

Older Adults, Therapy Dogs, and College Students: Analysis of Service-Learning Blog Posts

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Abstract

Research has shown that animal-assisted activities have specific benefits for older adults, such as decreasing loneliness (Banks & Banks, 2002; Banks, Willoughby, & Banks, 2008; Calvert, 1989) and depression (Grubbs, Artese, Schmitt, Cormier, & Panton, 2016; Le Roux & Kemp, 2009; Moretti et al., 2010) while increasing positive emotion (Lutwack-Bloom, Wijewickrama, & Smith, 2005), motor activity (Grubbs et al., 2016), and verbal and social interactions (Berstein, Friedmann, and Malaspina, 2000; Fick 1993). Older adults with Alzheimer's disease experience specific benefits, such as increased socialization (Churchill, Safaoui, McCabe, & Baun, 1999; Greer, Pustay, Zaun, & Coppens, 2001; Mossello et al., 2011; Richeson, 2003) as well as decreased agitation (Churchill et al., 1999; Richeson, 2003) and anxiety (Kanamori et al., 2001; Mossello et al., 2011).

The purpose of the present study is to examine the experiences of students participating in service-learning in order to evaluate the effectiveness of animal-assisted activities with older adults in long-term care facilities. The authors studied a total of 177 blog posts from the past six academic school years (2012-2018) using content analysis. These blogs were written by university students as a reflection on their required service-learning activities for a course on *Animal-Assisted Therapy*. Common themes from the blogs include: positive affect of the residents, increased conversations, reminiscence on the resident's past, and a facilitation of physical activity. Some residents did not want to interact with the team, and fewer residents had negative interactions or responses to the team. Animal-assisted activities seem to be promising in elder care settings in helping them initiate conversation, encouraging memory recall and physical activity, and inducing positive emotions. Students also reported experiencing positive effects from both their interactions with the residents as well as the therapy dogs, and the authors suggest further exploration of this topic.

Introduction

Older adults in long-term care facilities face a unique set of challenges. Fullerton and colleagues (2009) assert that more individuals in nursing homes have non-dementia mental illnesses (24%) than those who have solely dementia (18%). Other studies have produced similar findings; specifically, Choi, Ransom, and Wylie (2008) found that 55.4% of residents were diagnosed with depression, 7.8% with bipolar disorder, and 15.6% with an anxiety disorder.

Symptoms of depression in nursing homes can be due to a variety of stressors. Residents report the severe effects of the loss of autonomy, independence, freedom, and privacy, as well as their struggles watching the health of others around them deteriorate (Choi et al., 2008).

Many residents report missing their families upon moving into the institution (Choi et al., 2008). Similarly, leaving one's home to enter long-term care may result in the dissolution or hindrance of relationships with neighbors and friends, contributing to feelings of isolation (Webster et al., 2016). Though residents may receive visits from their spouses, children, and other members of their family, pets are also a significant member of the family (Mueller, Fine, & O'Haire, 2015). According to Banks and Banks (2002), 93.3% of residents in nursing homes state the reason they do not have a pet with them is because animals are not allowed at the facility. 100% of those residents are bothered by this and would like to have a pet.

“For nursing home residents, most of whom are in their last decade of life, making efforts to improve their psychosocial wellbeing is...an ethical and moral imperative” (Choi et al., 2008, p. 536). One way to offset the negative effects stemming from the transition to elder care is through animal-assisted interventions. An animal-assisted intervention (AAI) can be defined as the intentional use of a human-animal team to produce physical, psychological, social, and/or cognitive therapeutic outcomes. This is also called a human-animal interaction. These interactions can be further classified into animal-assisted therapy (AAT), animal-assisted education (AAE), and animal-assisted activities (AAA). While AAT and AAE are formal and structured interactions designed to accomplish specific goals, AAA is generally more unstructured and the goals are less specific (International Association of Human-Animal Interaction Organizations, 2014, pp. 5).

Extensive research suggests that animal-assisted activities may be beneficial to older adults in a variety of ways including reduced loneliness (Banks & Banks, 2002; Banks et al., 2008; Calvert, 1989), decreased depression scores (Grubbs et al., 2016; Le Roux & Kemp, 2009; Moretti et al., 2010), increased positive mood (Lutwick-Bloom et al., 2005), and a self-reported calming effect (Moretti et al., 2010). Grubbs and colleagues (2016) observed an increase in physical activity in the residents when therapy animals visited the facility.

Animal-assisted activities are also associated with social benefits in older adults. Berstein and colleagues (2000) found that residents were more likely to initiate conversation and participate in longer conversation when participating in animal-assisted activities. Similarly, Fick (1993) observed an increase in verbal interactions and Berstein and colleagues (2000) observed an increase in touch.

Even residents with dementia showed an increase in social interactions and vocal expressions (Churchill et al., 1999; Greer et al., 2001; Mossello et al., 2011; Richeson, 2003), touch (Churchill et al., 1999), pleasure (Mossello et al., 2011), physical activity (Friedmann et al., 2014), and a self-reported calming effect (Moretti et al., 2010), as well as a decrease in depressive symptoms (Friedmann, et al., 2014; Menna, Santaniello, Gerardi, Di Maggio, & Milan, 2016) and general sadness (Mossello et al., 2011).

Some benefits of animal-assisted activities in older adults seem to be specific to those with dementia. Animal-assisted activities have been associated with an improvement in dementia symptoms (McCabe, Baun, Speich, & Agrawal, 2002) and decreases in agitation (Churchill et al., 1999; Richeson, 2003),

aggression (Kanamori et al., 2001), and anxiety (Kanamori et al., 2001; Mossello et al., 2011). Some studies have suggested that individuals with dementia experience changes in cognition, including an increase in general alertness (Mossello et al., 2011) and cognitive function (Menna et al., 2016). Another study even found an increase in nutritional intake and body weight when a fish tank was placed in their dining area (Edwards & Beck, 2002).

According to Barker, Pandurangi, and Best (2003), once exposed to animal-assisted activities, 71% of their participants reported wanting to partake in animal-assisted interventions again. Similarly, according to a study by Moretti and colleagues (2010), 100% of participants would recommend animal-assisted activities to other older adults, and 80% were interested in continuing the interventions. The purpose of this study is to analyze the potential benefits and drawbacks that older adults in long-term care facilities experience as a result of animal-assisted interventions.

Procedure

Student Demographics

The participants in the present study were freshmen college students enrolled in a two-semester honors course sequence comprised of FYE 1220H: Animal-Assisted Therapy, and FYE 1410H: Animals, Kids, and Families. Students in the honors program could choose between several mandatory course options, including the *Animal-Assisted Therapy* course sequence. The students were of various majors (including biology, psychology, education, nursing, and engineering), and consisted of thirty-nine females and seven males ($N = 46$).

Course Structure and Service-Learning

The *Animal-Assisted Therapy* course sequence focused primarily on the various facets of human-animal interactions (HAI) with a specific emphasis on using animals in a therapeutic setting. This was highlighted by the students' participation in service-learning. Service-learning can be defined as an enhanced educational experience in which students collaborate with the community in order to apply academic knowledge and skills (Berea College, 2004). As such, service-learning is reciprocal in nature; the community receives a service to assist with an identified need, and the students gain knowledge and experience beyond what is provided in the traditional classroom setting (Vogel & Seifer, 2011).

The course sequence utilized a service-learning facilitator to coordinate students to work with local therapy horses or dogs. The students who worked with therapy dogs were further assigned to work with a specific handler at one or more facilities. Students visited a total of twelve long-term care facilities in the local area. There were nine assisted living facilities, two rehabilitation facilities, and one club for individuals with Alzheimer's. Of the nine assisted living facilities, six had memory care units.

Twenty-four dogs participated in the service-learning visits over the course of six years. All dogs were certified therapy dogs through organizations such as Pet Partners or Therapy Dogs International, or were in training to become certified. Dogs ranged in age and size, but were groomed and trained according to their certifying agency's standards. Breeds include German Shorthaired Pointer, Golden Retriever, German Shepherd, Australian Shepherd, Cavalier King Charles Spaniel, Shih Tzu, Bichon, Border Terrier, Border Collie, Great Dane, Dalmatian, and various mixes. All dogs were accompanied by a trained handler. Most students were familiar with dogs; however, many students were not familiar with interacting with older adults in a long-term care facility, and almost no students had experience visiting with therapy dogs in any setting. One student wrote, "During my service-learning, I learned many things about myself. At first, I was dreading working at the nursing home, but I ended up forming a bond with many of the residents we visited."

Though faculty interpret and implement service-learning in different ways, one consistent component of service-learning is reflection, by which students reflect on their service experience (Anderson, Boyd, Marin, & McNamara, 2019). In order to fulfill the reflection component, students in the *Animal-Assisted Therapy* class were required to write five blog posts each semester within two days of completing their service learning visit. Instructions were given to include details about the events that occurred during their experience, as well as the students' reaction to the interactions. The specific instructions in part are listed below.

Blog posts should conform to the following specifications:

1. Due within 48 hours of interactions with community partner.
2. Must be posted to the course blog with the title, "Service Learning Reflection: Week of __[date]_____" with the week beginning on Monday; for example, "Week of 9/11/2017"
3. Must include: name, date of visit, time range for visit, and specific location(s) of visit.
4. Must be a minimum of two paragraphs including:
 - a. What happened during the interaction?
 - b. What was your reaction to the experience?
 - c. How did this experience relate to the class? Include a minimum of one citation in APA format from either the text or your research articles that directly relates to the content of the blog post and *explain how it relates*.
 - d. Do you have any questions or concerns about the experience?
 - e. Students are required to include a minimum of one photograph of the service-learning visit for at least three of their blog posts.

A total of 196 blog posts from the past six academic school years (2012-2018) describing visits with at least one handler and therapy dog to long-term care facilities such as nursing homes and assisted living facilities were analyzed. Three students deleted their blogs during data collection, resulting in a total of 177 blogs in the final analysis.

Coding

Students signed a release form allowing their academic work to be used. Initially, the relevant blogs were analyzed for reactions to the animal-assisted intervention (therapy dog visit). Reactions from residents, students, handlers, and staff were recorded. Observations were then categorized into groups based on similar patterns, trends, and themes (axial coding), such as conversation about animals, or memory retrieval. Lastly, selective coding was used to categorize themes into "big-picture" groups, such as conversation or cognitive effects.

The researchers defined criteria to determine which reactions would be included. Reactions were only analyzed if the student explicitly stated that the reaction occurred. For example, "The resident smiled," or, "The resident said they felt less lonely." Similarly, if the student wrote that a resident or staff member explicitly stated their reaction to the interaction, this was recorded. Assumptions such as, "The resident is probably less lonely now," were not recorded. In order to ensure reliable coding across researchers, each researcher randomly selected 12 blogs that were coded by a different researcher and results were compared. Overall, all three researchers identified the same patterns and themes.

Because of the nature of the data, it is likely that students did not record every aspect of their visit. Certain interactions occur repeatedly, and students were encouraged in class to write about interactions that stood out. Because the researchers cannot guarantee that the data is complete due to omission of information in the blogs, the data will only be reported as frequencies and no statistical comparisons will be made.

Results

In order to standardize the results, the word “team” will be used to describe the therapy dog, its handler, and the college student(s). The results will be separated by who was affected by the interaction: first the residents, followed by the effects on the student. A complete list of results can be found in *Appendix A* for resident results, and *Appendix B* for student results.

Residents: Affect

The most common theme in the blogs was a general positive affect of the residents during the interaction ($N = 310$). The students often observed a sense of enjoyment; the residents were excited to see the team ($N = 90$), they smiled ($N = 37$), they enjoyed the experience ($N = 18$), and they laughed ($N = 12$). Students also observed explicit changes in affect. For example, the students reported that the resident’s affect generally became increasingly positive over the course of the interaction ($N = 45$), and the team comforted the resident in times of distress ($N = 7$). Students also observed that residents treated the team with more kindness than they treated the staff or fellow residents ($N = 2$), and that residents were more energized around the team ($N = 2$). Other observations of positive emotion include residents verbalizing that they were happy ($N = 22$) or thankful ($N = 4$) that the team visited, the resident showing physical affection to the team ($N = 12$), and the resident being calm around the dog ($N = 21$). One student wrote, “The whole demeanor of the residents change when they see the dogs. It is almost as if you can watch the tension, stress, and loneliness be lifted off of them.”



Resident expresses joy interacting with therapy dog. Photograph used with permission.

Residents: Communication

Students also frequently reported themes surrounding conversation ($N = 296$). The most common topic of conversation was animals; specifically, residents talked about their previous pets ($N = 57$). Some residents discussed how they were forced to give up their pets when they moved to the facility ($N = 6$), and that they missed their pets ($N = 6$). Residents also commonly discussed the therapy animal; this included complimenting the dog ($N = 16$), talking directly to the dog ($N = 15$), and asking questions about the dog ($N = 8$).

Other common conversation topics that were not about animals included: the residents' life and past ($N = 38$), their hobbies ($N = 5$) the residents' family ($N = 15$), how the residents were feeling ($N = 14$), and the residents' day ($N = 11$). The residents also asked the students questions about themselves ($N = 2$), or asked about the class or college in general ($N = 7$).

Students observed that residents became more talkative when interacting with the team, or when the team was nearby ($N = 15$).



Resident requested photograph with therapy dog to show his family. Photograph used with permission.

Residents: Physical Movement

The interactions also led to physical activity ($N = 179$). The students reported that residents often pet the dog ($N = 78$), or held the dog ($N = 42$). Sometimes, residents held multiple dogs at once ($N = 10$). Some residents were not very mobile, but pet the dog in spite of the difficulty ($N = 8$), though some were unsuccessful ($N = 2$).

The interactions also encouraged some residents to walk around the facility in order to follow the team ($N = 6$). Residents stood up to interact with the dog ($N = 4$), and came out of their room ($N = 4$) or got out of bed ($N = 3$) when they heard the dogs were present. Residents played with the dogs ($N = 3$), walked the dogs through the halls ($N = 2$), and squatted to the floor to interact with the dogs ($N = 2$).

Residents: Cognitive Effects

Students also noted the residents' cognitive abilities ($N = 42$). Residents recognized the team ($N = 13$), even if they typically struggled with memory ($N = 5$). Residents also remembered the dogs' names ($N = 5$) and noticed changes in their temperament ($N = 2$). Students observed that residents became more focused and engaged when interacting with the team ($N = 7$).

Residents: Negative Interactions

Some residents showed adverse and unintended reactions to the interaction ($N = 10$). Most commonly, residents were afraid of the dog ($N = 4$), though some were hesitant ($N = 1$) or overwhelmed ($N = 1$). Rarely, residents were violent during the interaction; in these cases, they hit the dog ($N = 2$) or pushed it away ($N = 1$).

Residents: Saying Goodbye

Some residents enjoyed interacting with the dog but experienced negative “side effects” because of the interaction. Residents experienced disappointment or sadness as the team left ($N = 7$). In rare occasions, a therapy dog passed away, which upset the residents ($N = 2$). Because the students typically terminate visits upon the conclusion of the class, residents reported sadness on the student’s last visit ($N = 1$). One resident experienced sadness when therapy dog handlers were permanently leaving.

Residents: Refusal of Interaction

Typically, when residents did not enjoy dogs, they refused the interaction when offered ($N = 38$). Most frequently, residents declined the interaction and did not participate in any way ($N = 17$). Some residents yelled at the dog ($N = 1$) or cursed at the team ($N = 1$). One resident reported that they refused the interaction for fear of “getting attached” to the animal.

Some residents refused a direct interaction with the animal, but still participated in some way. This included observing the dog from afar ($N = 5$), smiling at the team ($N = 2$), or talking to the team ($N = 4$).

Students: Positive Interactions with Residents

Students frequently reported that they enjoyed the visits because of their interactions with the residents ($N = 66$). This included: feeling happy that the residents were happy ($N = 25$), enjoyment talking to the resident ($N = 18$), feeling happy to see a particular resident again ($N = 9$), and feeling happy that the residents were comfortable around the student ($N = 3$).

Students: Enjoyment Witnessing Animal-Assisted Interventions

Students explicitly reported that they enjoyed seeing the effects of animal-assisted activities in person after learning about it in class ($N = 12$). Other students generally said that they enjoyed witnessing the interactions ($N = 5$), and enjoyed watching young therapy dogs “grow up” during their training ($N = 6$). Students also reported enjoyment seeing residents coming out of their shell around the dog ($N = 4$).

Students: Personal Benefits from Animal-Assisted Interventions

Students reported that they enjoyed their time with the dog ($N = 3$) and that it was beneficial to them ($N = 2$). Students also reported growing relationships with handlers and staff; specifically, they reported happiness to see their handler ($N = 3$), their nerves being calmed by the team ($N = 2$), admiration of their handler ($N = 1$), and friendships with the staff ($N = 1$).

Students: Personal Gratification

Students reported feeling rewarded by making a difference in the community ($N = 10$). One student wrote, “I learned that bringing someone joy was well worth the time out of your day.” They felt thankful ($N = 6$) and appreciated ($N = 3$), and looked forward to their next visit ($N = 7$).

Students: Sadness and Concern

Students reported feeling sad when residents were sick ($N = 5$), sad ($N = 3$), lonely ($N = 2$), or in generally bad condition ($N = 4$). Similarly, students reported feelings of sadness when residents passed away ($N = 2$). One student wrote, “One day we went to visit [the resident], and we learned that he had passed away the night before. I was surprised to find myself extremely sad, and had not noticed that I had become eager to

see him every week.” Students also reported concern for the quality and logistics of some visits, specifically regarding therapy dogs in training ($N = 2$).

Discussion

The students generally reported positive interactions during the visits that benefitted both the residents and the students themselves. For residents in long-term care facilities, the benefits of animal-assisted activities were largely in the categories of affect, communication, and physical movement. There were notably less observations of cognitive effects.

Our finding that students reported observations of positive affect or change in affect is consistent with the volume and content of research surrounding animal-assisted activities with older adults, and AAA in general. Interacting with a dog has been shown to increase oxytocin, dopamine, β -endorphins, prolactin, and phenylacetic acid, while decreasing cortisol (Odendaal, 2000). One student wrote, “Sometimes, when nothing else can cheer you up, even a little, the unconditional love from a dog can do just that, even if it’s just for a moment. Those moments are extremely important, especially in the lives of residents in assisted-living and nursing homes because they might not have many of them.” Similarly, it is possible that interacting with a dog may bring to the surface positive memories from individuals who had dogs in the past. The animal may have died during the individual’s life, or the individual may have been forced to give up the animal when moving into the facility. In either case, interacting with an animal gives older adults the opportunity to assume a different social role, like that of a caregiver or confidant (Netting et al., 1987). This perspective of animal-assisted interventions through the lens of social role theory is consistent with student observations that residents were happy the dog liked them, or that the dog made them feel loved, trusted, and important.

In addition, the students also observed a significant amount of conversation during the interactions. The most frequent topic of these conversations was animals. Residents often talked about their previous pets, or asked questions about and complimented the therapy animal. This is consistent with the concept of animals as a “social lubricant” (Arkow, 2015). In some cases, the animal may provide common ground between residents and handlers, providing them with a topic of conversation. Students often reported that residents would share details about their previous pets in group settings. In other cases, the animal may act as a first point of contact for residents who do not typically talk to other residents or visitors. The dog acts as a nonjudgmental presence (Ernst, 2014), and residents may feel more comfortable talking to the dog than they feel talking to the handler or other residents. In some cases, however, the therapy dog simply served as a means for residents to interact with human visitors. One student wrote: “[The resident] made me promise to come back because she enjoys the college students just as much as the dogs.” Students reported that some residents did not pay attention to the dog at all, or talked about their family or how they were feeling. In cases like these, while the dog may “humanize” the handler and make them more approachable by acting as a bridge (Ernst, 2014), the resident was largely seeking human interaction and the therapy dog served as a vessel.

The last significant category of observations were those surrounding physical activity. Residents in nursing homes often lose opportunities to exercise. For example, they may not be allowed outside of the facility to walk around unless accompanied by a family member. Though there may be some opportunities for exercise and movement within the facilities, including activities such as group exercise or arts and crafts, many residents do not have the motivation to participate in these activities or wish for different activities (Choi et al., 2008). Students reported that residents often pet and held the dogs, sometimes multiple dogs at once. These movements require the utilization of muscles and strength, though residents may not think of petting or holding an animal as “exercise” and are encouraged by the presence of the animal. Similarly, it is possible that the chemicals released when petting a dog (Odendaal, 2000) encourage the resident to continue the action. On a larger scale, residents were motivated to interact with the dog and would engage in various larger movements to do so. This included following the team around the facility, playing tug-of-war with

the dog, or squatting to the floor. While these actions are categorized more clearly as “exercise,” the residents had a clear motivation, interaction with the dog, to participate in these movements.

While students did report some observations surrounding cognitive effects, there were noticeably less compared to the previous three groups. This is consistent with the inconclusive nature of the literature surrounding the cognitive benefits of animal-assisted activities (Menna et al., 2016; Moretti et al., 2010). Participants in our study showed clear examples of memory retrieval during the conversations about residents’ previous animals and their life and past. Several students experienced older adults with dementia recalling a past pet with ease in the presence of a therapy dog. This suggests that seeing or touching a therapy dog can aid in memory retrieval, even if just for the visit. Students did report that a few residents, some of which had typically bad memory, recognized the team or remembered the dog’s name, though some residents forgot the team or introduced themselves multiple times. Students also reported that residents became more focused during the interaction. This may be due to the fact that the dogs are a novel stimulus and a change in the monotony of the facilities.

Some residents refused the interaction, or reacted negatively after the interaction started. There are numerous potential reasons why residents may not want to interact with the dog; for example, fear, allergies, sickness, and disgust. Some residents were disgusted by the “slobber,” and others did not want the dogs near their food. Some believed that dogs should be kept outside. While the therapy dogs were groomed according to agency standards, AAA with canines is not effective with residents who simply do not like dogs. On rare occasions, residents would yell or get violent with the dog. In these cases, AAA is clearly not effective and the handler must prioritize the safety of their dog. In some cases, residents would deny any interaction with the dog, but still engage with the handler or student. This is another example from which we can conclude that some residents use the dog as a means to interact with the human handler and student.

Limitations, Considerations, and Future Research

Due to the nature of writing a blog, details of the interaction may have been forgotten or simply not recorded by the students as to avoid repetition. Thus, our data set is presumed to be incomplete and we were unable to perform statistical analyses. Similarly, our data may be skewed in favor of positive interactions. The students may neglect to report negative interactions in an attempt to please the professor who would be grading their blogs.

Importantly, animal-assisted interventions may not be equally effective across all cultures. Most of the adult residents were white females from the southeastern United States, with very few male participants or members of other ethnic groups. While animal-assisted interventions were generally successful in this context, our sample lacks diversity in gender, background, and culture. The efficacy of animal-assisted interventions may also vary due to individual allergies, fears, and medical issues. It is important to consider these factors, as well as the capabilities of the facility and the safety of the dog, when considering animal-assisted interventions (Lutwack-Bloom et al., 2005; Netting et al., 1987). Adding stress or strain to facilities should be avoided.

Lastly, there are general limitations to research surrounding animal-assisted interventions. Perhaps most importantly, it is difficult to differentiate which effects stem from the animal and which effects stem from the human handler, or a mixture of both. Similarly, staff reactions to the therapy dog and handler could influence resident reactions (Bernabei et al, 2013). Richeson (2003) suggests that participants who have a greater history of pets and animals will benefit more from AAA, and those who willingly choose to participate (and therefore likely enjoy animals more than those who decline participation) will receive the greatest benefits. This may explain the general lack of negative or unsuccessful effects observed by the students.

In order to make these results more generalizable, the authors suggest replicating this study with a more diverse sample. It is also suggested to use information voluntarily presented by the students in the absence of a grading process, in order to remove the pressure of presenting the “right” observations. For future research, the authors suggest interviewing students directly about their experiences. Additionally, the authors suggest investigating the primary perspectives of the residents as well as the staff regarding their experiences with and perceptions of animal-assisted interventions.

Disclosures

All three authors played an active role in the *Animal-Assisted Therapy* class from which the blogs were gathered. Jerri J. Kropp served as a professor in the class, as well as a handler during some of the visits. Christina H. Morris was a student from 2015-2016 and the service-learning facilitator from 2016-2018. Christina L. Sartain was a student from 2016-2017 and the class peer leader from 2017-2018. Both Christina H. Morris and Christina L. Sartain wrote blogs that were analyzed for the purposes of this study.

Preliminary data was presented in poster format at the Gerontological Society of America 2018 Annual Scientific Meeting in Boston, MA.

Appendix A: Resident Results

Observation	Frequency
Resident was happy/excited to see team	90
Residents pet the dog	78
Resident talked about previous pets	57
Resident talked about previous pets	45
Residents hold dog	42
Resident talked about life and past	38
Residents smiled	37
Resident talked about an unspecified topic	28
Resident had to give up animals in facility	22
Resident was calm around dog	21
Resident enjoyed experience	18
Resident did not want to interact with dog	17
Resident gives treats to dog	17
Resident complimented dog	16
Resident talked to the dog	15
Resident talked about their family	15
Resident becomes more talkative	15
Resident talked about how they were feeling	14
Resident recognized team	13
Resident laughed	12
Resident talked about their day/recent events	11
Residents want team to come back	11
Resident hugged/kissed team	10
Residents enjoy seeing dog do tricks	10
Resident held multiple dogs at once	10
Resident asked questions about the dog	8
Resident pet dog though it was difficult	8
Resident asked student about class/college	7
Resident complimented dog	7
Resident is more focused/engaged around dog	7
Residents were disappointed/sad when team left	7
Resident experienced personalized visit due to less people	7
Residents paid more attention to humans than dog	7
Resident talked about how they miss their pets	6
Resident had to give up animals upon entering the facility	6
Resident followed team around facility	6
Residents look forward to visits	6
Resident told dog they loved it	5
Resident talked about facility animals	5

Resident talked about their hobbies	5
Resident with bad memory recognizes team	5
Resident remembered dogs name	5
Resident observed dog but did not pet it	5
Family member asked team to visit resident	5
Resident stopped activity to interact with dog	5
Resident talked about animal-assisted therapy	4
Resident compared dog to bible references	4
Resident imparted wisdom	4
Resident told jokes	4
Residents are thankful for visit	4
Blind resident was happy when dog touched her	4
Resident was happy dog liked them	4
Resident stood to interact with dog	4
Resident came out of room to interact with dog	4
Resident was afraid of dog	4
Resident declined visit but still talked to team	4
Family members pet dog	4
Residents have pictures of therapy dogs in their room	4
Resident woke up from nap to see dog	4
Resident is distracted from health issues	4
Resident made dog noises at dog	3
Resident talked to team about dog	3
Residents talked to the dog	3
Resident got out of bed	3
Resident generally played with dog	3
Family member enjoyed visit	3
Most residents wanted a visit	3
Resident was more interested in dog than team	3
Resident talked about their admiration of dogs	2
Nonverbal resident nodded to conversation	2
Resident asked team how they had been	2
Resident asked student questions about themselves	2
Residents were more comfortable conversing around dog	2
Resident could not communicate	2
Resident asked questions about dog	2
Resident talked about how they miss their pets	2
Resident is thankful for relationships formed with team	2
Resident kissed dog	2
Resident told team they love them	2
Residents display general positive emotion	2

Resident enjoyed holding dog though she could not pet it	2
Residents approached team	2
Resident walked dog through halls	2
Resident squatted to floor to interact with dog	2
Resident notices change in dog's temperament	2
Resident hit wicked	2
Resident was upset when therapy dog died	2
Some did not pet but smiled	2
Resident did not want to pet dog	2
Resident asks about team returning to visit	2
Team promises lonely resident they will visit again	2
Residents gather to wait for dog	2
Resident wants to paint dog	2
Resident asks team to visit another specific resident	2
Resident commented the BP decreased	2
Resident showed his art to team	2
Resident talked about their current pet	1
Resident talked about their family's pets	1
Resident generally talked about the therapy dog	1
Resident talked about their hatred of animal abuse	1
Nonverbal resident attempted to communicate	1
Residents talked about the weather	1
Resident told student that it was nice to see her	1
Resident reminisced on late wife who loved the therapy dog	1
Resident flirts with student	1
Resident kept talking to prevent team from leaving	1
Speaking abilities improved throughout interaction	1
Dog makes resident feel important	1
Resident feels loved and trusted by dog	1
Residents enjoyed cookies from student	1
Residents were happy to see handler even without her dog	1
Resident was happy to experience something new	1
Residents enjoyed being around many dogs at once	1
Resident was happy student brought her a picture of the two of them	1
Resident enjoys dogs energy	1
Resident verbalized that she enjoys seeing the student	1
Residents warmed up to team quickly	1
Residents were lively	1
Resident hugged dog	1
Resident held baby ducks	1
Resident tried to pet dog but expressed pain	1

Resident was unable to pet dog	1
Resident did not try to move to pet dog	1
Resident moved from spot on couch to interact with dog	1
Residents came to porch to interact with dog	1
Resident engaged in unnamed physical activity to interact with dog	1
Resident walks when they do not feel like it	1
Resident danced	1
Resident played tug-o-war with dog	1
Resident opened eyes though it was difficult	1
Resident loosened tense hand	1
Resident asked why they did not visit during usual time	1
Resident recognizes student without dog present	1
Resident with bad memory recalls details of life	1
Residents inform new student about how visits usually go	1
Resident noticed student was missing	1
Some residents do not remember team	1
Residents did not recognize student without dog present	1
Resident introduces herself to team multiple times	1
Resident could not focus on interaction	1
Residents who were more aware paid more attention to dog	1
Resident was hesitant around dog	1
Residents have mixed feelings	1
Residents are overwhelmed	1
Resident pushed dog away	1
Residents sadness came back when team left	1
Residents were sad handler was on last visit	1
Residents were sad students were on last visit	1
Resident misses therapy dogs that no longer visit	1
Resident was sad when he was too ill to receive visit	1
Resident worried about dog when she thought it was lost	1
Resident cried when other resident pushed dog away	1
Resident got upset as she reminisced about family	1
Resident typically enjoys visit, but was sick and visit did not help	1
Resident enjoys dogs presence but will not pet it	1
Team smiles at resident who don't want interaction to make them feel included	1
Resident initially frowned but welcomed team when student smiled at her	1
Resident did not like dogs but still interacted with team and dog	1
Resident did not like slobber, but still pet dog	1
Resident cursed at team for bringing dog near him	1
Resident yelled at dog to get out	1
Resident will not pet dog; afraid to get attached	1

Residents granddaughters followed team	1
Family talked to team	1
Residents family discussed therapeutic aspects of interaction	1
Residents who had dogs growing up liked the visit more	1
Few residents wanted visit	1
Mainly women interact with dog	1
Resident asked for dog's card	1
Resident asked for picture with dog	1
Resident showed team their room	1
Residents invited students to sit with them	1
Resident is distracted from personal problems	1
Resident wanted more time with team	1
Resident dislikes dogs but was happy to interact with ducks	1
Residents wanted more time with dog	1
Residents were shocked to see big dog	1
Residents compared their physical therapy with dog who was recovering from a broken leg	1
Dog slept with sleepy resident	1
Residents did not acknowledge team	1
Resident wants own dog	1
Resident tried to take dog with her	1
Resident let dog sit in their walker	1
Resident calls team her family	1
Resident dressed dog in accessories	1

Appendix B: Student Results

Experience	Frequency
Student was happy to see resident happy	25
Student enjoyed the experience	21
Student enjoys talking to resident	18
Student enjoyed seeing effects of AAT in person	12
Student feels like they make a difference/visit is rewarding	10
Student was happy to see particular resident	9
Student wants to return to facility/ looks forward to next visit	7
Student enjoys watching therapy dogs grow up in training	6
Student is thankful for visit	6
Student enjoyed witnessing interactions	5
Student want to continue visits	5
Student is sad residents are sick	5
Student was happy to see resident come out of shell	4
Student feels sad about condition of resident	4
Student is happy resident feels comfortable around her	3
Student is happy to see handler after a while	3
Student enjoys time with dog	3
Student feels appreciated	3
Student is sad that resident is sad	3
Student compares different therapy dogs	3
Student helped residents in their activities	3
Student feels close with resident	2
Student enjoys being around multiple residents at once	2
Student is happy to see sedentary resident moving around	2
Student enjoys watching others become joyful	2
Students nerves are calmed by team	2
Student benefits from time with dog	2
Student enjoys answering questions about dog	2
Student feels more comfortable with visits than before	2
Student is happy to return after break	2
Student enjoyed being part of interactions	2
Students mood was improved during visit	2
Student is sad to have to wait until next semester to continue visits	2
Student is sad this is last visit	2
Student notes it is difficult to visit nursing home when residents pass away	2
Student is sad witnessing lonely residents	2
Student was upset that resident was upset when they left	2
Student was concerned about dog in training	2

Student helped train the dog	2
Student was nervous to make first visit	2
Student was intimidated by residents	2
Student enjoys being around team and residents	1
Student wanted to spend more time with resident	1
Student looks forward to seeing specific resident	1
Student is excited to meet residents	1
Student enjoys seeing residents in hallway	1
Student enjoys having one-on-one time with residents	1
Student was happy resident remembered them	1
Student enjoys seeing residents' personalities change around dogs	1
Student is happy to see AAT facilitating relationships	1
Student was happy to see residents waiting for dog	1
Student is happy that residents look forward to visits	1
Student enjoyed seeing resident come out of room for dogs	1
Student enjoyed witnessing group AAT	1
Student enjoys seeing impact on resident	1
Student is thankful for handler	1
Admires handler	1
Student was happy to be around baby ducks	1
Student enjoys training dog	1
Student feels relaxed around dogs	1
Student is more appreciative of her own dog	1
Student feels proud	1
Student is happy to recognize residents	1
Student was excited to visit based on stories he heard from peers	1
Student would return to visit without dog too	1
Student is happy to return to facility	1
Student is excited to visit more facilities	1
Student was glad team could comfort upset staff	1
Student benefits from interaction	1
Student enjoys helping others	1
Student is happy to visit those who don't get other visits	1
Student enjoys providing service to someone who serves others	1
Student enjoys getting to know staff	1
Student reports growing friendship with staff	1
Student was happy to see resident and handler reunite	1
Student is sad witnessing a confused resident who wanted them to stay	1
Student did not enjoy visit because residents could not communicate	1
Student was sad that resident couldn't be around their pets	1
Student feels sad telling staff that therapy dog passed away	1

Student worries that some residents may be left out	1
Student is concerned he will say something wrong and upset resident	1
Wants therapy dog of their own	1
Student reflects on power of dogs	1
Student hopes to work with therapy dogs in future	1
Student feels familiar with residents	1
Student was unsure how to handle situation	1
Student brought roommate to meet residents	1
Student is admires older couple	1
Student enjoys some facilities more than others	1
Students opinion of residents changed positively upon interacting with them	1
Student learned from resident	1
Was difficult to talk to low-functioning residents	1

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