

THE PENNSYLVANIA STATE UNIVERSITY
SCHREYER HONORS COLLEGE

DEPARTMENT OF PSYCHOLOGY

SELF-RATED DIURNAL RHYTHMS OF STRESSFULNESS AND ANXIOUSNESS IN
UNIVERSITY STUDENTS

VICTORIA SHAFFER
FALL 2017

A thesis
submitted in partial fulfillment
of the requirements
for a baccalaureate degree
in Psychology
with honors in Psychology

Reviewed and approved* by the following:

Frederick Brown
Associate Professor of Psychology
Thesis Supervisor

Kenneth Levy
Associate Professor of Psychology
Honors Adviser

*signatures are on file in the Schreyer Honors College.

ABSTRACT

Although research on the topic is sparse, previous research suggests highest levels of anxiousness in the afternoon, with lowest levels in the morning and evening. To examine this rhythm further, we conducted a study on 39 students at The Pennsylvania State University to determine if, and when, rhythms of anxiousness and stressfulness occur during the day and during the week. They self-rated their anxiousness and stressfulness levels six times daily, every three hours beginning just after their natural wake-up time, for five consecutive days, Monday through Friday. The results suggest that university students do experience rhythms of stressfulness and anxiousness: for daily rhythms, with daily highest anxiousness and stressfulness in the early afternoon, and weekly rhythms, with highest anxiousness and stressfulness Tuesday and Wednesday. These results could advance aid clinicians who treat student patients who experience anxiety and stress, especially during specific times of the day and week.

TABLE OF CONTENTS

LIST OF FIGURES.....iii

ACKNOWLEDGMENTS.....iv

Introduction..... 1

Methods..... 4

 Design4

 Materials.....4

 Participants.....4

 Procedure 5

Results.....6

Discussion..... 10

References..... 13

Appendix A..... 15

Appendix B..... 21

Academic Vitae: Victoria Shaffer..... 22

LIST OF FIGURES

Figure 1 Anxiousness scores across the day6

Figure 2 Stressfulness scores across the day.....7

Figure 3 Anxiousness scores six times/day Monday - Friday.....7

Figure 4 Stressfulness scores six times/day from Monday - Friday8

ACKNOWLEDGEMENTS

First and foremost, I would like to thank Dr. Frederick Brown for being my thesis supervisor for the past year and a half. I am beyond grateful that he put so much time and energy into this project to make it something greater than I could have ever imagined. While he is a cognitive psychologist and I aspire to be in the clinical field, we were able to work together to form this study that combines both of our interests: anxiety and human rhythmicity. I appreciate this more than anything, considering he was willing to broaden his research interests in order to let me be involved in research that matters to me. I am beyond thankful for his guidance and constructive criticism that helped me to make this thesis reach its full potential. If he did not push me to make my own decisions, if he did not answer my hundreds of emails, and if he did not believe in me to pursue this project from start to finish, this study would not have been as successful as it has been.

I would also like to thank Dr. Cynthia LaJambe for being a phenomenal help in regards to the statistical analyses of this thesis. Some of the statistics for this project were at a complex level, and if it were not for her, I could not have completed this portion of the research. Not only did she aid in this aspect, but she was also there to assist Dr. Brown and me with ideas when we were creating the study.

Also, I owe a huge thank you to Dr. Kenneth Levy, my honors adviser, who helped me immensely with the entire process of graduating with honors in psychology. He was always there, with his expert advice, to answer any and all questions I ever had.

Finally, I would like to thank all of the research assistants in the Human Rhythms & Performance Lab who helped me conduct the study. Words cannot describe how grateful I am for their endless effort with helping me run training sessions and entering and coding data for the study.

Introduction

Do people experience daily rhythms of anxiousness and stressfulness in relation to bodily rhythms? If so, at what time of day or time of week are they the highest and lowest? Many factors can contribute to anxiousness. These include intense worrying about future events, dealing with unexpected events, feeling threatened, or constantly sensing general, daily stress (Chorpita & Barlow 1998; Mineka & Oehlberg, 2008; Schmidt et al., 2000). About 30% of young adults between the ages of 18-29 are frequently associated with having high anxiety levels, which is why it is of interest to conduct this research on college students (Kessler et al., 2005). Stress, on the other hand, is a different dimension. It results from everyday stressors known as “hassles.” Examples include keeping up with healthy habits like exercising and sleeping efficiently, having too many things to do at once, and misplacing a belonging. Stressfulness results from unresolved challenges occurring in everyday, while anxiousness results from the negative feelings that are larger and more powerful than those resulting simple daily hassles. Anxiety lingers; stress usually does not.

Little research has been done on time-of-day occurrences and anxiety-stress levels. One of the first was the Hopkins’ studies (1994, 2000), in which data were collected from 23 participants with clinically diagnosed Generalized Anxiety Disorder, using self-rated measures of anxiety at three times daily, early morning, midday, and evening, for a 14-week period. Nine out of 23 experienced a daytime (i.e., diurnal) pattern in their anxiety levels. No data were collected during the night (i.e., nocturnally). Out of those nine, five experienced the highest anxiety midday, which followed by an evening low. This seems to suggest that there likely is a diurnal rhythm that exists in people, and even further suggests that this anxiety reaches its peak

in the afternoon and lowest point in the evening. The other 14, however, apparently did not experience diurnal rhythms, for their curves were not statistically significant.

Cameron et al. (1986), received similar data from 63 participants, 40 of which had panic disorders, and 23 of which had other anxiety disorders (Generalized Anxiety Disorder, agoraphobia without panic disorder, phobias, and Obsessive-Compulsive Disorder) by having them measure their anxiety levels five times daily for the “previous several months” (p. 214). Of the 63 participants, most experienced highest anxiety levels afternoons. Differing from Hopkins, Cameron et al. (1986) observed lowest anxiety morning, not evening. While both of these studies suggest decreased anxiety mornings and evenings, relative to afternoons, this difference is worth investigating.

Based on the findings from these two studies, it was predicted that university students will experience highest anxiousness afternoons and lowest in the morning and/or evening. However, since more times are rated, a more precise timing of peak anxiety may be found. Since no consistent findings suggested a single daily low, it was predicted that morning and evening levels will be the same, with no statistical differences. We also predicted that students will experience diurnal rhythms of stressfulness. Although no previous research has observed weekly rhythms of stressfulness, we predicted that university students will be most stressed and anxious in the middle of the week, assuming then to be the busiest time for students to get things done before taking a break for the weekend. Finally, we predicted that there will be a general statistically significant increase in the stress-anxious group over the non-stress-anxious group, even though both follow similar daily and weekly rhythms.

If rhythms are found, then understanding time-of-day effects on stressfulness and anxiousness could serve as an important role in comprehending anxiety as a whole and

potentially benefit clinicians and their patients to build effective strategies to decrease their anxiety levels at certain times.

Methods

Design

This study is a mixed model repeated measures design, using two groups and six self-measurements daily for five consecutive days (Monday-Friday). Two variables were measured: anxiousness and stressfulness. The between-group condition is moderate stressfulness anxiousness vs. minimal stressfulness and anxiousness. The within-subject repeated measure is self-rating each variable for five consecutive days, Monday through Friday, six times per day.

Materials

All participants needed a personal cell phone available to record and transmit their self-rated levels of stressfulness and anxiousness, immediately following telephone prompts by the experimenter, using the smartphone app GroupMe. All participant responses were transmitted via the confidential survey website, Qualtrics.

Participants

Thirty-nine university students, in an introductory psychology class, ages 18-29, voluntarily participated in this study. The *GAD-Q-IV* screening survey (Newman, Zuellig, Kachin, Constantino, Przeworski, Erickson, & Cashman-McGrath, 2002) selected a “moderate stressfulness and anxiousness target group” having sub-clinical criterion levels of anxiety. These occur typically in university students from various kinds of continuous performance academic tasks, including exams and scholarly papers. The *Global Measure of Perceived Stress* survey (Cohen, S., Hamarck, T., & Mermelstein, R., 1983), similarly, selected those having realistically occurring moderate-to-low stress levels. The mild stressfulness and anxiousness group (called the “Comparison” group) rated themselves on the same screening questionnaires as having very little to no anxiety or stress. Both groups were assessed for their “chronotype,” or time of day preferences and practices (Brown & LaJambe, 2017). This means, participants were selected who considered themselves as “daytime” preferring persons, rather than more extreme

“morning” or “evening-type” in their sleeping-waking activity. Therefore, they must wake up between the hours of 7:30 am-9:30 am every weekday morning. Also, selected were those who averaged at least seven or more hours of nightly sleeping, to prevent possible anxiousness and stressfulness that is known to result from chronic partial-sleep deprivation. There were 12 males and 27 females in this study.

Procedure

Students took the initial screening survey (Appendix A) through the Psychology Subject Pool that asked questions regarding their self-rated stress, anxiety, well-being, and sleep schedules to determine if they qualified for the study. From those responses, the comparison and control groups were contacted.

Once this screening and the potential placement process was completed, participants came to the Human Performance Rhythms Laboratory for a study training session. Immediately, they were asked to read the study’s informed consent statements. Once all participant questions were answered and the consent forms were signed, the study’s instructions were given. The experiment began the following Monday morning. There were two groups of participants—an early group of participants who awakened between 7:00 and 8:15 am during the week, and a later group who awakened between 8:15 and 9:30 am during the week. On the first morning, subjects woke up at their usual awakening time. Following their first phone prompting by the experimenter at 7:30 am for the early group and at 9:00am for the later group, each participant recorded their self-rated anxiety and stress level, and then they did so five more times every three hours from that point on, within a maximum 30-minute lag of the three-hour probe time. Upon completion of data collection Friday evening, the subjects either came back into the lab or were emailed, their preference, a “debriefing statement” and officially completed the study.

Results

A repeated-measures analysis of variance data affirmed a significant presence of diurnal rhythms both for anxiousness ($p = 0.012$) and stressfulness ($p = 0.004$), for both the target and comparison groups, with peak mid-day to early afternoon. Again these amounts varied markedly between the two groups.

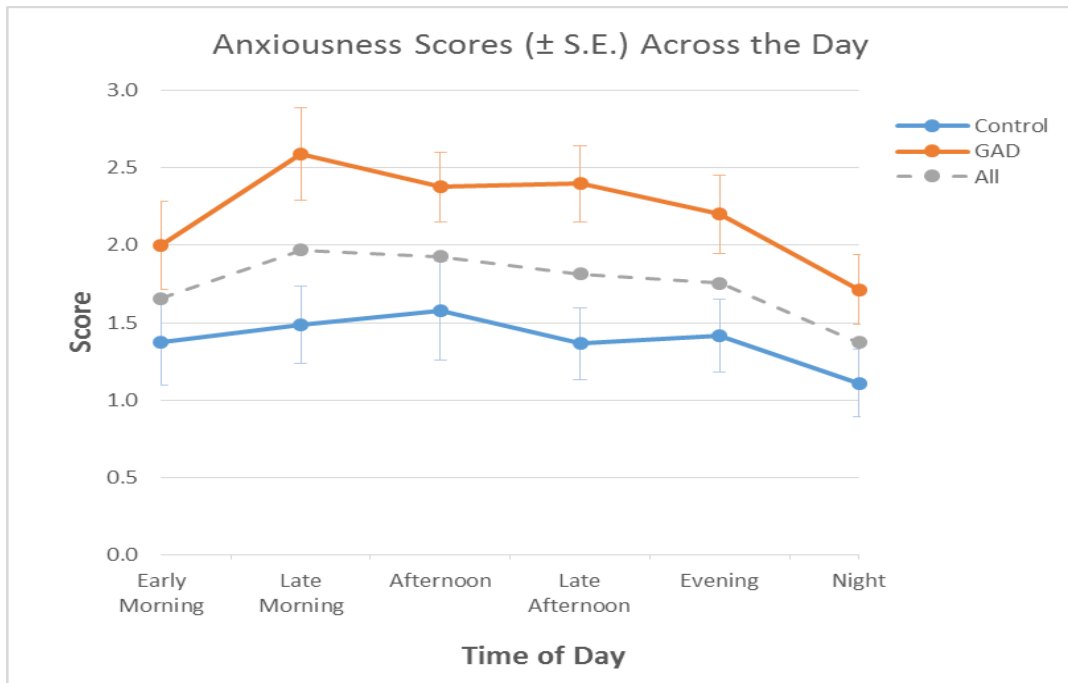


Figure 1 Anxiousness scores across the day

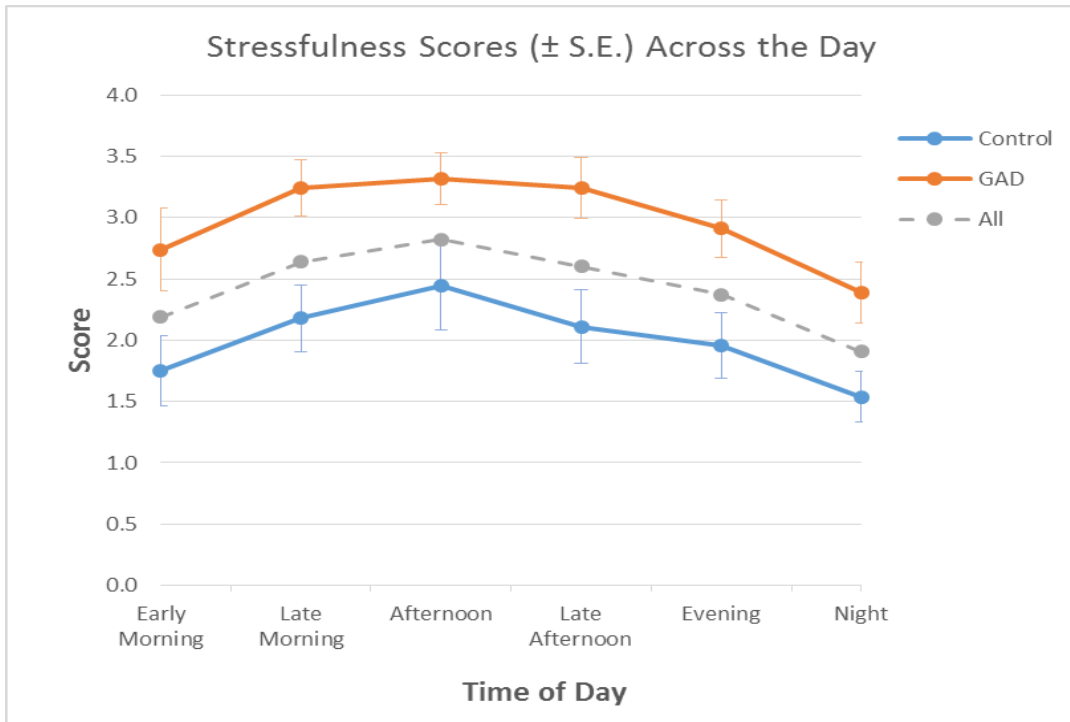


Figure 2 Stressfulness scores across the day

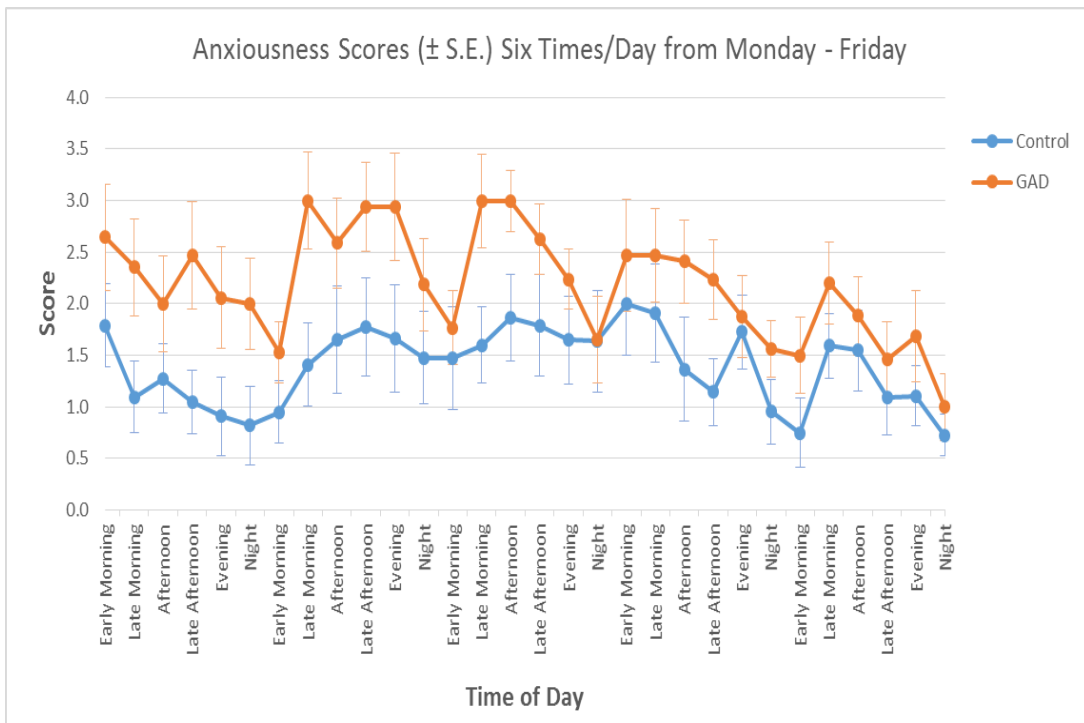


Figure 3 Anxiousness scores six times/day Monday - Friday

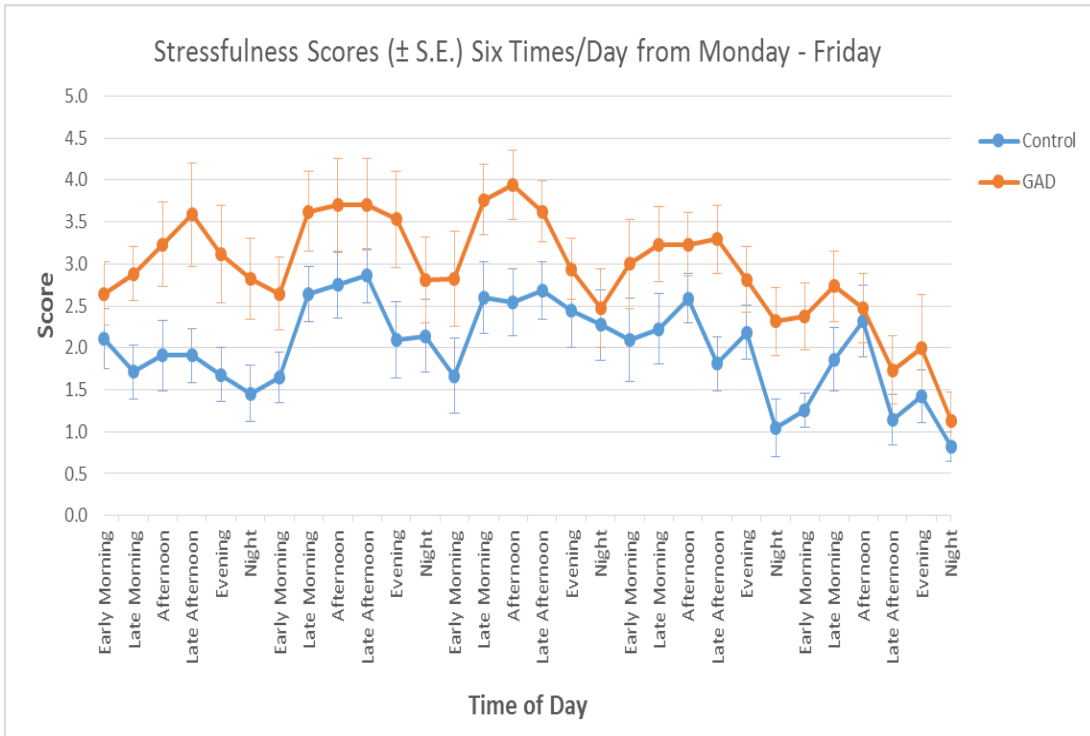


Figure 4 Stressfulness scores six times/day from Monday - Friday

Data plotting of the moderate stressfulness-anxiousness group target is shown in Figure 1 for diurnal rhythms and the comparison group is shown in Figures 2 for diurnal rhythms. Figure 3 shows data for the moderate stressfulness-anxiousness group for the five-day academic week rhythms, and Figure 4 shows data for the comparison group for the five-day academic week rhythms. In all cases, the moderate stressfulness-anxiousness target group rated their anxiousness and stressfulness much higher than the Comparison group, with the SEMs of the group means at the six phone reporting times not overlapping at all, indicating a significant difference. The grey lines in Figures 1 and 2 indicate the level of the pooled values between the target and Comparison group means.

The five-day distribution of the results in Figures 3 and 4 indicate an academic week rhythmicity as well for both anxiousness ($p = 0.002$) groups and stressfulness ($p = 0.001$), with peaking Tuesday and Wednesday, followed by a tapering off Thursday and lowest on Friday.

Discussion

These results demonstrate that both the stress-anxious group and the non-stress-anxious groups of students do experience daily and weekly rhythms of anxiousness and stressfulness. Specifically, students seem to experience the highest anxiousness and stressfulness levels in the early afternoon, as well as Tuesday and Wednesday during the week. When looking closely, the graphs also show that students rated both anxiousness and stressfulness levels lowest during the morning and evening hours, with no difference between those times. Students also rated anxiousness and stressfulness lowest Fridays, most likely due to anticipation for the upcoming weekend. The difference between the two groups of students is also noticeable. As though of similar patterns, the stress-anxiousness group is significantly higher throughout most of the day compared.

Given the paucity of research on diurnal and weekly rhythms of anxiousness and stressfulness, one interpretation for why these rhythms exist is the busy, typical lives of university students. We think that most students may have the majority of their activities going on in the afternoon, whether these are class, work, or other extracurricular involvement. Also, the middle of the week, specifically Tuesday and Wednesday, could be the most hectic for students as well; they may need to get everything done before the weekend, and perhaps the middle of the week is when students are the most engulfed their schoolwork. These speculations might be hypothesized as major contributing factors to these apparently systematic rhythms of stressfulness and anxiousness levels.

There are some adjustments that could be made in future studies to better improve the validity. For example, although participants most likely use the terms “stress” and “anxiety” in their daily lives, it is not certain whether they truly understand the differences. In future studies,

the researcher could have the participants demonstrate a clear understanding of the differences between the terms to increase construct validity.

In regards to internal validity, an aspect that might be improved would be the testing effects. Subjects in this study were sent a total of 30 identical surveys three hours apart, six times daily over five consecutive days during their awake time. Perhaps they grew fatigued by the end of each day or the end of the week and were not carefully answering the questions. This may be something difficult to correct for, for this research calls for as many measurements as possible in order to capture the detail of the daily and weekly rhythms. Perhaps future experimenters could switch the order of the questions so that participants have to attend to each question to answer it with a greater degree of alertness and accuracy.

Finally, as with many studies that use university students who average 18-22 in age, it is difficult to determine full external validity. Then too, among “university students,” there is probably variability, from those at a large university to those at a small liberal arts college, who may have different amounts or types of stressfulness or anxiousness because of this. Other factors that increase statistical variability are random events in students’ lives. For example, a university student who takes night classes and also works a part-time job on Friday nights may experience highest levels of stressfulness and anxiousness during the night and on Fridays, compared to a university student who does not have a job and only has classes during the afternoon. To correct for this study participants could be matched on potentially relevant factors; any of these make differences in time-of-day and week effects on stressfulness and anxiousness.

Aside from the validity threats above, there may also be limitations to this study. For example, self-report measures of research participants may be questionable, for it cannot be certain if they are reporting accurately their levels of stressfulness and anxiousness. Second, this

limitation also covers the confounding variable of chronic partial-sleep deprivation. To minimize this effect, our study excluded anyone claiming to get less than six hours of sleep. However, accuracy of sleeping patterns can be questioned. Participants could wear actigraphs that measure general patterns of activity and rest. Another limitation is the sample size of the study that relegates it to a preliminary study status. A major study requires a beta analysis to determine the minimum sample size to determine an adequate level of significance.

In conclusion, the results demonstrate daily and weekly rhythms of stressfulness and anxiousness in a college-age sample. With the knowledge gained from this experiment, the ultimate goal is to aid clinicians in helping student patients deal with stress and anxiety related issues. If patients are aware of when they feel most anxious and stressed, together, they could work to produce time-related treatment interventions. Clearly, this could help to improve the lives of patients and students experiencing these predictable rhythms of anxiousness and stressfulness.

References

- Brown, F.M. & LaJambe, C.M. (2017). *Positive Psychology and Well-Being: Applications for Enhanced Living*. San Diego: Cognella Publ., University Readers.
- Cameron, O. G., Lee, Myung, A. L., Kotun, J., and McPhee, K. M. (1986). Circadian symptom fluctuations in people with anxiety disorders. *Journal of Affective Disorders, 11*(1986), 213-218.
- Chorpita, B., & Barlow, D. (1998). The development of anxiety: The role of control in the early environment. *Psychological Bulletin, 124*(1), 3-21.
- Cohen, S., Harmorck, T., Mermelstein, R. (1983). A Global Measure of Perceived Stress. *Journal of Health and Social Behavior, 24*(4), 385-396.
- Hopkins, M. B. (1994). *Rhythms of reported anxiety of persons experiencing generalized anxiety disorder* (Doctoral dissertation). The Pennsylvania State University.
- Hopkins, M. B., Brown, F. M., Borkovec, T. D. (2000). Are there diurnal rhythms of anxiety? *Chronobiology International, 17*(2), 229-31.
- Kessler, R.C., Berglund, P., Demler, O., Jin, R., Merikangas, K.R., Walters, E.E. Lifetime prevalence and age-of-onset distributions of DSM-IV disorders in the National Comorbidity Survey Replication. *Arch Gen Psychiatry, 62*(6), 593-602. doi: 10.1001/archpsyc.62.6.593

- Mineka, S., & Oehlberg, K. (2008). The relevance of recent developments in classical conditioning to understanding the etiology and maintenance of anxiety disorders. *Acta Psychologica, 127*(2008), 567-580.
- Newman, M.G., Zuellig, A. R., Kachin, K. E., Constantino, M. J., Przeworski, A., Erickson, T., & Cashman-McGrath, L. (2002). Preliminary reliability and validity of the GAD-Q-IV: A revised self-report diagnostic measure of generalized anxiety disorder. *Behavior Therapy, 33*, 215-233. doi:10.1016/S0005-7894(02)80026-0
- Schmidt, N.B., Lerewb, D.R., & Joiner Jr., T. E. (2000). Prospective evaluation of the etiology of anxiety sensitivity: Test of a scar model. *Behaviour Research and Therapy, 38*(2000), 1083-1095.

Appendix A

Screening Questionnaire

These questions ask you about your feelings and thoughts during the last six months. In each case, you will be asked to estimate how often you felt or thought a certain way. Although some of the questions are similar, there are differences between them and you should treat each one as a separate question. The best approach is to answer each question fairly quickly. That is, don't try to count the times you felt a particular way; instead, write in the number that seems to be a reasonable estimate for that question.

For each question, write in the blank one of the following alternative numbers:

0. never 1. almost never 2. Sometimes 3. fairly often 4. very often

- _____ 1. I tend to bounce back after hard times
- _____ 2. Do you experience excessive worry?
- _____ 3. During the last six months, have you often been bothered by excessive and uncontrollable worries more days than not?
- _____ 4. In the last six months, how often have you dealt successfully with irritating life hassles?
- _____ 5. I have a hard time making it through stressful events
- _____ 6. Is your worry excessive in intensity, frequency, or amount of distress it causes?
- _____ 7. In the last six months how often have you felt that you were effectively coping with important changes that were occurring in your life?
- _____ 8. It *does not* take me long to recover from a stressful event
- _____ 9. In the last month, how often have you felt confident about your ability to handle your personal problems?
- _____ 10. It is hard for me to snap back when something bad happens
- _____ 11. Do you find it difficult to control your worry (or stop worrying) once it starts?
- _____ 12. In the last month, how often have to been able to control the way you spend your time?
- _____ 13. In the last month, how often have you been able to control irritations in your life?
- _____ 14. In the last six months how often have you felt that things were going your way?
- _____ 15. I usually come through difficult times with little trouble

- _____ 16. Do you worry excessively and uncontrollably about minor things such as being late for an appointment, minor repairs, homework, etc.?
- _____ 17. I tend to take a long time to get over setbacks in my life
- _____ 18. In the last month, how often have you felt that you were on top of things?
- _____ 19. In the last month, how often have you found yourself thinking about things that you have to accomplish?
- _____ 20. In the last month, how often have you felt difficulties were getting so high that you could not overcome them?
- _____ 21. In the last month, how often have you been upset because of something that happened unexpectedly?
- _____ 22. In the last month, how often have you felt that you were unable to control the important things in your life?
- _____ 23. In the last month, how often have you felt nervous and “stressed”?
- _____ 24. In the last month, how often have you found that you could not cope with all the things that you had to do?
- _____ 25. In the last month, how often have you been angered because of things that happened that were outside of your control?
- _____ 26. During the last six months, have you often been bothered by restlessness or feeling keyed up or on edge more days than not?
- _____ 27. During the last six months, have you often been bothered by difficulty falling/staying asleep or restless/unsatisfying sleep more days than not?
- _____ 28. During the last six months, have you often been bothered by difficulty concentrating or your mind going blank more days than not?
- _____ 29. During the last six months, have you often been bothered by irritability more days than not?
- _____ 30. During the last six months, have you often been bothered by being easily fatigued more days than not?

_____ 31. During the last six months, have you often been bothered by muscle tension more days than not?

32. How much do worry and physical symptoms interfere with your life, worry, social activities, family, etc.? Write one number: _____

| | | | | | | | | |
|------------|---|--------|---|------------|---|----------|---|---------------|
| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| I | I | I | I | I | I | I | I | I |
| Not at all | | Mildly | | Moderately | | Severely | | Very Severely |

33. How much are you bothered by worry and physical symptoms (how much distress does it cause you)? Write one number: _____

| | | | | | | | | |
|------------|---|--------|---|------------|---|----------|---|---------------|
| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| I | I | I | I | I | I | I | I | I |
| Not at all | | Mildly | | Moderately | | Severely | | Very Severely |

34. If you feel worried on a particular day, at what time do you typically feel the MOST worried? : _____ (circle one) AM PM

35. If you feel worried on a particular day, at what time do you typically feel the LEAST worried? _____ : _____ (circle one) AM PM

36. If you feel anxious on a particular day, at what time do you typically feel the MOST anxious? : _____ (circle one) AM PM

37. If you feel anxious on a particular day, at what time do you typically feel the LEAST anxious? _____ : _____ (circle one) AM PM

38. How many topics do you worry about excessively and uncontrollably?: _____

39. On the night before a typical day of work or school for you, what time do you usually go to bed? _____ : _____ AM PM

40. On the morning of a typical day of work or school for you, what time do you usually get up? : _____ AM PM

41. I feel best when I sleep for _____ hours and _____ minutes per night.

42. Generally, I get about _____ hours and _____ minutes of sleep per night.

Answer the following questions as if you did not work, and did not have to take care of any children, or other people, or animals, or anything, and that your time was your own and you are free to set your own schedule, like being on a restful vacation. For every question, even though it may be difficult, **please check the response** that would fit you the best.

43. Thinking only of your own “feeling best” times of day, what time would you get up if you were completely free to plan your day?
- 5:00-6:30 in the morning
 6:30-7:45 in the morning
 7:45-9:45 in the morning
 9:45-11:00 in the morning
 11:00 morning – 12:00 noon
44. Thinking only of your own “feeling best” times of day, what time would you go to bed if you were completely free to plan your evening?
- 8:00-9:00 in the evening
 9:00-10:15 in the evening
 10:15 evening – 12:30 night
 12:30-1:45 at night
 1:45-3:00 at night
45. Under free time conditions, how easy do you find getting up in the morning?
- Not at all easy
 Slightly easy
 Fairly easy
 Very easy
46. If you go to sleep at night at a regular time, how wide awake do you feel during the first half hour after getting up in the morning?
- Not at all wide awake
 Slightly wide awake
 Fairly wide awake
 Very wide awake
47. If you go to sleep at night at a regular time, during the first half hour after getting up in the morning, how tired or rested do you feel?
- Very tired
 Fairly tired
 Fairly refreshed
 Very refreshed
48. In your free time you have decided to do some physical exercise. A friend says do this one hour twice a week and the best time is 7:00-8:00 in the morning. Thinking of nothing else but your own “feeling best” times, how do you think you would do at that time?
- Would be in very good form

- Would be in pretty good form
- Would find it difficult
- Would find it very difficult

49. Suppose you have nothing but free time, at what time in the evening do you feel tired and need to get some sleep?

- 8:00-9:00 in the evening
- 9:00-10:15 in the evening
- 10:15 evening – 12:30 at night
- 12:30-1:45 at night
- 1:45-3:00 at night

50. You want to be at your top performance for a test (for a job promotion, for example) which you know is going to take two hours and will completely tire you out mentally. You are completely free to plan your day. Thinking only of your own “feeling best” times, which ONE of the four testing times would you choose?

- 8:00-10:00 in the morning
- 11:00 morning – 1:00 in the afternoon
- 3:00-5:00 in the afternoon
- 7:00-9:00 in the evening

51. “Morning people” wake up early and are wide awake fast, but then feel tired in the evenings and like to go to bed before it gets late. “Evening people” take some time before they get going in the mornings, but like to stay up late at night. Which ONE of these types do you think you are?

- For sure a morning type
- More a morning than an evening type
- More an evening than a morning type
- For sure an evening type

52. When would you like to get up (if you have a full day’s work—8 hours—ahead of you, for example) if you were completely free to set your work time?

- Before 6:30 in the morning
- 6:30-7:30 in the morning
- 7:30-8:30 in the morning
- 8:30 or later in the morning

53. Suppose that you did not work, but you still always had to get up at 6:00 in the morning. What do you think it would be like for you?

- Very difficult and unpleasant

- Rather difficult and unpleasant
- A little unpleasant but no great problem
- Easy and not unpleasant

54. If you could go to sleep at a regular time every night, how much time would it take to “clear your head” in the morning after getting up from a night’s sleep?

- 0-10 minutes
- 11-20 minutes
- 21-40 minutes
- More than 40 minutes

55. If you were free to set your time, please mark how much you would be a morning or evening *active* person.

- Very much early morning active (wide awake mornings and tired evening)
- Somewhat morning active
- Somewhat evening active
- Very much evening active (tired mornings and wide-awake evenings)

Appendix B

Stressfulness/Anxiousness Survey Questions

Below are the questions that the participants will be probed to respond to every three hours through Qualtrics.

Questions will be set up so that participants choose an answer from a bulleted list.

One a scale of 0-9 (0 being not at all, 9 being extremely much)...

1. How anxious are you currently feeling?

0 1 2 3 4 5 6 7 8 9

2. How stressed are you currently feeling?

0 1 2 3 4 5 6 7 8 9

3. How fatigued are you currently feeling?

0 1 2 3 4 5 6 7 8 9

4. How sleepy are you currently feeling?

0 1 2 3 4 5 6 7 8 9

Academic Vitae: Victoria Shaffer

Email: Tns998@yahoo.com

- EDUCATION: The Pennsylvania State University, University Park, PA, BA December 2017
-Major: Psychology (B.A.)
International Studies Institute, Florence, Italy May-June 2016
-Minor: Human Development and Family Studies
- HONORS THESIS: *Rhythms of Self-Rated Stressfulness and Anxiousness in University Students*
Dr. Frederick Brown, Supervisor, Department of Psychology
- HONORS: Schreyer Honors College Scholar
Paterno Fellow Program Scholar
Dean's List 2014-2017
- WORK EXPERIENCES: *Undergraduate Teaching Assistant, The Pennsylvania State University* August 2017-present
Psychology 243: Positive and Well-Being Psychology
-Assist professor, mentor students, and organize papers and class surveys in order to help the class function at its greatest potential
Psychiatric Direct Support Professional, Strawberry Fields Inpatient Facility January 2017-present
-Attend to daily needs of patients and provide them with the appropriate support, comfort, and medication for their mental illnesses
Cognitive Research Assistant, The Pennsylvania State University August 2016-present
Human Performance Rhythms Laboratory
-Create and run study measuring students' stress and anxiety rhythms
-Send participants surveys throughout the day asking them to rate their current feelings of stressfulness and anxiousness
Clinical Research Assistant, The Pennsylvania State University February 2015-present
Emotion & Anxiety Laboratory
-Conduct experiments measuring anxiety by using physiological instruments such as GSR electrodes, ECG electrodes, and respiration belts
- VOLUNTEER EXPERIENCES: *Hotline Counselor, Centre Helps* May 2017-present
-Guide clients through potential solutions to fix their issues including rent assistance, relationship violence, general anxiety, etc.
- RESEARCH PRESENTATIONS: Psi Chi National Research Conference, The Pennsylvania State University April 2017
-Presented findings from honors thesis project
- ACTIVITIES: Psi Chi
Student Philanthropy Council
Phi Sigma Sigma Sorority