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Decreasing Test Anxiety in Nursing Students Using Cute/Funny Animal Videos

Submitted in Partial Fulfillment of the Requirements for the Degree of Doctor of Nursing
Practice at the University of Kentucky

By

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Abstract

Background: Stress, test anxiety and worry continue to increase in nursing students. As successful completion of course exams is required for nursing students to complete their program of study, these increased levels of stress, anxiety and worry can hinder their ability to perform at their best. **Purpose:** The aim of this project is to show that using cute/funny animal videos prior to an exam can decrease test anxiety (TA) and improve performance. **Project Improvement Framework:** The plan-do-study-act, PDSA, quality improvement framework was used for the final, modified project. **Method:** A video was embedded into three of four course exams. The Test and Examination Measure (TEAM) survey was sent to all medical-surgical nursing students after each course examination (exam) to determine change in TA and performance. **Results:** Of the 670 surveys sent out, only 14 were completed, and of those only one completed a survey with and without an embedded video. **Discussion:** Although survey response rates are typically low, the response rate for this project was exceptionally poor. Understanding the lack of response will be important in continuing to help students combat test anxiety. **Conclusions:** It is clear that students need help controlling test anxiety. It may become even more important in the future as we learn the impact the SARS-CoV-2 pandemic has had on our students. Knowing the best way to control test anxiety remains a question for faculty.

Keywords: test anxiety, nursing students, cute animal videos, funny animal videos

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Dedication

I would like to dedicate this project to my family. My parents who have given me everything and without whom I would not be the person I am today. To my sister and brother-in-law and my brother and sister-in-law who are a sounding board and who were able to pick up for me when I couldn't travel to Pittsburgh during the pandemic, especially my sister, who is there to help our parents with everything. To my nieces and nephews, who keep me motivated and take me to new heights. And to my band family who helped to keep me sane during the past zoom year.

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Background and Significance

Problem statement

Stress has permeated every aspect of our society and increasing levels of stress can impact how people perform in their daily and professional lives. Generation Z adults, ages 18 – 23, have frequently reported the highest average stress levels of any adults (American Psychological Association, 2019). With the 2020 SARS-CoV-2 global pandemic, these stress levels are only increasing. Generation Z adults are experiencing significantly higher levels of stress and more symptoms of depression than any other adults surveyed (American Psychological Association, 2020).

Anxiety is a growing problem among college students, most of whom fall into the Generation Z age group. The National College Health Assessment (ACHC, 2018) found that 63% of U.S. college students felt overwhelming anxiety in the previous year and of those, 23% had been diagnosed or treated by a mental health professional. It has been found that baccalaureate nursing students have even higher levels of anxiety than their peers (Poorman, Mastorovich, & Gerwick, 2019; Brown et al., 2020b). With increased general anxiety, there are higher levels of test anxiety which can lead to poorer academic performance and higher rates of attrition (Farner, Reed, Abbas, Shmina, & Bielawski, 2019). This anxiety continues to increase throughout a nursing program. In one study, 23% of nursing students had a diagnosis of anxiety and 16% had a medically diagnosed mental illness at the beginning of their program (Brown et al., 2020a). By the final year of their program these rates had increased to 23% and 22%, respectively (Brown et al., 2020a). This can impact program and future success.

This is also true within the university college of nursing (CON) chosen to conduct this project, with an average of 600 traditional undergraduate students in the three-year baccalaureate

nursing curriculum. Within the CON, students report high levels of anxiety in the 3rd semester of the program, their medical-surgical course traditionally being the most stressful (Cowley, 2021). Stress within the nursing program can be seen in the number of students who request Disability Resource Center (DRC) testing accommodations. Testing accommodations that are available include 50% - 100% increase in the amount of time for an exam, and the ability to take an exam in a low stimulation environment or private room. The number of students requesting DRC testing accommodations increased from 16 in the 2016 spring semester to a high of 58 in the 2019 spring semester. The numbers for the subsequent semester were fall 2019 – spring 2021 were: 48, 41, 36 and 35 (Hayhurst, 2020, 2021). Overall in the university as whole, the number of students with documented anxiety disorders is the largest percentage of students who request accommodations (personal DRC communication, Pickering, Jan 29, 2020). Students who request accommodations through the DRC only represent those with a documented anxiety disorder. Worry, the cognitive component of test anxiety, has been identified as being most associated with a poor academic performance (Duty, Christian, Loftus, & Zappi, 2016).

Within the CON, students are able to reach out to the Student Affairs Office or the Counseling Center for support and academic coaching. The CON, as well as the university, offer Koru Mindfulness, a program to teach mindfulness, stress management, deep breathing techniques and meditation to help students manage and decrease stress (Schmidt, 2021). It is a technique that is also being offered to pre-nursing students to try to improve stress management prior to starting the nursing program. Students are provided with test taking strategies and skills and encouraged to have a better work-school-personal life balance (Schmidt, 2021). Individual faculty members also try to help students manage stress and anxiety. Despite these options that are available for students, they continue to have high levels of stress and anxiety.

Context, scope and consequences of the problem

Test anxiety can affect a student's preparation for an exam and can decrease their ability to perform on the exam (Quinn & Peters, 2017). Test anxiety peaks during higher education (Quinn & Peters, 2017). Between 50% and 100% of nursing students have been found to experience test anxiety with up to 35% of nursing students reporting levels of test anxiety high enough to interfere with academic performance (Clutter, Potter, Alarbi, & Caruso, 2017; Driscoll, Evans, Ramsey, & Wheeler, 2009; Duty et al., 2016; Farner et al., 2019; Khalaila, 2015; Quinn & Peters, 2017). When compared to other undergraduate students, nursing students have been found to have higher levels of test anxiety (Brown et al., 2020b).

Nursing schools have traditionally used exams to evaluate the knowledge of their baccalaureate students. While exams may not be the most often used method for grading, they typically are weighted the highest when course grades are calculated (Brodersen, 2017). Nursing students with test anxiety have lower grade point averages (GPAs) and score lower on course exams (Duty et al., 2016). This can then lead to academic failure, which takes a toll, not only on students, but on their families, and can contribute to the national nursing shortage (Brown et al., 2020b).

Various scales have shown that test anxiety, specifically worry, is associated with lower test scores in nursing students (Duty et al., 2016). Salivary cortisol levels, which increase with stress, were found to be increased in nursing students prior to exams (Clutter et al., 2017). They also found that the highest salivary cortisol levels were in junior nursing students before they took their final exam (Clutter et al., 2017). Additionally, students in their third semester of a nursing program reported the highest levels of test anxiety compared to nursing students in other semesters (Quinn & Peters, 2017). This has also been demonstrated at the CON where the first

semester junior year, or third semester, has traditionally been the most stressful, and with the highest number of failures in their medical-surgical course (Cowley, 2021). This impacts their ability to move forward through the curriculum and delays their time to graduation, which further increases their stress level and can impact not only the student but their family.

Test anxiety is not just a problem for multiple choice exams. Test anxiety has also been shown to have a negative impact on performance. Pharmacy students were found to perform at a lower level on Objective Structured Clinical Examinations (OSCEs) when they experience higher levels of test anxiety (Hadi et al., 2018). Students in any medical profession are required to perform various procedures and exhibit competence in skills related to their profession. When test anxiety increases, students are unable to perform at their highest level.

Current evidence-based interventions/strategies targeting the problem

Various interventions to combat test anxiety have been evaluated in both general students and nursing students. Farner, et. al. (2019), in a RCT pilot study showed that aromatherapy hand massage decreased test anxiety scores in nursing students, compared to hand massage without aromatherapy or control subjects. The use of relaxation techniques prior to an exam was also shown to decrease test anxiety in nursing students (Manansingh, Tatum, & Morote, 2019). Relaxation and imagery were both shown to decrease anxiety but did not show a decrease in physiologic markers of stress (Reiss et al., 2019).

Quinn and Peters (2017) identified both environmental and student behavioral interventions that have been used to decrease test anxiety in nursing students. Environmental interventions included aroma therapy, particularly essential lemon oil, music therapy, and pet therapy. Student behavioral interventions have included relaxation practices and deep breathing (Quinn & Peters, 2017).

All of the environmental interventions were implemented with students taking in-person exams in a designated classroom. Aroma diffusion, into the exam classroom, decreased test anxiety, as did listening to classical music during an exam (Quinn & Peters, 2017). Pet therapy, most commonly with dogs, showed subjective improvement in test anxiety amongst nursing students (Ein, Li, & Vickers, 2018; Quinn & Peters, 2017). Behavioral practices of guided reflection and muscle relaxation could be conducted remotely, however they can be more time consuming and not conducive to decreasing test anxiety immediately prior to a course exam (Quinn & Peters, 2017).

Emotional support animals have been used in a variety of setting to decrease stress and anxiety. One study randomized nursing students to therapy dog exposure, or not, over the course of an academic semester and found a significant decrease in anxiety in those students who interacted with the therapy dogs (Hall, 2018). A meta-analysis of pet therapy showed that there was a decrease in heart rate as well as self-reported stress and anxiety after exposure to pet therapy (Ein et al., 2018). In that meta-analysis, dogs were used in more than 90% of the studies reviewed. Additionally, the use of emotional support dogs was shown to decrease test anxiety in first and second year medical students (Lephart, Jennings, Hoellein, & Hamilton, 2019).

Purpose and Objectives

Decreasing test anxiety has been shown to improve academic performance in nursing students (Khalaila, 2015). While it is the desire of faculty that their students are successful, there are continued struggles in how to combat increasing levels of test anxiety withing baccalaureate programs. The purpose of this project was to decrease test anxiety in third semester

undergraduate nursing students, prior to their medical-surgical course exams, with goal of improving exam scores.

The original objectives included providing students time to interact with therapy dogs prior to course exams to decrease test anxiety. Because of the pandemic, face-to-face exams were no longer given in the CON and students took their course exams remotely through Respondus and LockDown Browser, the on-line testing option available through Canvas, the CON learning management system. This necessitated altering the project for this new platform.

The new objectives were threefold:

1. To determine if watching cute/funny animal videos will decrease reported test anxiety levels, as measured by the Test and Examination Anxiety Measure (TEAM) tool (Brooks, Alshafei, & Taylor, 2015).
2. To determine if watching cute/funny animal videos prior to an exam improves students' subjective exam performance.
3. To determine if watching cute/funny animal videos will improve the overall class exam average compared to previous spring semester courses.

Performance Improvement Framework

The project improvement framework for the revised project was the Plan, Do, Study, Act (PDSA) Cycle and Model for Improvement (Figure 1). This model is simple and straightforward and is well established (Moen, n.d.). The study is simple in its design and, as such, does not need a complicated model for implantation. The project easily fits the PDSA model and this model will allow for easy replication by other undergraduate nursing programs. This model also

fits the revised project. With the embedded videos in the exam instructions, there was no way to verify whether the students actually watched the video available for three of the course exams or if they just started the exam without watching the video.

The original project plan was to provide therapy dogs prior to in-person medical-surgical nursing exams. Before the start of the project and the pandemic, this process was trialed with two separate medical-surgical nursing exams to determine feasibility and student interest. Subjectively, the students liked having the opportunity to interact with the dogs prior to their exam. The Health Belief Model was identified to guide the original project (Figure 2). The Health Belief Model uses perceived severity and susceptibility of the problem along with motivation to treat the problem as well as the perceived benefits and barriers to that treatment (Langley, Wootton, & Grieve, 2018). Using this model with the presence of therapy dogs would allow for verification that students were utilizing the time made available with the dogs prior to exams. With the inability to verify if students viewed the embedded video, thereby participating in their health maintenance, this framework was not as helpful as the PDSA model.

Because the SARS-CoV-2 global pandemic changed the format and delivery of courses and exams, there was no longer an option to use therapy dogs as there were no longer in-person exams. The trial of using therapy dogs was then guided by the Plan-Do of the PDSA model. When the original Plan was no longer an option it had to be changed to accommodate the new testing format, the Act part of PDSA – what changes should be made (Figure 1). The project was adjusted in consideration of remote exams via Respondus and LockDown Browser.

The Plan changed to embed cute/funny animal videos in the Respondus exam instructions that the students could watch before starting the exam. This was done with the pathophysiology-pharmacology courses during the Fall 2020 semester to determine feasibility and to ensure there

would be no interruption or problem with the actual exam. The project was then able to move through the Plan – IRB submission and approval, Do – embed videos prior to the second, third and fourth medical-surgical nursing exams, Study – send the Test and Examination Anxiety Measure survey to all medical-surgical nursing students, Act – modify the IRB proposal to include a reminder email for students to complete the survey.

Review of Literature

Review of literature

A literature search was conducted with the Cumulative Index to Nursing and Allied Health Literature (CINAHL) database. Key words included: test anxiety and college students, test anxiety and nursing students, decreasing test anxiety, test anxiety interventions, pet therapy and anxiety, and pet therapy and test anxiety. When the SARS-CoV-2 pandemic altered course and exam delivery, the literature search was broadened to include imagery and test anxiety, videos and test anxiety. The search was limited to articles published in the English language. The age range was limited to 19 – 44 and narrowed to articles published after 2010. The types of research included in the search included meta-analysis, randomized control trials (RCTs) and observational studies.

Test Anxiety. A meta-analysis conducted by von der Embse, Jester, Roy and Post (2018), to evaluate test anxiety and performance on various academic evaluation strategies found that, consistently higher levels of test anxiety led to lower levels of performance regardless of the testing strategy. In their meta-analysis, which included research from 1988 – 2017, supported previous research related to test anxiety academic performance and they found that, over numerous studies females had higher levels of test anxiety than their male counterparts (Embse,

Jester, Roy, & Post, 2018). This is important to nursing programs that consistently have more female than male students.

Test anxiety in nursing students. Researchers consistently find that higher levels of test anxiety correspond to lower academic performance in nursing students and up to 35% of nursing students report levels of test anxiety high enough to interfere with academic performance (Clutter et al., 2017; Driscoll et al., 2009; Duty et al., 2016; Farner et al., 2019; Khalaila, 2015). Nursing students also report higher levels of test anxiety when compared to their peers in other majors (Brown et al., 2020b; Farner et al., 2019; Quinn & Peters, 2017). Duty, et. al. (2016) identified worry, the cognitive component of test anxiety, as being most important for poor academic performance.

This becomes more problematic for nursing programs as poor academic performance leads to higher levels of attrition in nursing students with attrition rates averaging 50% in BSN programs. With great focus on diversity in nursing programs, attrition rates can be as high as 84% for minority students (Farner et al., 2019).

Interventions. Various interventions to combat test anxiety have been evaluated in both general students and nursing students. Farner, et. al. (2019), in a RCT pilot study showed that aromatherapy hand massage decreased test anxiety scores in nursing students, compared to hand massage without aromatherapy or control subjects. The use of relaxation techniques prior to an exam was also shown to decrease test anxiety in nursing students (Manansingh et al., 2019). Relaxation and imagery were both shown to decrease anxiety but did not show a decrease in physiologic markers of stress (Reiss et al., 2019). In their literature review, Quinn and Peters (2017) found that aroma therapy with essential lemon oil, classical music, guided reflection, muscle relaxation techniques and deep breathing exercises all lowered anxiety scores in nursing

students. Exposure to pet therapy was found to subjectively provide a positive effect for students (Quinn & Peters, 2017).

Another study randomized nursing students to therapy dog exposure, or not, over the course of an academic semester and found a significant decrease in anxiety in those students who interacted with the therapy dogs (Hall, 2018). A meta-analysis of pet therapy showed that there was a decrease in heart rate as well as self-reported stress and anxiety after exposure to pet therapy (Ein et al., 2018). In that meta-analysis, dogs were used in more than 90% of the studies reviewed.

Ferrer, Grenen and Taber (2015) completed a meta-analysis of 26 different studies to determine whether mood or emotion could be influenced using internet-based methods. They found that emotion and mood could be influenced through internet interventions. However, they also found that negative affective states were easier to induce than positive affective states and was no significant change when trying to induce happiness (Ferrer, Grenen, & Taber, 2015).

Lin and Utz (2015) found that viewing Facebook could elicit positive emotions. This was especially true when participants viewed Facebook posts from people with whom they shared close personal ties (Lin & Utz, 2015).

Two separate studies looked at the use of *kawaii*, a Japanese term meaning cute or things that are cute, to improve attention and performance. Both of these studies looked at how images could impact task performance using the Hasbro game Operation and attention searching for a specific number in a numerical matrix (Nittono, Fukushima, Yano, & Moriya, 2012; Ohno & Tanaka, 2020).

Nittono, et.al. (2012) found that university students did better on both fine motor tasks and attention after viewing images of puppies and kittens compared to viewing images of adult dogs and cats, and there was no effect of viewing images of ‘pleasant’ foods. Ohno and Tanaka (2020) used non-animal cute images such as flowers and check patterns, individually selected cute images that were not babies or baby animals, noncute images such as furniture and scissors, and a blank piece of paper in their study. Participants who viewed cute images performed significantly better than those who viewed non-cute or blank images, and those viewing individually selected images outperformed those viewing random cute images (Ohno & Tanaka, 2020).

A small study, shortened and delayed by the SARS-CoV-2 pandemic, was conducted by Dr. Andrea Utley at the University of Leeds, in partnership with Tourism Western Australia. Preliminary findings were released showing that students, after viewing a 30-minute slideshow of pictures and videos of various cute animals, particularly the Western Australia quokka, had a decrease in heart rate, blood pressure, and measured anxiety level (Bagliere, 2020; "Study confirms Western Australia's quokkas' happiness is infectious ", 2020).

Gaps in practice

Although there have been numerous attempts at decreasing test anxiety and stress in students, particularly nursing students, most have been individual efforts and require in-person interventions. Very few have looked at the use of remote options for decreasing test anxiety and stress. The only study using videos had a video that was 30-minutes long, which is untenable for decreasing test anxiety.

The project originally planned to use therapy dogs, prior to in-person nursing exams, to decrease test anxiety. However, with the global pandemic leading to on-line, remote exams, the project had to adjust to the new setting. Using short, one to two minutes in length, cute/funny animal videos, prior to a nursing exam, could help to identify a new way to combat test anxiety in nursing students. This will be helpful in the future, particularly with educational programs that provide distance learning and on-line course options.

Methods

Design

The design of this project was a pre/post repeated measures design. All students enrolled in the medical-surgical course at the start of the Spring 2021 semester were eligible to participate in the study. There were three unit exams and a final exam in this course. There was no video to watch prior to the first exam. Prior to the remaining three exams, a one to two minute video that the students could watch was embedded in the exam instructions. Depending on the length of the video, one or two minutes were added to the time available to complete the exam so that students did not lose any exam time by watching the video. Videos that were embedded included penguins chasing bubbles, playful kittens and baby wild animals including a baby hippopotamus, rhinoceros, giraffe and kangaroo.

The TEAM survey was sent, through REDCap, to every student within 24 hours after the completion of an exam. After the first exam, a reminder was sent through REDCap 48 hours after the initial email. Because of the low response rate, the time of evening that the emails were sent was changed but remained within the 24 hour post-exam window, as was the subject heading for the email.

Setting

Agency and Strategic Plan. This project was completed in a CON that is one of six health care colleges at a research-intensive university. There are an average of 600 traditional undergraduate students enrolled in the 3-year, 6-semester baccalaureate nursing program and 100 students are admitted each fall and spring semester. The CON offers six degree options. Along with the traditional Bachelor of Science in Nursing (BSN) degree, the college offers RN to BSN, Accelerated BSN, Master of Science in Nursing, Doctor of Nursing Practice and Doctor of Philosophy degrees. Table 1 shows the enrollment for each degree option at the start of the Spring 2021 semester.

This project aligns with the CON mission and strategic plan for student success. Retention of undergraduate students is a key metric in the 2015 – 2020 strategic plan. First year retention rates – beginning the first semester junior year, have been up to 91% but with an on-time graduate rate of 81%. The third year retention rate – start of the senior year – drops to 87% with on-time graduation of 72% (CON, 2015). Improving the third year retention and on-time graduation rates requires improving success in the junior year, including the medical-surgical course, traditionally one of the most stressful courses for the students related to the high number of failures in the course (Cowley, 2021). A strategic objective for undergraduate student success is to “provide effective academic support systems to enhance student success” (CON, 2015) with a focus on improving the mental and emotional health of students enrolled in the nursing program.

Stakeholders. There are many stakeholders for undergraduate nursing students successfully completing their program of study, however few have any role in this project. Those with the greatest role included the faculty and staff of the CON, who are committed to the

success of their students. Understanding how stress and anxiety can impact student performance, providing any support that lessens that burden will be helpful.

Site specific facilitators and barriers. With the change in exam administration to an on-line format through Respondus LockDown Browser, there were no site specific barriers to the project. There were two site specific facilitators. The course coordinator for the medical-surgical course approved embedding videos into the exam instructions for the 2nd, 3rd and 4th course exams. The Director of Instructional Design and Curriculum Development was able to ensure that the videos were embedded in the exam instructions so that the students could view them while in LockDown Browser and the videos would not interfere with the exam itself.

Sample

Target Population. The target population for this project was the CON first semester junior students in the traditional baccalaureate program, which is their 3rd semester in the nursing program. All students enrolled in the medical-surgical nursing course, had the option to participate or not (see Table 2). There were no exclusion criteria for the project.

Procedure

IRB Approval. This project was approved by the University of Kentucky Institutional Review Board for the Protection of Human Subjects (IRB) through an expedited review (#60378). A cover letter was included with the REDCap survey and completion of the survey was students' consent to participate. After the first exam and survey invitation, that had a very low response rate, a modification to the original IRB proposal was submitted and approved for a reminder email to be sent 48 hours after the initial email.

Measures and Instrument. The Test and Examination Anxiety Measure (TEAM) survey was used, with permission from Dr. Brooks, to evaluate test anxiety of the students (Brooks et al., 2015). This is a 26 item survey where students rate each item with a Likert scale of one (uncharacteristic of me) to five (characteristic of me). There are five subscales identified in the TEAM: state anxiety (7 items), worry (5 items), rumination (4 items), distractibility (4 items) and trait anxiety (4 items) (Brooks et al., 2015).

The survey demographic data were adjusted to reflect the students in the course being studied. An additional demographic question was added to surveys 2, 3 and 4 that asked if the student viewed the video prior to the exam. A 27th question was also added to those three surveys, asking whether watching the video helped to improve the student's exam performance (Appendix 1).

Data Collection. All TEAM surveys were sent electronically through REDCap. A cover letter included with the REDCap email described the project to ensure students that participation would not impact their grade in the course. Completion of the survey was consent to participate in the project.

Although a longitudinal study design would allow for comparison of a student's multiple responses, REDCap only sends out follow-up survey invitations to people who responded to the initial survey. When planning the second survey invitation, it was discovered that students who did not respond to the initial survey would not receive any further invitations. Because the survey response rate was so low, and in order to ensure anonymity, the survey was then divided into four separate arms, one for each of the four course exams.

For the first exam, 97 emails were sent to the students two hours after the exam was completed. There were only nine responses with seven being completed and an eighth with all but two questions completed. The IRB modification to allow for a reminder email 48 hours after the initial email was implemented with the second course exam. Ninety-seven emails were sent after the second exam. There were five responses and 92 reminder emails sent, with no additional responses. For each of the remaining two exams 96 emails and reminders were sent (1 student withdrew from the course prior to midterm). From that, there were two responses after exam three and one response after exam four.

Data Analysis. The original plan for the data analysis was to compare initial test anxiety levels to those after students had the opportunity to view the embedded video. A student's T-test was intended to be run in order to compare mean TEAM scores with and without the video (see Table 3). There was only one student who completed both the initial survey and one follow-up survey, after exam three. Of the five students who responded to the second exam survey (the first with an embedded video) only three watched the video and none had completed the initial survey after exam one. One additional student completed a survey after each of the exams with an embedded video but did not complete the initial survey. After discussion with a statistician, it was felt that summarizing the data would be the best option as an analysis of the findings.

Results

Demographics and Findings

There were 16 surveys returned, with a response rate of 2.6%. There were 13 unique survey responders of which 12 were female, 11 were 21 or over, 9 were white/Caucasian (1 did not respond), and 10 were juniors. Of the five responders who completed the second survey, two

did not view the embedded video, so only three completed the TEAM survey, leaving 14 surveys available for data analysis, from 11 unique responders.

Because of the low response rate, after discussion with a statistician, it was felt that summarizing the data was the best option (Table 4). For the TEAM survey, a total neutral score would be 78. The eight students who responded to the first survey had a total TEAM score of 87.46 and the three who responded to the second survey had a total TEAM score of 89.37 showing the presence of high levels of test anxiety. Of the five subscales within the TEAM survey: state anxiety, worry, rumination, distractibility, and trait anxiety, all 11 responders showed a higher than average level of worry, rumination and trait anxiety while having a lower than average level of distractibility and an average level of state anxiety.

The three students who watched the video prior to exam 2 felt that the video neither helped nor hindered their exam performance. One student who watched the video felt that it did not help the exam performance compared to no video. One student watched the video for all three exams where it was available and felt that it helped exam performance for two of those exams.

Discussion

Discussion of findings

Because of the low number of survey responses, it is impossible to draw any conclusions from the available data. Although students reported high levels of anxiety prior to exams, watching a cute/funny animal video prior to the exam had little effect on the exam performance.

It is impossible to compare, however, as only one student who completed the survey after the first exam, when a video was not available, completed another survey after watching a video.

While there were no studies evaluating whether viewing cute/funny animal videos prior to an exam would decrease test anxiety, images and videos that have been used in research have shown an improvement in performance. The previously studied video, at 30 minutes, was too long to be useful in a pre-exam setting (Bagliere, 2020). Finding videos short enough to not interfere with the testing was a challenge. Many potential videos were over six minutes and some were between 12 and 20 minutes and therefore not used in the project.

It is also unclear how the current global pandemic might affect students. The students who were eligible to participate in this project were admitted into the CON January 2020. After less than two months in the program all in-person education was immediately transitioned to online because of the SARS-CoV-2 pandemic. This likely had a great impact on their stress and anxiety levels. The American Psychological Association completes an annual survey about stress in the United States. The 2020 survey found that levels of stress in Americans was greatly increased from previous years, and the greatest increase in stress was seen in Generation Z adults (American Psychological Association, 2020). All of the students eligible for this project would be identified as Generation Z adults.

Eighty-seven percent of Generation Z survey participants said that in 2020, education was major source of their stress with uncertainty related to the 2020-2021 academic year being a source of stress for 82% (American Psychological Association, 2020). Forty-seven percent felt that they did not learn as much as they had in the past, 45% had a difficult time concentrating on coursework, and 52% felt less motivation to do their coursework (American Psychological Association, 2020). Fitzgerald and Konrad (2020) found that 90% of nursing students they

studied during the early months of the pandemic, had difficulty studying and 64% were concerned about managing their coursework. There were concerns directly related to the pandemic. In particular, students were fearful of a loved one contracting COVID-19, 84%, or getting sick themselves, 70% (Fitzgerald & Konrad, 2020). Another important finding was that 63% of Generation Z study participants felt lonely and that the pandemic was having a negative impact on their relationships (American Psychological Association, 2020).

Much interaction with others, including fellow students and faculty, had to be transitioned to Zoom. Zoom fatigue became a great concern throughout the pandemic and has impacted students, faculty and other employees who found themselves using Zoom for much of their daily interactions (Lee, 2020). There is an audio delay frequently associated with Zoom which increase the fatigue associated with multiple Zoom meetings, or classes, and can impact the perception of the person speaking (Lee, 2020). It is also difficult, if not impossible for faculty to develop direct eye contact with students on Zoom which can impact the student faculty relationship that can help with learning. People using Zoom frequently experience more tiredness and need more recovery time which can impact learning ("Remote-working boom causing 'zoom fatigue'," 2021). There are increased distractions that can occur when a student is learning from home over Zoom, and the large the large class size, in this case 97 students, can make it impossible for the professor to know if students are being present, paying attention and understanding the content. All of this can impact how they perform on exams as well as their desire to do additional work.

Throughout the pandemic, it felt as though on-line survey research was the only research being conducted outside of a hospital or research on developing a vaccine. I found myself deleting every email that had a request to complete a survey. If I felt this way, I assume that

students had similar feelings. The majority of students received seven separate requests to complete the survey for this project, two of which came after completing their last final exam of the semester. This could certainly have impacted their desire to complete yet another requested survey.

Impact and Next Steps

There are nursing programs, such as baccalaureate completion programs, that are held online and could benefit from a way to decrease test anxiety in their students prior to remote exams. Unfortunately, with the small response, it is unclear if there is any benefit to nursing exams. Continuing to provide a short cute/funny animal video prior to exams could help to increase the response of students. There is no cost associated with doing this so it could be easily sustainable to any program. This only requires time looking through video clips to find ones that could be funny or cute and are between 1 and 2 minutes in length.

Implications

It is clear that test anxiety is of great concern for college students in general, and nursing students in particular. Faculty strive to find ways to help students be successful and decreasing their test anxiety would be one way to help them be successful in a program. Going forward, having a way to decrease test anxiety for online nursing exams could be very helpful. Although embedding a video clip in the exam instructions would be an easy way for all students to be able to view the video, it is unclear whether it would help to decrease test anxiety.

Continued research needs to occur, both validating other methods of decreasing test anxiety that have been shown to have some effect, as well as developing new methods that can

be used for various exam situations. When students are face-to-face, therapy dogs could prove to be very helpful in decreasing test anxiety. Video clips of cute/funny animals could also be shown to the entire class prior to an exam.

It is also unclear how much the SARS-CoV-2 pandemic effected students and their stress. It is known that Generation Z adults had higher levels of stress and anxiety than any other adults during the pandemic (American Psychological Association, 2020). As the colleges and universities move back toward tradition class and exam presentation, it will be even more important to find ways to help students address and manage their stress and anxiety.

Limitations

The greatest limitation to this project was the sample size. There were 97 students enrolled in medical-surgical course at the start of the spring 2021 semester. A total of 670 emails were sent over the course of the four exams, including the reminder emails. From that, there were only 16 responses. Because there was only one student who completed a survey with and without the video, no conclusion could be made.

The videos that were embedded were chosen by me. While I felt that they were cute or funny, they may not have been perceived the same by students who viewed them. It was also difficult to find videos that were the appropriate length of one to two minutes. When searching for cute or funny animal videos, many of them were 12 to 25 minutes in length.

Although the videos were embedded in the exam instructions, there was no way to verify if students were able to view the video. Also, because the exam instruction were the same for

each exam, students may not have read through to the end of the instructions where the video was embedded.

Although not common, some students have difficulty accessing Respondus LockDown Browser and it can take some time for them to actually begin their exam. For those students who are delayed in starting their exam, they may not be willing to take any additional time away from starting the actual exam.

REDCap is an easy way to develop and distribute surveys. It provides a secure platform for data collection, but it does take time to learn. Having someone who is familiar with REDCap would be helpful with the entire process of development and distribution of the survey. While a longitudinal design would be ideal to evaluate before and after data, REDCap will only send follow-up surveys to those participants who responded to the initial survey. Because of the small response rate to the initial survey, it was not possible to continue with the longitudinal design. That would have limited follow-up emails to only those eight students who completed the first survey and could potentially impact the anonymity of future responses. The REDCap survey had to be reworked, into four separate arms, so that every student received an email invitation for each of the four surveys.

Conclusion

It is clear that nursing students have higher levels of test anxiety than other college and university students and that has only increased during the SARS-CoV-2 pandemic. Because exams are so integral to grading, and are required to move forward in a program, it is important

for nursing students to be able to perform at their best. Decreasing test anxiety is a way to help improve test performance, help with student retention and, ultimately, graduation.

Because of the increasing levels of stress that nursing students are facing, it will be even more important to find ways to mitigate stress and test anxiety. Faculty need to have tools at the ready to help their students. Being able to embed a short video clip in exam instructions could be one easy way to help decrease test anxiety and help students to be successful. Further research is needed to evaluate the effectiveness of these video clips.

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Tables

Table 1. Spring 2021 CON Enrollment

Program	Enrollment
Trad BSN	580
RN to BSN	175
ABSN	71
MSN	14
DNP	151
PhD	26

Table 2. Medical-Surgical Student Demographics: Start of Spring 2021 Semester (n=97)

Age	19 - 28
Gender	
Male	5 (5%)
Female	92 (95%)
Race/Ethnicity	
White	86 (89%)
Afr Am	6 (6%)
Hispanic	2 (2%)
Asian	2 (2%)
Multi	1 (1%)

Table 3. Study Measures

Measures	Description	Level of Measurement	Data Source
Demographics			
Gender	Male vs Female	Nominal	Survey
Race	European American, African American, Hispanic, Asian, Native American, Other	Nominal	Survey
Age	Age in years: 20 and under; 21 and over	Interval/Ratio	Survey
Class Standing	Junior, Senior	Ordinal	Survey
Exam Grade	Grade in score	Ratio	Survey -self report
Watched Video	Yes vs No	Nominal	Survey
Test and Examination Anxiety Measure			
Total Anxiety Score	Value	Ordinal	Survey
State anxiety score	Value	Ordinal	Survey
Worry score	Value	Ordinal	Survey
Rumination score	Value	Ordinal	Survey
Distractibility score	Value	Ordinal	Survey
Trait anxiety score	Value	Ordinal	Survey

Table 4. Average scores for TEAM Surveys 1, 2, 3&4

TEAM QUESTION	AVERAGE #1 (n=8)	AVERAGE #2 (n=3)	AVERAGE #3&4 (n=3)
1	4.14*	4.67	4.33
2	4.71*	5	4.67
3	4.43*	4.67	4
4	4.29*	3.67	1.67
5	3.57*	4	3.33
6	2.57*	1.67	3
7	3	2.67	2
8	3.75	3	3.67
9	3.5	4.67	3.33
10	3.5	3.67	4
11	3.625	4.67	3.67
12	3.625	4.67	4
13	3	3.33	3
14	2.375	1.33	2
15	3.125	2.67	3.67
16	2.875	4	3.67
17	3.625	4.67	5
18	3.875	5	4.67
19	3.875	3.67	4
20	3.875	4.67	4.67
21	4.25	4.33	3.33
22	1.75	1	1
23	2	1	1.33
24	3.625	3.67	3.67
25	2.125	1.67	1.67
26	2.375	1.33	1.67
27		3	2.33
TOTAL TEAM SCORE Q1-26			
78**	87.46	89.37	85.02

*only 7 answered

**neutral score for each question

Figures

Figure 1. Plan-Do-Study-Act cycle and Model for Improvement

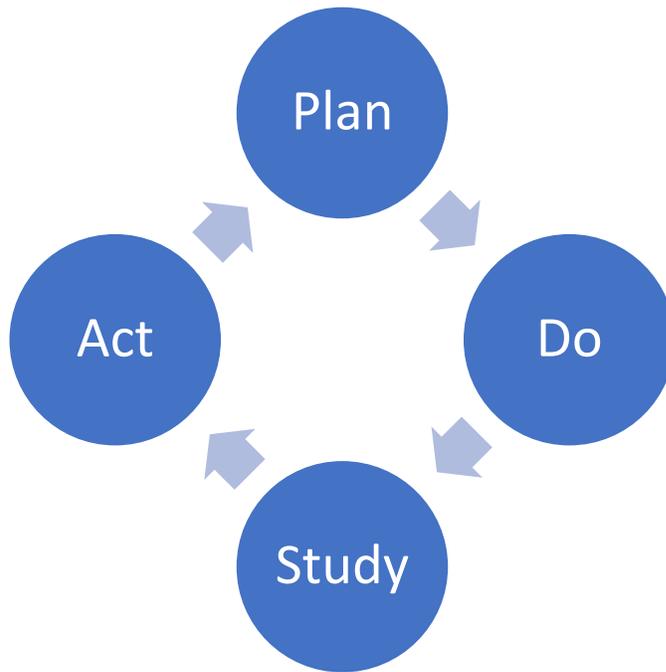
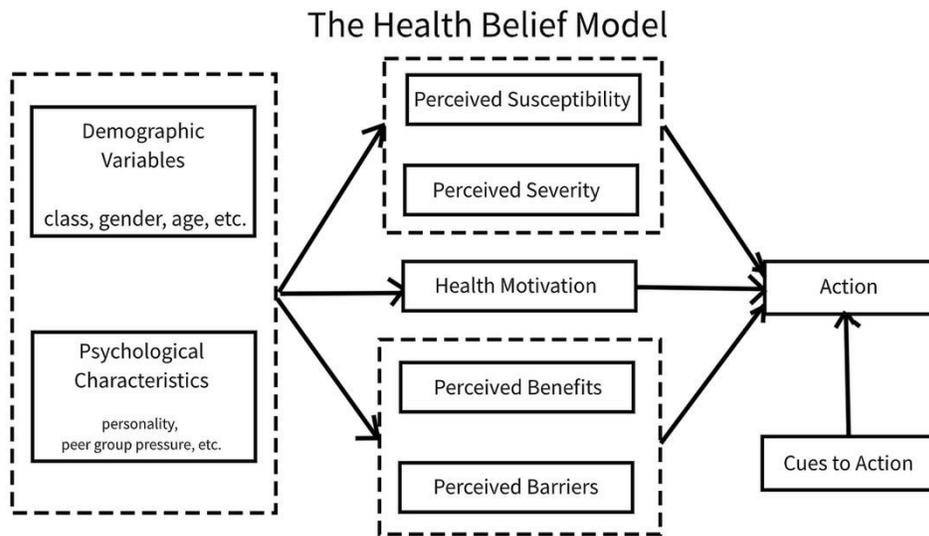


Figure 2. The Health Belief Model



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Appendix A

Appendix 1. Test and Examination Anxiety Measure

Test and Examination Anxiety Measure

Sex: Male/Female (circle one) *20 and under; 21 and over**

Race (circle one):

*White/Caucasian, African American, Asian, Native American, Other**

*Ethnicity: Hispanic/LatinX yes/no**

Class Standing: Junior, Senior*

*Did you watch the video clip prior to the exam yes/no***

Please read each statement below and consider how characteristic it is of you. Rate each statement using the following scale and record your answer in the space provided.

- 1 = Uncharacteristic of me
- 2 = Somewhat uncharacteristic of me
- 3 = Neither uncharacteristic nor characteristic of me
- 4 = Somewhat characteristic of me
- 5 = Characteristic of me

- ___ 1. The thought of an exam makes me anxious.
- ___ 2. Doing poorly on an exam makes me feel dejected.
- ___ 3. After an exam, I still continue to worry about how well I did on that exam until I find out for certain.
- ___ 4. When someone finishes an exam when I am halfway done with an exam, I become anxious.
- ___ 5. I have effective test taking skills.
- ___ 6. I often feel relaxed and laid-back.
- ___ 7. I view exams as a negative part of the education system.
- ___ 8. Worrying about my performance on an exam affects my performance on an exam.
- ___ 9. When presented with an exam, I begin to sense the physical symptoms of anxiety (sweating, increased heart rate, muscle tension, difficulty breathing).
- ___ 10. During an exam I become flustered, and my mind goes blank.
- ___ 11. When I am faced with an exam, I become anxious.
- ___ 12. Exams generally cause me more anxiety than other items in my life.
- ___ 13. I am easily distracted during exams.
- ___ 14. I have a difficult time comprehending the instructions of exams.
- ___ 15. When I am well prepared for an exam, I do not feel anxious about it.
- ___ 16. I feel anxious the majority of the time.
- ___ 17. I am hypercritical of myself usually.
- ___ 18. After I have performed poorly on an exam, I have a hard time with coping and moving on from that experience.

- ___ 19. I worry about how others will view me if I do poorly on an exam.
- ___ 20. I worry about how an exam will affect my success in the future.
- ___ 21. I wish there were other ways to measure my knowledge of material other than exams.
- ___ 22. I do not put in effort when it comes to exams because I know I will fail.
- ___ 23. When presented with an exam, I do not sense any physical symptoms of anxiety (sweating, increased heart rate, muscle tension, difficulty breathing).
- ___ 24. Exams are a way for me to demonstrate my knowledge.
- ___ 25. I avoid courses or professors that use a lot of exams.
- ___ 26. Exams do not cause me more anxiety than other things in my life.
- ___ 27. *Watching the video clip helped me to improve my exam performance***

*Demographic data that was changed to reflect the demographics of the medical-surgical course used for the project

**Added to surveys 2, 3, 4 when the video was embedded in exam instructions