

Running Head: ANIMAL ASSISTED THERAPY AND MOOD AND ANXIETY

Preface

The Effects of Animal Assisted Therapy on Mood and Anxiety in College Students

By:

Ashley Chermak

In Partial Fulfillment of
the Requirements for
The Alfred University Honors Program

May 3rd, 2016

Under the Supervision of: Dr. Beth Johnson

Chair: Dr. Beth Johnson

Committee Members: Dr. Stacy Bender, Dr. Danielle Gagne

The Alfred University Honors Program is very unique compared to other honors programs I have heard about at other schools. Other programs seem to burden the students with large amounts of extra, tasking assignments, which take time away from the students' already heavy course loads. The Honors Program at Alfred has never made me feel obligated to take any classes that I was not interested in, and the classes that I chose were a nice change of pace compared to my regular university classes. To me, the Honors Program here is a reward to the students who excel and want to learn more.

I have been in the Honors Program during all four years of my undergraduate degree. When I sat down to pick out my first Honors class, I was amazed at the random topics that seemed so out-of-the-box compared to other classes on my schedule. After taking four Honors courses, I can confidently say that I would recommend the program to anyone, whether they are a transfer student or an incoming first year student. The classes that I have taken were extremely interesting simply because of the topics, but what made the courses most worth-while for me were the other students that I was able to interact with.

Although Honors students do have a good GPA in common, there is a good change that one can walk into an Honors course and not recognize a single person in the room. I have met some very good friends through the program, and had the chance to take classes from professors that I would have otherwise probably never met. I enjoy that professors from all departments teach the Honors classes, because they bring unique perspectives with them from whatever their respective field might be. I would have never taken a science class with a chemistry or physics

professor if I had not signed up for the program. Likewise, I would never have had the chance to join a group of artists in a class taught by an art professor. The variety of classes offered is matched by the variety of teaching specialties that each Honors instructor brings to the class with them.

Although I did enjoy my Honors courses, I think the most beneficial aspect of the program for me has been the process of working on my thesis. In the fall semester of 2015, I designed an experiment about Animal Assisted Therapy (AAT) in the Psychology Research and Design II class. Throughout the semester, we slowly learned about the in-depth process of designing, conducting, and reporting the results of a study. I have always loved animals, and became very interested in AAT when I arrived on campus as a freshman and noticed all of the puppies and dogs wearing therapy vests on campus. After learning that some of the animals were being trained as guiding-eyes dogs, and some were being trained as therapy dogs or emotional support animals, I became more interested in the process of becoming a trainer. However, I learned that the students who train the puppies have to give them back to the university at the end of the year, and I would never have been able to part with my dog. When Dr. Johnson informed us that we would be conducting our own studies in Research and Design II, I knew right away that I wanted to attempt to conduct a study about AAT. In the fall, I began the process of finding materials, and designing my overall experiment. I learned how to find reliable surveys to target my variables of interest, and how to use SPSS to analyze my data. With 36 participants, I found statistically significant results that supported my hypothesis, and learned what I could change to someday improve the study. Shortly after completing my study, I began making changes and submitted my proposal to defend my Honors Thesis.

My thesis consists of an experiment that tested the effects of an AAT video on the reported mood quality and anxiety level of college students. Overall, I obtained results for 43 participants, almost equally half men and women. I created a short demographic survey for them to answer after consenting to the study, and then used the Brief Mood Introspection Scale (BMIS) (Mayer & Gaschke, 1988) and Current Anxiety Scale (CAS) (Spitzer et al 2006) to test mood and anxiety. I had already used the BMIS in my previous study, however the CAS was a new measure, intended to better target current anxiety better than the survey that I used in the first study. Both measures were relatively short and easy to understand, which were the main reasons I chose them. They had both been used in hundreds of previous studies and were rated high in validity and reliability. The procedure that my participants went through was very straight-forward and took between 10-20 minutes.

After signing the consent form and filling out the demographic survey in a classroom, they completed a copy of the BMIS and CAS. Then, I took individuals to observational counseling cubicles where I instructed them to watch a short video that was either about AAT or Albert Einstein. Participants were randomly assigned to either the control or experimental group. After watching the video, they filled out another copy of both the BMIS and CAS. They brought the completed surveys back to me in the classroom, and I gave them a debriefing statement to take with them.

The results of my study showed that there was a significant interaction effect of the type of video and measurement time on participants' mood. This means that my hypothesis about the effect of the AAT video on mood was successfully supported. As for my second hypothesis concerning anxiety, I unfortunately did not find any significant results for the interaction effect of the video type and measurement time on anxiety. However, there was a small difference

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between the anxiety of people who watched the AAT video versus the Einstein video, but it was not a large enough difference to be statistically significant.

Overall, I found significant support for one of my hypotheses, which I was very excited about. I learned an incredible amount about the research process from my thesis preparation, and I would someday like to implement the changes that I have concluded would benefit the study. After completing both of my studies about AAT, my interest in the topic has only grown further. I am very interested in completing graduate work with therapy animals, and was ecstatic to learn that the School Psychology department recently adopted a puppy that I will be allowed to help train as a graduate student. My plans for research include studies throughout graduate school, as well as my dissertation. I would like to be able to start the approval process earlier than I did during my thesis, so I might get approved to conduct research with live animals. If I could implement live animals into my design, I feel I could get a much more realistic set of data concerning participants' mood and anxiety changes. I hope to conduct a study like this in the near future and hopefully find results that lend support to my idea of developing an AAT program on campuses around the country.

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A Thesis Presented to
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ABSTRACT

During this study, I tested the effects of an Animal Assisted Therapy video on participants' mood quality and anxiety level. I hypothesized that participants who watched an AAT video would report better mood and lower anxiety than the control group. Forty three undergraduates completed two surveys to measure mood and anxiety level before and after watching their assigned video. Data were analyzed using a 2x2 ANOVA with dependent variables of mood and anxiety, and results showed that participants in the AAT group were in a significantly better mood than the control group after watching the video. There were no significant results for anxiety for either group. Overall, the AAT video had a positive impact on people's mood and anxiety level.

Keywords: Animal Assisted Therapy, AAT, college students, mood, anxiety

Animal Assisted Therapy and Its Effects on
Anxiety and Mood in College Students

The use of therapy animals is an increasingly popular therapeutic technique that is currently being studied for its effectiveness. Therapy animals can range from dogs and cats to horses, rats, and reptiles, and the process to become a registered therapy animal can be extensive and difficult. Animal Assisted Therapy (AAT) is currently being studied for its effectiveness as both an independent therapy technique and as a supplement to already existing treatments. Although this therapeutic technique is growing in approval among mental health professionals, the actual level of effectiveness is not exactly known (Lefkowitz, Paharia, Prout, Debkiak, & Bleiberg, 2005). In order to better determine the possible influence of AAT as a therapeutic technique, researchers have conducted studies that focus on AAT's impact on various groups of people with a variety of psychological and physiological disorders.

Although AAT is a relatively new and unconventional therapeutic technique, its uses are proving to be very beneficial for people of varying demographics. It has been used to help treat children, adolescents, adults, and the elderly, along with groups of people with various psychological and physical obstacles (Stewart, Dispenza, Parker, Chang, & Cunnien, 2014). AAT is becoming increasingly popular in settings that deal with young children, and it is partially due to the fact that the children feel more comfortable during therapy when there is an animal present (Dietz, Davis & Pennings, 2011). Researchers have investigated the effects of AAT on groups of children and adolescents with varying psychological and developmental disorders including Post Traumatic Stress Disorder (PTSD), Attention Deficit Hyperactivity Disorder (ADHD), and Autism Spectrum Disorder (ASD). A study conducted by Dietz, Davis, and Pennings in 2011 found that, when accompanied by a therapy dog versus not accompanied

by a therapy dog, children who suffered from PTSD due to sexual abuse showed a significant decrease in trauma symptoms including anxiety, depression, anger, PTSD, dissociation, and sexual concerns (Dietz et al., 2011). The researchers' findings support the idea that the presence of a therapy animal helps children to feel more comfortable during therapy when compared to children who received the same therapy without any AAT component.

AAT is also being tested for its potential uses with children who have ADHD and ASD. Although these disorders can be extremely difficult to deal with and vary greatly from child to child, there is significant support for AAT being a beneficial addition to existing treatments (Schuck, Emmerson, Fine, & Lakes, 2015). It would appear that, like other types of therapy, the effectiveness of AAT may increase with the amount of time that clients receive AAT. This was shown by the results of a 12-week study performed by Schuck and colleagues, who exposed their experimental group of children with ADHD to over 48 total hours of AAT. Their findings indicated that, compared to the control group, children who were treated using AAT showed a significantly greater decrease in problematic behaviors such as hyperactivity and impulsivity, while also showing a significantly greater increase in social skills. Studies such as this help develop support for AAT as a viable and effective treatment for ADHD, while similar studies are being conducted by researchers who are interested in other disorders such as ASD in children.

O'Haire, McKenzie, McCune, and Slaughter (2014) conducted an 8-week study that implemented an AAT program for children with ASD in 15 different schools. Each class that participated in the AAT program was given a class guinea pig that was integrated into daily classroom activities. By the end of the 8 weeks, the researchers found that children in the AAT group showed significantly greater increases in social approach behaviors and overall social skills, while also demonstrating greater decreases in social withdrawal behaviors than the control

group. Along with these findings that the research team hypothesized would occur, there was also an unexpected benefit that they had not anticipated. After being exposed to the guinea pig in class, parents reported that their children were much more interested in attending school (O'Haire, McKenzie, McCune, & Slaughter, 2014). The team hypothesized that perhaps the presence of the animal helped enhance the overall social atmosphere of the classroom, which made the children more motivated to attend. In recent years, studies such as the few mentioned already have provided promising support for AAT as a treatment for children with various mental and developmental disorders; however, AAT has also been shown to be beneficial to other age groups as well.

Adolescents who are forced to deal with adverse situations including mental, physical, and sexual abuse have also been the subjects of experiments testing the effectiveness of AAT. One study in particular focuses on the influence of AAT with a group of teenagers in residential care who suffered from various psychological disorders due to trauma. Balluerka, Meula, Amiano, and Caldentey focused their 2014 study on a group of teenagers in residential care who all suffered from some kind of childhood trauma. By implementing AAT in a farm setting with animals such as sheep, goats, pigs, and chickens, the research team discovered that the children showed significant improvements in their psychological symptoms and, overall, a more secure attachment style. Using only one group of participants, the team found that from pre-test to post-test, there was an overall significant improvement in the way the teens viewed their attachment to their caretakers, and ultimately perceived the relationship in a more positive way (Balluerka, Meula, Amiano, & Caldentey, 2014). These results provide promising support for the use of AAT with teenagers in general, but particularly those who have been exposed to severe trauma. This study also provides support for the use of various animals that may seem “less

conventional” than animals like dogs and horses, which are some of the more commonly-used animals during AAT.

Research has also been done on adolescents as they progress into young adulthood, as college students living on and off campus. Throughout college, students encounter feelings of anxiety, stress, varying mood, and even loneliness due to being in a new place away from friends and family. In order to evaluate the potential effects of the presence of a therapy animal on college-aged students’ feelings of anxiety and loneliness, Stewart, Dispenza, Parker, Chang, and Cunnien conducted a pilot study in 2014. While the study was very informal and observational, its results show promising support for the future of AAT. The team implemented the presence of a therapy dog in a dorm building where students could choose to stop and interact with the dog for as long as they pleased. Stewart and his colleagues reported that they felt much less anxious and lonely after interacting with the dog compared to before they saw the dog. Many students who participated expressed significant interest in an AAT program and indicated that they would utilize the program if it were offered on campus (Stewart, Dispenza, Parker, Chang, & Cunnien, 2014). Universities could benefit students by offering pilot AAT programs and then use the results to better understand the therapeutic needs of the study body. Another study was designed to evaluate the effects of the presence of a dog while college students were asked to write about a traumatic life experience (Hunt & Chizkov, 2014). When compared to those who were asked to write about a traumatic experience without a dog present, students who were placed in the traumatic writing group with the dog present reported a significantly greater decrease in depressive symptoms from baseline to post-test. Interestingly, the results were most strongly connected to participant tendency toward introversion or extroversion. The researchers found

that introverts benefitted most from the dog's presence while writing about their traumatic stories (Hunt & Chizkov, 2014).

Although there are various theories as to why AAT is proving to be an effective form of therapy, many of the researchers mentioned agree that it has something to do with the relationship that people can form with animals. Because of the overall pleasant demeanor that most dogs and other social animals have, clients of AAT experience a sense of unconditional positive regard from their therapy animal. The animal does not criticize or judge what the client says to the therapist, therefore the client can feel free to say anything to the animal without fear of judgement. The idea of unconditional positive regard is a key element to successful counseling, so the fact that clients can create this relationship very easily with an animal might be part of why AAT is successful.

Although this study is not focused on the reasons *why* AAT might be successful, it is focused on the overall effects of AAT on the mood and anxiety level of college students. During my literature review, I found it very difficult to find many studies that used college students as participants. I strongly felt that this was a gap in the research, and that my study could help provide information for the effects of AAT on a specific demographic group. My hypotheses were that, compared to the control group, participants who watched a video about AAT would report being in a better mood and have a lower level of anxiety.

Method

My study was set up as an applied 2x2 mixed experimental design. The independent between-subjects variable was the type of stimuli administered to participants. The experimental independent variable was operationally defined as a two minute informational video about AAT, while the neutral independent variable was operationally defined as a two minute video narrating

the biography of Albert Einstein. The independent within-subjects variable was the participants' reported mood and anxiety levels. The dependent variables were self-reported overall mood and anxiety before seeing the video and again after, level of anxiety, and mood quality. Anxiety and mood were calculated using the Current Anxiety Scale (CAS; Spitzer, Kroenke, Williams, & Lowe, 2006) and the Brief Mood Introspection Scale (BMIS; Mayer & Gaschke, 1988).

Participants

Forty three undergraduate students from a small private university in upstate New York participated in this study. The participant pool consisted of 22 self-identifying men and 21 self-identifying women. Participants ranged in age between 18 and 24 with a mean age of 18.69 years old. Of the 43 participants, 22 were randomly assigned to watch the video about AAT, while 21 were randomly assigned to watch the neutral video. Nearly all of the participants were Introduction to Psychology students at the university and received experiential credits for participation. The exclusionary criteria included anyone under age 18, and participants were only allowed to volunteer for the study one time. I recruited participants by posting study sign-up sheets in the hallway of the psychology floor of the science building on campus.

Materials

I created a demographic survey that asked participants to indicate their age, current year in school, self-identifying gender, and any aversion to animals (see Appendix). The information about any aversions to animals was indicated by choosing "No", "Somewhat", or "Yes" to the question, "Do you have any fear or aversion to animals?". Of all of the participants, none indicated having an absolute fear of animals, but ten did say they somewhat feared animals.

The Brief Mood Introspection Scale (BMIS) is a 16-item survey that lists eight emotions characterized as positive, and eight emotions characterized as negative. Participants indicated

their current level of each mood by using a 4-point Likert scale (definitely do not feel, to definitely feel). A total of eight items were reverse scored, and the overall score was calculated by adding the rating for each individual item. The higher scores indicated a more positive overall mood, while lower scores indicated a more negative overall mood. Raw scores were interpreted using the following range: scores between 0-16 indicated a negative mood, scores ranging from 17-32 indicated a neutral mood, and scores ranging from 32-48 indicated a positive mood (Mayer & Gaschke, 1988). Examples of the items include emotions such as “Calm”, “Fed Up”, “Happy”, and “Tired”. After the 16 items were completed, the bottom of the survey contained a “current overall mood” scale. The scale (very unpleasant mood to very pleasant mood, zero being completely neutral).

The Current Anxiety Scale (CAS) was an adapted version of the Generalized Anxiety Disorder 7-item Scale (Spitzer et al 2006) which I formatted to apply to the participants’ current feelings of anxiety as opposed to their feelings of anxiety over a two week period. The scale included seven items that required participants to respond using a 4-point Likert scale (not at all, to severely). Each item was preceded by the statement, “At this moment, how much are you being bothered by the following problems?” The items included statements such as “Feeling nervous, anxious, or on edge” and “Feeling afraid as if something awful might happen”. Each item was regularly scored, to add up to a total a raw score between 0- 21 points. Scores from 0-6 indicated low anxiety, scores from 7-13 indicated moderate anxiety, while scores from 14-21 indicated high anxiety. Like the BMIS, there was also a scale at the bottom of the CAS survey, where participants indicated current overall level of anxiety (not anxious at all, to extremely anxious, with zero being neutral).

The videos I used were both found on Youtube.com and each lasted approximately 2 minutes in length. The video I used in the experimental group consisted of various therapy animals interacting with people in school, hospital, and home settings, while information about AAT appeared in text on the screen (peacefulsue, 2009). Rather than using a video that only contained animals in general, I wanted the participants to feel as if they were experiencing AAT by watching others experience it. Because I did not utilize real animals that participants could physically interact with, I wanted the experience to be as close to an AAT session as possible. Due to the fact that I could not find an actual visual recording of an AAT session, I felt this video was a good representation. The video that I used for the control group was intended to be neutral and not significantly stimulating in any way. The video was a short biography about Albert Einstein, and was narrated by a man with a British accent (CloudBiography, 2012). During the pilot study, this video was shown to be almost completely neutral and did not evoke any significant change in mood or anxiety in participants from pre-test to post-test. Each of the videos was viewed on a 13” or 15” laptop, or a 2nd generation iPad. After collecting my data, I used SPSS to analyze my data.

I chose to use these specific surveys for multiple reasons, one of which being their length. In 2015, I conducted a pilot study to test my materials and procedure, and I found that a shorter survey worked well because participants did not grow bored during a lengthy survey. I chose to use the CAS (GAD-7) because of its reliability and validity for the measure of anxiety in the general population (Lowe, Decker, Müller, Brähler, Schellberg, Herzog, & Herzberg, 2008). The BMIS proved to be very effective at quantifying participants’ mood during the pilot study in 2015, and seemed to be a reasonable length that participants could focus on.

Procedure

After receiving approval from the Human Subjects Research Committee (HSRC), the first step to conducting my study was to post sign-up sheets for participation in the science center. The sheets indicated on what days and at which times participants could come to participate in the study. Once my participants had expressed interest in the study, I waited for them to arrive on the day and time they chose. The consent form, demographic survey, and a pre-test BMIS and CAS were all completed in the main classroom. After they were completely finished with each survey, I placed them in a small counseling room based on the flip of a coin I did before they arrived. The individual rooms were located on either side of the main classroom, which contained observational 2-way glass so I could monitor the participants. After flipping the coin for my first participant, the rest were assigned to a condition by every other person, alternating between conditions. Once they were placed in the correct room, I instructed the participants to watch a short film that was already cued on the laptop or tablet placed in front of them. After watching the video, I told them to complete the CAS and BMIS and then return to the main room to give me their completed surveys. After I left their room, I repeated these instructions with all of the other participants. As they finished and handed me their surveys, I gave them a debriefing statement and asked if they had any questions. The entire study lasted between ten and 20 minutes for each participant.

Results

To test whether participants' mood would be improved by watching an animal therapy video, data were analyzed using a 2 (Video Type) by 2 (Measurement Time) mixed factorial analysis of variance (ANOVA) with a dependent variable of mood quality as measured by the Brief Mood Introspection Scale (BMIS). There was a significant interaction effect of the video

participants watched on their reported mood score, $F(1,41)=22.22$, $p<.001$, partial $\eta^2=.35$.

Participants who were assigned to watch the AAT video reported a mean mood score of 34.36 ($SD=4.23$) before watching the video, and reported an improved mood quality after watching the AAT video ($M=38.64$, $SD=5.26$), whereas those who were assigned to watch the Einstein video, reported a similar mean mood score of 34.19 ($SD=4.73$) before watching the video, which worsened after watching the Einstein video ($M=31.91$, $SD=6.77$). This interaction had a medium effect size of partial $\eta^2=.35$. There was no significant main effect of mood quality within subjects, $F(1, 41) = 2.04$, $p=.16$, partial $\eta^2=.047$. Participants' mood quality before and after watching either video did not change (pre-test $M= 34.28$, $SE=.68$, post-test $M= 35.27$, $SE=.92$). However, there was a significant main effect for the two different movie options, $F(1,41) = 5.54$, $p <.05$, partial $\eta^2=.12$. The main effect of type of video had a relatively small effect size. Overall, participants who watched the AAT video reported being in a better mood ($M=36.50$, $SE=1.03$) than those who watched the Einstein video ($M=33.05$, $SE=1.05$).

To test whether participants' anxiety would decrease by watching the animal therapy video, data were analyzed using a 2 (Video Type) by 2 (Measurement Time) mixed factorial analysis of variance (ANOVA) with a dependent variable of anxiety level as measured by the Current Anxiety Scale (CAS). There was not a significant interaction effect of the video participants watched on their reported anxiety score, $F(1,41)=.35$ $p=.56$, partial $\eta^2=.008$. Participants who were assigned to watch the AAT video reported a mean anxiety score of 2.18 ($SD=2.77$) before watching the video, and reported a lesser level of anxiety after watching the AAT video ($M=.73$, $SD=1.42$), whereas those who were assigned to watch the Einstein video, reported a mean anxiety score of 4.90 ($SD=4.44$) before watching the video, which improved slightly after watching the video ($M=4.00$, $SD=4.74$). There was a significant main effect of

reported anxiety level within subjects, $F(1, 41) = 6.43, p < .05$, partial $\eta^2 = .14$. Participants' anxiety level before and after watching either video did not change (pre-test $M = 3.54, SE = .56$, post-test $M = 2.36, SE = .53$). However, there was a significant main effect for the between subjects variable, which was the two different movie options, $F(1,41) = 9.22, p < .05$, partial $\eta^2 = .18$. The main effect of type of video had a relatively small effect size. Overall, participants who watched the AAT video reported lower levels of anxiety ($M = 1.46, SE = .69$) than those who watched the Einstein video ($M = 4.45, SE = .706$).

Discussion

The original hypotheses were that, compared to those who watched a video about Albert Einstein, participants who watched a video about AAT would show a more positive mood and a lower level of anxiety. The results indicated that there was a significant interaction between the video people watched and their quality of mood afterward. However, there was no significant interaction between the video that they watched and their reported anxiety level. There were significant results with small effect sizes for the main effect of the different movies on participants' mood quality, and also for the main effect of the different movies on participants' anxiety level. There was also a significant main effect of reported anxiety level within the subjects, which means that their anxiety level could have changed simply because of the time between the pre-test and post-test, and not necessarily because of which video they watched.

The results that I found were consistent with what other researchers had already discovered about the effects of AAT, especially when concerning college-aged students. In particular, my findings were very similar to the findings of Stewart, Dispenza, Parker, Chang, & Cunnien (2014), when they discovered that interacting with a therapy dog helps decrease feelings of anxiety and loneliness in college students. These researchers had participants who were

demographically similar to mine; therefore I feel that my results can be compared to theirs, however they utilized an actual therapy dog, rather than a video about therapy animals. Stewart and his colleagues also determined that an AAT program on campus would most likely be very well-received and beneficial to students who are having a hard time adjusting to being away from home or missing their own pets.

The results that I found indicated that overall, the AAT video had a significant effect on participants' mood, but not on their anxiety. This may have happened for many different reasons, one of which being that perhaps the time spent during the video was actually when participants' minds wandered and allowed them to think about all of their responsibilities and current stresses. As for the results that supported my original hypothesis about mood quality, there could be different reasons as to why people who watched the AAT video reported being in a better mood afterward. Perhaps the video helped improve their mood only because of the animals' cute nature, and not because of the information about the therapeutic effects of AAT. This could threaten the internal validity of the study. In order to improve the internal validity, I would have to search for more AAT videos, and conduct a pilot test to make sure they are testing exactly what I want them to. A second unintended reason for the changes in mood after watching the AAT video could have been participants' feelings toward their own pets that they miss at home. In order to control for this or determine if it is a contributing factor to the BMIS scores, I could add an item to the demographic survey that allows participants to indicate if they have pets at home, and perhaps indicate on a Likert scale how much they miss them at that time. Another weakness of the study could have been the participants themselves. Out of the 43 participants, most of them were taking part in order to fulfill a requirement for their PSYC 101 course. While watching them fill out their informed consent form and their first set of surveys, I inferred that

many of them were not taking the study very seriously, which resulted in their answers being on either extreme end of the Likert scales. I came to my conclusions by observing the participants both in the larger classroom and in the individual cubicles. While in the main classroom, many of them talked quietly with their friend sitting next to them, or had their phone in their line of sight on the table next to their surveys. While in the cubicles, many of them were using their cell phones, and quite a few of them looked frustrated and bored after I gave them the directions to watch the video and then fill out the surveys again. Perhaps they thought it was redundant to complete the same surveys again, and therefore they may have rushed through the post-test materials or simply circled either extreme ends of the Likert scales. Unfortunately, the results of the individuals who were not interested in the study were calculated just like those who gave honest and thoughtful answers, so there is no way to know if the data accurately reflected how every participant actually felt at the time.

Due to the demographics of the participants, I would say that my findings are generalizable to other small private universities in the north-east region of the United States. The study has good external validity, and if someone were to use my design to test other students at a similar college, I think they would mostly find similar results.

If I were to continue this research in the future, my first change would be to the overall design of my study. In order to increase internal validity, I would like to have not only the Einstein and AAT video, but also a video that just contains cute animals doing various things. If I could discern whether peoples' mood and anxiety changes because of the pure presence of animals or not, then I could better take into account the fact that maybe there is no need for the therapeutic aspect at first. Perhaps the sight and thought about animals in general is enough to help improve peoples' mood and anxiety. If this is the case, then I would have to edit my

hypotheses and rethink my original idea in order to account for the possibility that the stimulus of animals in general is powerful in and of itself.

Overall, AAT is a therapeutic technique that is very much worth studying further. My results, as well as the results of others, indicate that there are most likely various settings and groups of people that would benefit from the use of an AAT program. I think that future research should focus on experimental designs, where live animals are present for participants to interact with. I predict that the most beneficial studies would involve participants sitting through an actual AAT session with a licensed therapy animal and a licensed psychologist, in order to see what the real effects of an actual session might be like for various people. If studies like this could be conducted and replicated and improved to be used again in various settings and regions around the world, then the effects of AAT could be extremely generalizable to different groups of people.

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Appendix

Demographic Survey

Please fill out this short survey by circling the best answer for yourself

1) Age: -17 -18 -19 -20 -21 -22 -23 -older than 23

2) Year in College: -1st -2nd -3rd -4th year -more than 4 years -not in college

3) Identifying Gender: -WOMAN -MAN -OTHER

4) Do you have any kind of fear or aversion to animals? -YES -NO -SOMEWHAT