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## The Effects of Pet Therapy on Undergraduate Nursing Students' Perceived Stress and Exam Performance

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The Effects of Pet Therapy on Undergraduate Nursing Students' Perceived Stress and Exam  
Performance

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### **Abstract**

Pet therapy has been found to decrease anxiety and stress levels. Pets are becoming an increasingly more significant part of peoples' lives and families in the American culture. Nurses need to be aware of the benefits that can come from holistic interventions such as pet therapy in various practice settings. An exploratory experimental research study was conducted to explore the effects of pet therapy on undergraduate nursing students' (n=7) perceived stress and exam performance. Nursing student exposed to pet therapy reported lower levels of perceived stress compared to nursing student who did not experience pet therapy. Exposure to pet therapy did not impact exam performance. The study demonstrates the significance pet therapy can have on perceived stress. Nurses caring for patients in both acute and long term care should consider advocating for the use of pet therapy to help decrease stress and anxiety their patients experience while in the inpatient and outpatient settings of care. Future research needs to be conducted, specifically with nursing students, to expand the understanding of the benefits pet therapy has to offer.

### **Dedication**

This thesis is dedicated to my grandmother, Anna Dugan without whom I would not have had the self-confidence to continue on in nursing school and follow my dreams. Thank you for your constant encouragement and continued advice on how to get through nursing school, Nana. I love you.

### **Acknowledgements**

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## **Chapter 1: Background and Significance**

Pets are becoming more common in homes. They are considered to be parts of our families. One cannot help but wonder why that is. There are health benefits to having a pet. Specifically, pet therapy has been shown to decrease anxiety and depression among diverse populations, including students, the elderly and children. This senior thesis will explore the effects of pet therapy on junior level nursing students' perception of stress and their exam performance. The idea was impacted by an article discussing nursing students interacting with a golden retriever before testing in the program and one student came back to sit and play with the golden retriever prior to sitting for her National Council Examination for Registered Nurses (NCLEX-RN) exam. However, after analyzing this article it became clear that there was no control group and therefore the exposure to the dog could not be correlated with the decreased anxiety. While this thesis project does not set out to replicate the study exactly, the basis for the idea began here.

### **Specific problem**

Being a college student is a stressful and challenging transition in life, regardless of major. However, the population of interest for this research project is nursing students. Nursing school is a stressful and time consuming major that requires many hours of studying and frequently leaves students feeling stressed and anxious, especially before exams. Much of nursing school rides on exam performance. In fact, nursing students do not rely on merely repetition of facts, but also application questions. These tests are designed to mimic the National Council Examination for Registered Nurses (NCLEX-RN) questions, which makes the exams all the more daunting.

**Purpose of proposed research**

Despite the fact that pets are highly valued in our culture, there is a lack of pet therapy research available. The research regarding students is virtually non-existent. This research seeks to fill in some of the gaps in the field of pet therapy research.

The purpose of this research is to study the effects of pet therapy on undergraduate student nursing students' perceived stress and exam performance. It explores whether interaction with a pet prior to exams will decrease the perceived stress. The research also explores whether or not exposure to pet therapy will increase exam performance.

**Hypotheses to be tested**

The hypotheses tested in this research were:

1. Exposure to pet therapy will reduce perceived stress rating.
2. Exposure to pet therapy will increase exam scores.

## **Chapter 2: Literature review**

Pet therapy has been shown to be effective in managing and aiding in decreasing anxiety and decreasing stress individually and as part of a large group. In addition, pet therapy has been conducted with a wide variety of populations.

Young (2012) examined the effects that pet therapy had on student's exam anxiety and performance. Students were able to interact with the pet therapy dog in the student library before exams, offering toys and dog biscuits, if they chose. However, the control group was not separated and could both see and interact with the pet therapy dog. The students in the intervention group gradually decreased their test anxiety. Participants decrease in test anxiety ranged; some dropped 25 points in their test anxiety, while others simply dropped 2 points. Although the students reported lower test anxiety, it was not statistically linked to exam performance.

In addition to lowering stress and anxiety among nursing students, pet therapy has also been found to help cancer patients view their health in a more positive light (Johnson, Meadows, Haubner, & Sevedge, 2008). The researchers in this study divided cancer patients into two groups, one group was exposed to pet therapy dogs for 15 minutes, 3 times a week, for 4 weeks while the other spent the same amount of time with a human companion. The researchers used a pre and post-test to study the effect of pet therapy on perceived health, mood, and orientation to life. While the researchers found no statistically significant difference between groups, subjects in the pet therapy group viewed their health as improved. In addition, both activities were described as beneficial by the research subjects.

Research has also been done with young children to investigate the impact of pet therapy on separation anxiety. In a case study conducted by Weston (2010), a child with severe

separation anxiety was introduced to a dog during therapy sessions. She would spend regular time with a therapist and when her therapist noted the girl liked dogs, she offered to bring in a dog to the next session. The child's separation was so intense that she would become hysterical whenever the parents tried to leave. When introduced to the dog, the young girl immediately reached out to pet the dog. Her mother asked if she was able to leave and after agreeing she would return 20 minutes later, did so. Although she asked when her mother would return several times, she was able to participate in several ice breakers happily and confidently with the dog snuggled up by her side. Gradually the little girl was able to be apart from her mother for an entire therapy session with the aid of a therapy dog.

Research has also been done with antepartum women hospitalized with bed rest. Groups of women were divided into control and intervention groups; one group received normal care (control group) while the other received normal care and animal therapy as well. Measures of reported boredom and anxiety were collected. The study found that animal therapy was effective in decreasing both boredom and anxiety (Klemm, Washington, Bradley, Bucher, Collins, Lyons, Seckel, & Urban 2010).

Coakley and Mahoney (2009), investigated the effects of pet therapy on inpatient and outpatient treatment groups. The interaction between patient and animal depended upon what the subjects wanted and how they felt they would best gain from the experience. Some of the subjects simply wanted to talk to the handler about childhood dogs, while others wished to visit with the pet while the handler stood nearby. The researchers found pet therapy to be a cost effective intervention to improve the mood of patients in both inpatient and outpatient settings. In addition, they found that it was very meaningful to the patients themselves.

The use of pet therapy has also been studied in the elderly. A study conducted by LeRoux & Kemp (2009), divided residents at a nursing home into two groups; some received Animal Assisted Therapy (AAT) while others did not. The intervention group spent time talking to, grooming, and patting the dog as they desired for 6 weeks, while the control group received no interaction with the dog at all. However, at the end of the study, several subjects from the control group desired to interact with the dog. The researchers found statistically significant data showing AAT reduced depression and anxiety among the elderly.

Pet therapy has been shown to reduce anxiety and improve mood in a range of patient populations in a variety of settings. Overall, there is still much work to be done in the pet therapy field. This senior thesis research will investigate the impact that pet therapy may have in decreasing stress and anxiety while increasing test performance.

### **Chapter 3: Design and Methods**

#### **Research Design**

This is an exploratory experimental correlational design. Researchers randomized students into the control group or pet therapy intervention group. The independent variable is the exposure to pet therapy. The dependent variables are perceived stress and exam performance.

**Sample and setting.** Subjects were recruited from the fall 2013 section of Nursing 3310, a junior level cohort of nursing students. The study took place at the College of Health and Human Services (CHHS) on the campus of Western Michigan University. The study took place throughout the fall 2013 semester, over a four month period with four sessions, 30 minutes each.

**Recruitment strategy.** The student researcher attended nursing student Assembly Day, where students practice and validate previously acquired skills prior to the beginning of fall semester classes, to invite students to be a part of the study. Inclusion criterion were being an undergraduate nursing student in Nursing 3310. Exclusion criteria were any students who are allergic to dogs, have a fear of dogs or cannot make a time commitment of 30 minutes prior to each exam. Subjects signed and dated a consent agreement form that was returned to the student researcher indicating desire to participate. All students returned the consent form, regardless of participation, in sealed envelopes to ensure confidentiality of the subjects.

#### **Human Subjects' Considerations**

This study has been approved by the Human Subjects Institutional Review Board (HSIRB) at Western Michigan University. Subjects were notified of this and were aware that they could drop out of the study at any time. All members of the research team completed the appropriate training modules required by HSIRB.

### **Instruments and Measures**

**Demographics.** Subjects filled out a short demographic survey (See Appendix A), including gender, age, ethnicity, relationship status, if they owned a pet, and if so what kind. The subjects also reported their preference of animal between cats and dogs.

**Perceived Stress.** The research used the 10-item Perceived Stress Scale (See Appendix B) to collect data on students' perceived stress following the sessions and prior to the exams. A higher score indicates a higher level of perceived stress; while a lower one indicates less perceived stress. The measurement tool has been deemed valid and reliable. The reliability coefficient was .89. The validity coefficient was .83. (Robert, Harrington, & Storch, 2009).

**Pet Interaction.** The subjects in the intervention group self-rated their interaction with the pet therapy dog following each session on a likert scale (See Appendix C). The pet interaction scale was developed by the student researcher.

**Exam Performance.** Exam performance was reported by student name for each exam at the end of the semester by the professor of Nursing 3310.

### **Data Collection Procedure**

Students were randomized into two groups, one control and one intervention; each group met in a separate room. Both the groups were given a small breakfast of bagels, donuts, and juice. Quiet studying was allowed in both rooms, however a group study session was not allowed. In both groups there were researchers available to observe the groups to ensure that a group study session did not take place.

The intervention group was exposed to a pet therapy dog for 30 minutes prior to each exam from 8:20 to 8:50. The intervention group subjects were able to pet the therapy dog, play

fetch with him and/or just sit with him. There was no structured interaction that the subjects needed to complete, rather they simply interacted with the dog as they desired. Students in both groups were given the perceived stress scale (Appendix B) before each exam in the last five minutes of each session. In addition, the intervention group filled out a likert scale rating their interaction with the pet on a scale (See Appendix C)

### **Data Analysis**

**Sample size.** The sample size for this project was taken from the fall nursing 3310 cohort. There were a total of seven people who chose to participate in the study. There were initially nine subjects but two dropped out of the study before it started. Subjects were randomized into groups; there were three people in the intervention group and four in the control. Due to this small size, the sample may not be representative of all nursing students. The sample size also contributes to the lack of power in the study. If there had been more subjects who participated in the study the research may have had the power to detect a difference between the groups

**Statistical procedures.** All data were entered into SPSS (Statistical Package for the Social Sciences) for analysis. A one-way Analysis of Variance (ANOVA) was used to examine the differences in perceived stress and exam performance between groups.

## **Chapter 4: Results**

### **Missing Data**

There was some missing data in the collection process, specifically relating to the perceived stress scale. For the first data collection session we had six complete perceived stress scales and only one missing data set. However, due to communication errors, we were unable to expose subjects to a pet therapy dog. During the second data collection session we collected four complete data sets and had three missing data sets. During the third data collection session we collected five missing data sets and two complete data sets. These missing data were due to the perceived stress scale questions being listed on the front and back of the page; subjects filled out the front 8 questions and failed to fill out the remaining two questions on the back side of the page. The last data collection session had a full complete data set for all subjects. Because of this only the last session was used in data analysis.

### **Sample Characteristics**

The intervention group was comprised of three people, while the control group had four. There were six females and one male. The control group had all females in it. All subjects but one were within the age range of 21 to 25; the last participant was 26-30. All of the subjects were Caucasian. All subjects preferred dogs and one also liked cats. Four subjects were single and three were living with a significant other. Three subjects currently owned pets; two subjects owned a dog, 1 participant had a cat and another had both a dog and a cat.

### **Hypotheses Testing**

The mean perceived stress score (PSS) for the control group on the fourth data collection session was 22.5. The mean PSS for the pet therapy intervention group was 20.3. (See Table 1). The mean PSS for the pet therapy intervention group was lower than for the control group. The

highest possible score on the perceived stress scale is 40, while the lowest is 0. The scores of the subjects indicate that they were moderately stressed at the time of data collection. The moderately high scores on the scale may have been related to the increase in stress as the end of the semester grew closer.

Table 1

*Mean Perceived Stress Score by Group*

Group	Mean
Pet Therapy Intervention Group	20.3333
Control Group	22.5000

An analysis of variance was utilized to examine the effect of exposure to pet therapy on perceived stress and exam performance.

Table 2.

*Perceived Stress and Exam Performance by Group*

		Sum of Squares	df	Mean square	F	Sig.
PSS Data Collection 4	Between groups	8.048	1	8.048	7.101	0.045
	Within groups	5.667	5	1.133		
Score of Exam 4	Between groups	0.762	1	0.762	0.057	0.821
	Within groups	66.667	5	13.333		

\*PSS = perceived stress scale

A one-way between subjects ANOVA was conducted to compare the effect of pet therapy on perceived stress score in undergraduate nursing students in a pet therapy group and control group conditions. There was a significant effect of pet therapy on perceived stress score,  $F(1,5) = 7.101$ ,  $p < .05$  (See Table 2). Therefore, hypothesis 1 was accepted. It can therefore be said that students' perceived stress score was correlated with pet therapy exposure.

A one-way between subjects ANOVA was also conducted to compare the effect of pet therapy on exam performance in undergraduate nursing students in a pet therapy group and control group conditions. There was no significant effect of pet therapy on exam performance,  $F(1, 5) = 0.057$ ,  $p = 0.821$  (See Table 2). Exam performance was not correlated to exposure to pet therapy.

## **Chapter 5: Discussion**

### **Pet therapy and Perceived Stress**

Overall this study did find pet therapy to be an effective way to reduce the perceived stress of undergraduate nursing students in one data collection session. Students in the pet therapy intervention group reported a lower mean perceived stress score for the last session when compared to the students in the control group (see table 1).

### **Pet Therapy and Exam Performance**

This study found no significant data related to exam performance. Therefore, pet therapy did not correlate with the exam performance. It was thought that lower levels of perceived stress would raise exam scores, however this was not the case. The exam scores for the students were similar between groups, only differing by 0.03%

### **Strengths and Limitations**

One of the strengths of the study is the design itself. Our study included a control group whereas the one that sparked our idea for the study did not. Since the control group was not exposed to the pet therapy dog and had no interaction with him, we can be more sure that the exposure to a pet therapy dog was the real cause of the decreased score in perceived stress. In addition since this project was designed as a senior thesis, the benefits of learning and potential for further use in later years is a positive aspect of the research.

One of the biggest limitations of this study was the small sample size. At first there were nine subjects but due to attrition the sample size was reduced to seven. Due to the small sample size and limited participation the study lacked power.

Another error that was made was the design of the perceived stress scale, which resulted in missing data. For the first three sessions, the questions used in the scale were on the front and

back of the page. Subjects didn't fill out the back of the form which resulted in missing data. Once this was realized and changed, there was only one session left. There was also human error made because subjects did not put their name on the perceived stress scale. Due to this error, the perceived stress of each individual was not able to be tracked or analyzed over time.

### **Nursing Practice**

While there was some human error in this study, the research did show that exposure to pet therapy decreased subjects' reported stress. Pet therapy has been shown to reduce stress not only in nursing students but also in children (Weston, 2010), patients with cancer (Johnson, Meadows, Haubner, & Sevedge, 2008), patients in the inpatient and outpatients settings (Coakley & Mahnoey, 2009), pregnant women (Klemm, Washington, Bradley, Bucher, Collins, Lyons, Seckel, & Urban 2010) and, elderly residents in a long-term care facility (LeRoux & Kemp, 2009).

The current nursing practice should continue to incorporate pet therapy into their interventions in the hospital if pet therapy is available. Based on the literature review and the results of this study, pet therapy is useful in many different settings. However, pet therapy needs to be expanded to a greater variety of areas, ranging from increasing the number of hospital units the therapy is used in to potentially using it in the classroom setting. Funding may need to be increased and more certified pet therapy dogs and handlers are needed to accommodate for this expanding field in holistic healthcare practices.

### **Future Research**

In future research studies, expanding the recruitment of subjects by using more than one nursing school may help to generalize results. In addition, researchers need to expand the

recruitment to increase the available subjects. Offering it to more people would expand the available subjects and therefore increase the sample size. A larger sample size may help to provide the statistical power necessary to detect if an effect is present. Having a greater n would lead to a higher likelihood of finding a statistically significant result that exists.

In addition to adding more subjects, it would be interesting to test the hypothesis overtime from the start of the program to the finish of the program, such as a longitudinal study. Students would be given the option upon admission to the nursing program and continue to meet with the pet therapy dog throughout their nursing school experience.

### **Conclusion**

As pets become start to be a common member of the family, pet therapy will have increasing relevance. The presence of a pet decreases anxiety among patients in various settings. As this research has shown, there is some value in the nursing career field as well, starting from the very beginning in nursing students. The benefits remain to be seen in the area of increasing test performance, but pet therapy interaction is correlated to a lower stress level going into a stressful exam.



## Appendix B

## Perceived Stress Scale – 10 item

Instructions: the questions in this scale ask you about your feelings and thoughts during the last month. In each case please indicate with a check how often you felt or thought a certain way.

1. In the last month how often have you been upset because of something that happened unexpectedly?

\_\_\_ 0 = Never \_\_\_ 1 = almost never \_\_\_ 2= sometimes \_\_\_ 3= fairly often \_\_\_ 4=very often

2. In the last month, how often have you felt that you were unable to control the important things in life?

\_\_\_ 0 = Never \_\_\_ 1 = almost never \_\_\_ 2= sometimes \_\_\_ 3= fairly often \_\_\_ 4=very often

3. In the last month, how often have you felt nervous or “stressed”?

\_\_\_ 0 = Never \_\_\_ 1 = almost never \_\_\_ 2= sometimes \_\_\_ 3= fairly often \_\_\_ 4=very often

4. In the last month, how often have you felt confident about your ability to handle your personal problems?

\_\_\_ 0 = Never \_\_\_ 1 = almost never \_\_\_ 2= sometimes \_\_\_ 3= fairly often \_\_\_ 4=very often

5. In the last month, how often have you felt things were going your way?

\_\_\_ 0 = Never \_\_\_ 1 = almost never \_\_\_ 2= sometimes \_\_\_ 3= fairly often \_\_\_ 4=very often

6. In the last month, how often have you found that you could not cope with the things that you had to do?

\_\_\_ 0 = Never \_\_\_ 1 = almost never \_\_\_ 2= sometimes \_\_\_ 3= fairly often \_\_\_ 4=very often

7. In the last month, how often have you been able to control irritations in your life?

\_\_\_ 0 = Never \_\_\_ 1 = almost never \_\_\_ 2= sometimes \_\_\_ 3= fairly often \_\_\_ 4=very often

8. In the last month, how often have you felt that you were on top of things?

\_\_\_ 0 = Never \_\_\_ 1 = almost never \_\_\_ 2= sometimes \_\_\_ 3= fairly often \_\_\_ 4=very often

9. In the last month, how often have you been angered because of things that were outside of your control?

\_\_\_ 0 = Never \_\_\_ 1 = almost never \_\_\_ 2= sometimes \_\_\_ 3= fairly often \_\_\_ 4=very often

10. In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?

\_\_\_ 0 = Never \_\_\_ 1 = almost never \_\_\_ 2= sometimes \_\_\_ 3= fairly often \_\_\_ 4=very often

Appendix C

Please rank your time spent with the dog today based on the scale below.

No interaction

Little interaction

Some interaction

Lots of interaction

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