10. Respiratory Symptoms</b> Pressure or constriction in chest, choking feelings, sighing, dyspnea.</p>					
<p><b>11. Gastrointestinal Symptoms</b> Difficulty in swallowing, wind abdominal pain, burning sensations, abdominal fullness, nausea, vomiting, borborygmi, looseness of bowels, loss of weight, constipation.</p>					
<p><b>12. Genitourinary Symptoms</b> Frequency of micturition, urgency of micturition, amenorrhea, menorrhagia, development of rigidity, premature ejaculation, loss of libido, impotence.</p>					
<p><b>13. Autonomic Symptoms</b> Dry mouth, flushing, pallor, tendency</p>					

to sweat, giddiness, tension headache, raising of hair.					
<b>14. Behavior at Interview</b> Fidgeting, restlessness or pacing, tremor of hands, furrowed brow, strained face, sighing or rapid respiration, facial pallor, swallowing, etc.					

**Appendix D**

## Generalized Anxiety Disorder Screener (GAD-7)

Over the last 2 weeks, how often have you been bothered by the following problems?	Not at all	Several Days	More than half the days	Nearly every day
1. Feeling nervous, anxious or on edge	0	1	2	3
2. Not being able to stop or control worrying	0	1	2	3
3. Worrying too much about different things	0	1	2	3
4. Trouble relaxing	0	1	2	3
5. Being so restless that it is hard to sit still	0	1	2	3
6. Becoming easily annoyed or irritated	0	1	2	3
7. Feeling afraid as if something awful might happen	0	1	2	3
8. If you checked off any problems, how difficult have these problems made it for you to do your work, take care of things at home, or get along with other people?	Not difficult at all	Somewhat difficult	Very difficult	Extremely difficult