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The Effect of Interaction with Therapy Horses on University Students' Perceived Stress Level

A thesis submitted in partial fulfillment
of the requirements for the degree of
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By

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Abstract

This research project investigates how university students are affected by interacting with therapy horses. Stress is the factor that will be evaluated in this particular study. The self-rated stress scores will be acquired from University of Arkansas students both before and after interacting with specially trained therapy horses during an Equine Assisted Activity and Therapy (EAAT) class offered at the University. Stress will be evaluated by students taking a survey inquiring about daily stressors including finances, school, work and relationships. The data collected will be compared by pre- and post- interactions with the horses. We expect that the pre- and post- survey results will indicate lower stress levels following interaction with the therapy horses. Therapy horses' calming and therapeutic effect on humans could result in stress relieving benefits for the University of Arkansas students participating in this study. This study could support the utilization of therapy horses to decrease stress for college students. Overall there was no significant evidence supporting a decrease in students stress levels in this study. Future studies will require a larger sample size as well as a control group. The possibility of horse therapy use in the decrease of stress levels of university students is valuable and should be studied further.

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Background and Significance

Therapy with horses is becoming increasingly more common in treatment for both mental and physical disorders. Animals are known to have a calming effect on people, especially when they are specifically trained to be therapeutic. Horse therapy is used by a very diverse clientele. It has been shown to benefit a large scale of disorders ranging from children with autism to adults with post-traumatic stress disorder. There are few limitations as to who can be positively affected by therapy with these friendly creatures. This study will determine whether or not therapy horses can offer the same stress relieving benefits to university students while participating in an equine assisted activity and therapy (EAAT) class at the University of Arkansas.

University students around the world are dealing with a monumental amount of stress. Not only are they worried about school but many must juggle jobs, finances and relationships as well (Robotham, 2008). Being in college is a new and challenging time in a person's life and can be extremely overwhelming. When stress becomes too much to handle, it creates negative effects on an individual's overall health. Negative effects of stress include an increase in blood pressure and heart rate, and can also decrease the function of the immune system (Kennedy, 2015). The human body responds to stress with epinephrine and norepinephrine. These hormones are secreted into the blood and directly influence the heart rate and blood pressure. When the sympathetic nervous system is activated, heart rate and blood pressure tends to rise (Breedlove & Watson, 2013). If there is a prolonged experience of stress in a person's life, it can directly contribute to an increased likelihood of disease and illness. If a person is unable to effectively cope with stressors in their life, it can lead to poor grades, sickness and failing relationships (Dusselier, Dunn, Wang, Shelley & Whalen, 2005). A university student who is experiencing significant

The Effect of Interaction with Therapy Horses on University Students' Perceived Stress Level stress is predisposed to coping negatively due simply to the fact that most college students suffer from a lack of sleep (Robotham, 2008). Higher education students are not naturally good stewards of their own health which attributes even more importance to the study of relieving stress in this population.

Stress is commonly seen as a barrier that is inevitable. While stress is usually always present, either good or bad, it is important to be attentive to it. The issue of stress is becoming alarmingly prevalent worldwide. When stress goes unresolved, it can manifest into problems far greater. Stress is associated with low levels of health as well as higher levels of unhappiness, depression and anxiety (Bayram & Bilgel, 2008). It is common for a person with an intense amount of pressure from outside sources to experience difficulty focusing, enjoying themselves and feeling satisfied with their life. This outside pressure originates from parents, peers, test grades, job offers, romantic relationships and even themselves. There is so much focus on success in various areas of life which can create a major problem when there is disappointment or failure to exceed the expectations of people (Bayram & Bilgel, 2008). Unfortunately, suicide, depression and anxiety are all very common issues in stressed out college students. A study was done at the Franciscan University Counseling Center to examine the relationship that academic and social pressures have with mental health problems (Beiter, Nash, McCrady, Rhoades, Linscomb, Clarahan & Sammut, 2015). In this study it was found that stress, while unavoidable, can have a snowball effect and ultimately lead to these very serious issues if not handled appropriately. Stress, depression and anxiety are linked and are often associated with bad habits like smoking, drugs, poor diet and little exercise (Beiter et al., 2015). Stress-coping skills are a necessity for every college student in order to handle what life throws at them. Studying students' perceived stress and cop-

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ing skills is of the utmost importance in order to gain insight to best equip students to handle stressors effectively. While horse therapy may be only a small stepping stone, this research could ultimately lead to preventing consequences of harmful stress that so many students face.

Living with unresolved stressors can result in detrimental effects on health. It is the norm to be busy and always have something going on. Busyness is expected and acts as an indicator of success in the eyes of society. When stress becomes negative there needs to be an intervention or coping method that students utilize to better handle their stress. Granados and Agís (2011) reported why children with special needs feel better with horse therapy sessions and related the beneficial effects to the release of endorphins into the body. Endorphins are hormones that produce happy feelings and when one feels happy it is more likely for stress to disappear (Granados & Agís, 2011). There are many different opportunities available for university students to relieve stress however they must be utilized in order to have an effect. Stress-relieving therapies vary for each individual so it is important for every person to find what works for them. Yoga, deep breathing, exercising and being outdoors are all examples of stress relieving activities (Brook et al., 2013).

The correlation between stress and mental health disorders, as well as the link between mental health disorders and lower retention indicates that stress is a factor in low retention and academic success in students. In a study conducted at a private Midwestern university, by Pritchard & Wilson (2003), it was found that students who were involved in some sort of group or activity tended to have a higher retention and GPA. Results indicated that students who are emotionally and socially healthy are more likely to be successful in college (Pritchard & Wilson, 2003). The ability for a student to cope with stress effectively may be increased if the coping

The Effect of Interaction with Therapy Horses on University Students' Perceived Stress Level mechanism they utilize involves interaction of some kind. Horse therapy sessions typically involve others going through similar situations or struggles that allows for emotional support and encouragement. Horse therapy can be an avenue where students feel included in something which can help their emotional and social health. If students are able to feel a part of a community or activity then the likelihood of effectively coping with stress could increase a great deal. When a person is in a supportive environment, hope can be introduced. As the level of hope in their situation increases, the stress and depression begin to decrease (Frederick, Ivey Hatz & Lanning, 2015).

Animal interaction has shown significant results in helping a variety of problems in a multitude of individuals. Horses have primarily been known to help children and adolescents with disabilities, both physical and mental. Horse therapy is proven to be beneficial for children with disabilities in physical, psychological and social areas of their lives (Cunningham, 2009). A study, by Cunningham (2009), was conducted on a group of four elementary school-aged children with physical disabilities to observe physical and psychosocial effects of horse therapy. The children participated in 60-minute horse therapy sessions once a week for six months. At the end of the six months, parents of the participants were given a questionnaire to fill out regarding their child's progress with therapy. The parents' evaluations showed an increased ability to physically function (walking, mobility, ADLs) as well as an increase in psychosocial elements (happier mood, involvement with peers). Three of the four participants in this study showed an improvement after six months of horse therapy (Cunningham, 2009). The therapeutic use of horses in university students is not well researched, therefore, it is important to study the possible use of

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horse therapy as intervention to physically benefit and decrease stress levels in college students.
(Colston, Shultz, & Porr, 2015).

Aims

The purpose of this study was to investigate if time spent with therapy horses had an effect on university students stress levels. The aims of the study are:

Aim #1: To determine if there was a change in perceived stress levels of a college student after spending time with therapy horses. To address this aim, students took a stress survey during the first EAAT class, before interacting with the therapy horses, and then again after 8 weeks of EAAT instruction and horse interaction.

Hypothesis: Students' stress levels decrease after interacting with therapy horses.

Aim #2: To determine whether there was a difference in the student's perceived stress levels depending on the degree the students are pursuing. To address this aim, students specified their area of study in the stress survey and the data was analyzed.

Hypothesis: There was a difference in the stress levels of students dependent on their selected degree path.

Aim #3: The amount of stress a student feels differed based on their experience as a student (freshman, sophomore, junior, senior). To address this aim, students specified their year of school in the stress survey and the data was analyzed.

Hypothesis: There was a difference in stress levels of students based on their experience as a student.

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Research Design and Methods

This study utilized a pre- and post-survey design to assess the stress level of university students before interaction with therapy horses and after interacting with therapy horses. This study was reviewed and approved by the University of Arkansas Institutional Review Board. This study aimed to measure the effect that the presence of therapy horses had on a student's perceived stress level. Data collection occurred during an EAAT class at the University of Arkansas in Fayetteville, Arkansas during the fall semester of 2017. A convenience sample of 46 students enrolled in an EAAT class gave voluntary consent to participate in this study. All participants were full time university students enrolled in the EAAT course. Demographic information was gathered from the students during the pre-survey session. All participant identifiers were removed from the stress survey data. Students received a research number in order to collect and record data. Students took a stress survey (see Appendix A) on the first day of the class to gather a baseline for the amount of stress they experience in their daily lives. The survey included questions about finances, school, work and relationships which yielded quantitative data to evaluate the stress levels of each student's life. The surveys were administered on paper and taken up after completion. Students started interacting with therapy horses on either week two or week three of class. Therapy horse interaction included petting the horse, learning how to lead the horse or act as a side-walker for therapeutic purposes, or riding the horse. All students were also required to complete at least five hours of community service in an equine therapeutic setting. During this time, students either groomed horses, led horses or acted as side-walkers for individuals with disabilities. After all the students interacted with therapy horses, each student completed the same stress survey as they did during the first EAAT class. The surveys were completed on paper

The Effect of Interaction with Therapy Horses on University Students' Perceived Stress Level and taken up after completion. Once all the data was collected, it was analyzed to determine any changes in the perceived stress levels of students in relation to time spent with therapy horses.

Data was compared and analyzed by a statistician to determine whether or not the horses had a therapeutic effect on the students' stress level.

Data Analysis Procedures

Both dependent and independent t-tests were used to statistically analyze the data collected. This allowed for the participants to be analyzed comparatively because multiple tests were run on each participant. The pre- and post- stress tests were analyzed for aim #1. Aim #2 and aim #3 will be looking at the pre-test only. All data gathered will be quantitative.

Results

Data was collected during two different class periods during the semester. The first data collection was completed during the 1st week of classes and the second set was collected after interaction with therapy horses. The results for each aim are as follows.

Aim 1: A paired samples t-test was conducted to determine if there was a change in perceived stress levels of a college student after spending time with therapy horses. The pre- and post- test means for Q22 on the Stress Survey Questionnaire for EAAT students, which rated the average stress in the student's personal life, were compared. The self-rated stress levels prior to horse therapy interaction ($M=2.905$, $SD=0.7262$) only differed slightly from the self-rated stress levels after the interaction ($M=3.000$, $SD=0.8264$), $t(41)=0.892$, $p=0.377$. Thus, the sample as a whole did not experience a statistically significant change in stress from the time they took the first survey until the second survey.

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Aim 2: Comparisons between students seeking different degrees were made to discover if biological or social science majors experienced higher self-rated stress levels. There were a few participants with majors that did not fit the 2 subcategories and they were removed from this specific test. An independent t-test was performed to compare the overall stress levels and students majoring in the biological sciences ($M=-0.200$, $SD=0.77460$) showed a greater increase in self-rated stress than social science majors ($M=-0.0417$, $SD=0.69025$). This data exhibited the trend that the stress in students who studied biological sciences were more stressed than social science majors, however the data did not have statistical significance, $t(37)=0.665$, $p=0.510$.

Aim 3: This aim was to determine if a student's stress level varied based on year of school they were currently enrolled. Due to the low numbers of freshman and sophomores who took part in this survey, only the data from the juniors and seniors were analyzed. An independent t-test was performed to investigate if there was a significant difference in the stress levels among juniors and the stress levels among seniors. The hypothesis stated that the level of stress would increase based on the higher the class of the student. The data indicated that there was no significant difference between the levels of stress in these two classes. The self-rated stress levels for juniors ($M=0.0909$, $SD=0.75018$) and seniors ($M=0.1250$, $SD=0.61914$) showed a slight increase in stress for the seniors. Although there was a small increase in stress, this data was statistically insignificant, $t(36)=0.149$, $p=0.883$.

Additionally, subcategories within the stress survey were analyzed to discover whether different avenues of stress experienced different levels of change. The subcategories included stress related to social relationships, academics and finances. Paired t-tests were conducted for each subcategory and the results are provided below in Table 1.

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The results comparing academic and financial factors were insignificant. The social factor was nearing significance, $p=0.076$. A Cohen's D was performed for the pre- and post- social test, $d=0.2176$. This Cohen's D value indicated that this data had a small effect size. A Cohen's D was calculated to measure the magnitude of the differences in mean values.

Table 1

Descriptive Statistics and Paired t-test Results for Q22, Social, Academic and Finances

Outcome	Pre and Post test Diff		95% CI for Mean Difference	t	df	Sig. (2-tailed)
	M	SD				
Q22	-0.0952	0.6917	-0.3108, 0.1203	-0.892	41	0.377
Social	-0.15278	0.50099	-0.32229, 0.01673	-1.830	35	0.076
Academic	0.05983	0.70863	-0.16989, 0.28954	0.527	38	0.601
Finance	0.00000	0.59914	-0.19162, 0.19162	0.000	39	1.000

* $p<0.05$

Discussion:

Aim #1: Overall, the stress levels of the university students was not positively affected by interacting with therapy horses. The data did not indicate any statistically significant differences between the pre- and post- stress levels of the students in the EAAT class at the University of Arkansas. Though there was no statistically significant correlation between time spent with therapy horses and decreased stress levels, there was no significant increases in stress levels either. The timing of the survey could have had an effect on the student's stress levels. For example, the beginning of the semester may have been less stressful than the middle of the semester concerning academics. Schedules and deadlines increase drastically toward the middle of the semester. This was expected and the survey that was administered addressed multiple areas of stress for the stu-

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dents, not only school related stressors. Stress was a difficult variable to keep consistent because it is handled differently by every individual. This limitation is addressed by focusing on how stress varies related to different factors including academics, social relationships and finances.

Aim #2: The participants were categorized in two groups. Biological sciences included nursing, animal science, poultry science and public health. The social science category included psychology, communication and social work. The sample included 15 biological science majors and 22 social science majors. The stress of the biological science majors increased slightly more than the social science majors in the post-test. This small increase could be due to the level of difficulty of the classes they were taking.

Aim #3: The difference between junior and senior student stress levels increased slightly more for the seniors. This increase could have been due to the added stress of graduation and job searching in the near future for the seniors. The sample size for this analysis included 22 juniors and 16 seniors. If there was a larger and equal sample, the data could possibly have gathered a more accurate and generalized assessment of junior and senior level university students. The small sample size may also have affected the data because with a larger number of participants, it would have taken a less drastic change to detect. The larger the sample size, the smaller the difference that can be detected. The likelihood of positive effects with horse therapy interaction would be more likely in a larger group of participants. This study should be expanded and continued over multiple semesters of students in order to increase the sample size.

In a future study, a control group would be beneficial. There could be a sample that does not have a stress-reducing intervention at all. The data analyzed in a future study could compare the mean of the control group and the group that interacts with therapy horses. Additionally,

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longer amounts of time should be taken in between the pre- and post- stress surveys in a future study to ensure that the participants have an adequate amount of time interacting with the therapy horses. In this particular study, the post survey was given at the beginning of a lecture class. A limitation to this study was the fact that the survey was given in a classroom while it would have possibly been more beneficial to give the survey immediately after physical interaction with the therapy horses to gather a more accurate interpretation of the effect of the therapy itself. Further investigations should be considered because the value of horse therapy on students perceived stress levels is a great opportunity for stress relief among all college campuses and a more extensive study is necessary.

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Appendix A

Stress Survey Questionnaire for EAAT Students

1. Age:
2. Gender:
3. Do you have a job?
 - No
 - Full time
 - Part time
4. If in college, what University do you attend?
5. If in college, what is your major?
6. What class are you in?
 - Freshman
 - Sophomore
 - Junior
 - Senior
 - Graduate student
7. How many hours are you taking this semester?

Rate these sources of stress:

8. Roommate
 - No stress
 - Slight stress
 - Average
 - Above average
 - Hard core
9. Living away from home
 - No stress
 - Slight stress
 - Average
 - Above average
 - Hard core
10. Finances

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No stress
Slight stress
Average
Above average
Hard core

11. Job

No stress
Slight stress
Average
Above average
Hard core

12. Grades

No stress
Slight stress
Average
Above average
Hard core

13. Classes/Schoolwork

No stress
Slight stress
Average
Above average
Hard core

14. Family Relationships

No stress
Slight stress
Average
Above average
Hard core

15. Friends

No stress
Slight stress
Average
Above average
Hard core

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16. Health

No stress
Slight stress
Average
Above average
Hard core

17. Sports

No stress
Slight stress
Average
Above average
Hard core

18. Tests/Exams

No stress
Slight stress
Average
Above average
Hard core

19. Romantic relationships

No stress
Slight stress
Average
Above average
Hard core

20. Not being happy

No stress
Slight stress
Average
Above average
Hard core

21. Do you work well under stress?

No
Yes

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22. Rate your average stress in your personal life

- No stress
- Slight stress
- Average
- Above average
- Hard core

23. What characteristics represent your present level of stress? (Select all that apply)

- Angry
- Panicked
- Irritable
- Anxious/worrying
- Overwhelmed
- Focused
- Unusually emotional
- Tired
- Headache
- Insomnia
- Loss of appetite
- Cravings (food, i.e. chocolate)
- Nausea/upset stomach
- Diarrhea

24. Do you feel comfortable at your current stress level?

- Yes
- No

25. How do you cope with your stress? (Select all that apply)

- Talk to friends
- Listen to music
- Exercise
- Sleep
- Eat comfort food
- Work
- Read a book
- Drink Alcohol
- Smoking
- Use illegal drugs
- Use aromatherapy or herbal remedies

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Do a hobby/project

Other:_____.

26. Are your coping strategies effective?

Not at all

Slightly

Okay

Good

Excellent

*This survey was adapted from <http://www.cs.uofs.edu/~beidler/cilit/q99/knueven.html>