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# The mental health benefits of having dogs on college campuses

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## The Mental Health Benefits of Having Dogs on College Campuses

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### *Abstract*

*College can be a stressful time for many, especially those dealing with problems like stress, anxiety, and depression. While colleges and universities typically offer counseling services, many students who could benefit do not take advantage of them. Research suggests that animals may play an important role in some forms of treatment for conditions such as anxiety, stress, and depression. A recent trend on college campuses is to offer opportunities to interact with dogs and other animals as a way to relieve stress and help individuals deal with other psychological issues. In this paper, we discuss the current research regarding using animals to assist in treatment for problems commonly faced by college students. We also describe our own experiences with a university-sponsored animal-interaction day and offer tips on how others can plan such an event on their campus.*

*Keywords: animal-assisted therapy, pet therapy, college students, stress, anxiety*

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### **Prevalence of psychological disorders among college students**

College can be a very stressful time for students. Many are away from home for the first time and may experience homesickness or have difficulty functioning while away from friends and family. Freshmen in particular may face difficulties with adjusting to a new situation and learning to handle new responsibilities. Such difficulties are compounded for individuals suffering from psychological issues like anxiety and depression.

According to the Center for Collegiate Mental Health 2015 Annual Report, 100,736 students at the 139 colleges and universities contributing to the report sought counseling during the 2014-2015 academic year, with 79,331 students attending at least one counseling appointment. The most common psychological issues faced by these students were anxiety (56.91%), stress (46.63%), and depression (45.93%). When clinicians were asked to choose one primary concern per client, they indicated anxiety (20.0%), depression (15.8%), relationship problem (specific) (9.4%), and stress (5.9%). The

report also revealed that over the previous 6 years, the number of students seeking counseling services increased by 29.6% and the total number of counseling appointments increased by 38.4%; both of these greatly exceed the increases in enrollment over that time. While rates of some psychological problems have remained relatively stable or have declined, the report indicated increases in self-reported depression, anxiety, and social anxiety over the previous five years (Center for Collegiate Mental Health, 2015). In another study, Beiter et al. (2015) studied depression, anxiety, and stress among college students. The researchers found that 11% of the students reported dealing with stress, 15% experienced anxiety, and 11% struggled with depression. The students who reported dealing with stress also indicated a number of concerns causing their stress. These included financial problems, academic success, post-graduation plans, lack of sleep, and relationships with family and friends. The American College Health Association stated that in the previous 12 months, 58.4% of students reported overwhelming anxiety, 36.7% reported difficulty functioning due to

depression, and 9.8% seriously considered suicide (American College Health Association, 2016). In the United States, suicide is the second leading cause of death for people ages 15-24 and ages 25-34 (Centers for Disease Control and Prevention [CDC], 2014). Drum, Brownson, Denmark, and Smith (2009) found that 6% of undergraduate students and 4% of graduate students had considered committing suicide in the past 12 months. Of the students that had made a suicide attempt, 23% of the undergraduate students and 27% of the graduate students were considering making another suicide attempt.

Another issue faced by college students is autism spectrum disorder (ASD). In a review of data from Wave 5 of the National Longitudinal Transition Study-2, Roux et al. (2015) noted that of all the participants (aged 21-25) with autism spectrum disorders, 40% had attended 2 or 4-year colleges or vocational/ technical school within eight years of graduating high school. White, Ollendick, and Bray (2011) estimated that between 1 in 53 and 1 in 130 college students meet the criteria for diagnosis of HFASD (high-functioning autism spectrum disorder). These individuals may face other issues as well. White et al. found significant positive correlations between symptoms of ASD and social anxiety, depression, and aggression among a sample of 667 undergraduate students. Literature describing the experiences of college students with autism spectrum disorders is scarce and further research in this area is needed (Roux, et al., 2015).

It can be difficult for students dealing with mental illnesses or developmental disorders to excel in their school work. College students with mental illnesses are about twice as likely as other students to drop out of college. Approximately 86% of those with mental illnesses withdraw before

graduating compared to 45% of the general student body (Salzer, 2012). For college students who are depressed, being involved on campus, maintaining good grades, and even preserving relationships with friends and family can be difficult. Being more involved with organizations, having a close friend group, and having better relationships with their administrators are all associated with depressed students having higher graduation rates and reporting higher satisfaction with their college experience (Salzer, 2012).

Whether it is anxiety, depression, autism, or any of the other issues faced by college students, it is clear that many students are experiencing psychological challenges. Given this, and the impact that these issues may have on their academic success, it is important that colleges offer services aimed at helping students deal with their problems.

#### **Students' use of counseling services**

The need for mental health services for college students has increased and it is important that colleges work to meet the demand (Center for Collegiate Mental Health, 2015). Many colleges offer counseling services at little or no cost to students. Unfortunately, fewer than half of students with mental health issues seek help from campus counseling services (Salzar, 2012). The annual report from the American College Health Association found that only 25.1% of students had been diagnosed with or treated for any mental health condition in the past 12 months (American College Health Association, 2016). Kim, Saw, and Zane (2015) stated that the relatively low number of students seeking treatment may in part be due to a lack of mental health literacy. In fact, their studies showed that college students who are experiencing depression or anxiety were less likely to recognize symptoms of depression and that all groups of participants had low mental health literacy

regarding anxiety. The studies also found that participants experiencing at least moderate anxiety or depression were less likely to indicate a need to seek psychological help.

D'Amico, Mechling, Kemppainen, Ahern, and Lee (2016) investigated college students' usage of counseling services and what barriers kept students from seeking counseling. They found that those who were the least likely to use the services had family and friends who were likely to stigmatize them for needing help. They also found that those who were more likely to use the counseling services were also more likely to use alternative counseling services like yoga, meditation, and exercise. Salzer (2012) also hypothesized that many college students do not use counseling services provided to them because of a fear of retaliation and stigma, and emphasized a need for colleges to destigmatize mental illness.

A major problem is the lack of knowledge that people have about mental disorders. Some students may not take advantage of counseling because of ignorance or misperception of psychological issues. Scientific research and anecdotal evidence support the idea that college students with mental illness experience intolerance from other students on a significant scale; this issue has become increasingly relevant as the number of students with mental illness attending college has increased (Granello & Granello, 2000). Granello and Granello found that students with more inclusive definitions of mental illness were more accepting. So it seems educating all college students, including those who do not suffer from psychological issues, could be beneficial in increasing the number of students who seek help when needed.

While colleges typically offer services directed at assisting students with issues such as stress, anxiety, and depression, White et al. (2011) emphasized the growing need for

more effective accommodation for college students with autism spectrum disorders. Of the 40% of young postsecondary students on the autism spectrum who participated in Wave 5 of the National Longitudinal Transition Study-2, the majority (87.3%) reported being offered sufficient assistance or accommodation by their schools. However, only 68% of students felt that the services they'd received had been at all helpful. Of the students who informed their institutions of their disabilities, only 48.6 % reported receiving assistance or accommodation from their schools while 17.6 % reported seeking help from places independent of their educational institutions (Roux et al., 2015).

It is clear that simply providing counseling services is not enough. Colleges must work to educate their students on the importance of mental health while working to destigmatize mental illnesses in order for their students to feel comfortable enough to seek the counseling services provided. Increasing acceptance of those with mental illnesses and creating a more inclusive environment may lead to greater participation in campus activities. Salzer (2012) stated that getting students involved on campus, especially students with mental illnesses, is key to getting more students to graduate and found that students who are actively involved in campus activities are more likely to graduate, regardless of whether or not they suffer from a mental illness.

We have a long history of using interaction with animals to improve human health (Krause-Parello, Tychowski, Gonzalez, & Boyd, 2012). As the following section will show, animals have been shown to have positive effects on people who suffer from various conditions including depression, stress, and homesickness.

### Benefits of pet therapy/interacting with animals

Animal-Assisted Therapy (AAT) is becoming more popular among college and university counseling centers because it offers an effective option for students struggling with anxiety and stress (Stewart, Dispenza, Parker, Chang, & Cunnien, 2014). The use of therapy dogs on college campuses has become extremely popular since about 2005. This is probably in large part due to the low cost; the majority of university pet therapy programs are free for students and universities and most of the dog handlers are volunteers. (Castellano, 2015). One study involving college freshmen found that 96% of the participants were in favor of having a pet therapy program on campus (Adamle, Riley, & Carlson, 2009). A quick internet search reveals that many colleges are adopting such programs.

Many college students suffer from homesickness. For some, this may be a minor issue, but for others, homesickness becomes so severe that they see counselors for “crisis appointments” (Shellenbarger, 2015). In a recent study investigating the usefulness of AAT as a treatment for homesick first-year college students, a treatment group participated in an 8-week program with trained therapy dogs and volunteer handlers. Participants had one 45-minute session on the Friday of each week wherein they interacted with an assigned dog for 30 minutes before being allowed to interact with any dog present for the last 15 minutes. A non-treatment control group was informed that they were on a waiting list and never received the treatment. The results showed that the intervention was successful in decreasing homesickness and increasing satisfaction with life (Binfet & Passmore, 2016). Folse, Minder, Aycock, and Santana (1994) investigated the utility of combining AAT with standard psychotherapy sessions.

Although AAT alone was demonstrated to be effective in reducing depression, the results did not provide evidence for AAT as useful compliment to traditional psychotherapy. In contrast, Hoffmann et al. (2009) found that the addition of a dog to interview/therapy sessions significantly reduced state anxiety as measured by the State-Trait Anxiety Inventory (STAI).

Wisdom, Saedi, and Green (2009) reported that for some adults, pets may provide support not provided by a missing family or may compliment whatever family support the individual is receiving. College freshmen in another study said that their pets provided support and comfort during stressful experiences. (Adamle, Riley, & Carlson, 2009). McConnell, Brown, Shoda, Stayton, and Martin (2011) found that pets can provide social support even for people who have support from others and that just thinking about one's pet can help to alleviate the effects of social rejection.

The impact pets can have in reducing stress is well-documented. In one study, college freshmen viewed a presentation about pet therapy and then interacted with a therapy dog. A majority of the participants said they had left their pets back at home, missed their pets, and thought it would be beneficial for therapy dogs to come to campus to help with stress. The researchers pointed out that having access to therapy dogs might also help students form new relationships with others (Adamle, Riley, & Carlson, 2009). Thus, the animals might not only reduce stress, but also alleviate homesickness and perhaps put the students in a better position to make new friends which could in turn lead to an overall more enjoyable college experience. Daltry and Mehr (2015) found that simply interacting with a dog can positively influence college student's emotional well-being. They also stated that having a pet therapy program on campus

helped with the establishing new relationships and reduced stress among the students.

Some studies have shown that animals can have demonstrable effects on measurable physiological correlates of stress. Somerville, Kruglikova, Robertson, Hanson, and MacLin (2008) found both male and female college students experienced a decrease in diastolic blood pressure immediately after holding a dog or cat. Interestingly, this reduction in blood pressure occurred only after contact with the animal, not during the actual contact. Krause-Parello, et al. (2012) found that interacting with a dog decreased cortisol levels (indicating a reduction in stress) in college students who did not own pets. Pet owners did not show this decrease in cortisol levels. Another biomarker for stress, the immunoglobulin IgA, was not affected by interaction with a dog in either group of participants. Polheber and Matchock (2014) measured stress indicators in connection with the Trier Social Stress Test. Participants were randomly assigned to have a dog, a friend, or neither present during the experimental procedure. Before the Trier test began, the participants were able to interact with their friend or with Jazz, a 7 year old golden retriever. During the Trier stress test, either the friend or dog stayed nearby. The participants who were in neither the friend nor dog condition were instructed to sit and relax. Participants in the dog condition experienced lower heart rate and lower cortisol levels than did the other two groups. Researchers have observed that lower levels of perceived stress are associated with increased happiness and have suggested that taking steps to decrease stress may facilitate interventions aimed at increasing happiness (Schiffirin & Nelson, 2010).

In addition to reducing stress, research suggests that spending time with a therapy dog reduces anxiety levels in college students.

Shearer, Hunt, Chowdhury, and Nicol (2016) conducted a study that compared the effects that mindfulness meditation and interacting with a therapy dog had on the anxiety and stress levels of college students. The interactions with the therapy dog decreased the amount of stress and anxiety and were suggested to be an effective treatment. However, the mindfulness meditation sessions lowered the student's anxiety levels more than the sessions with the therapy dog. Crossman, Kazdin, and Knudson (2015) conducted an experiment with three groups of students from a medical school. The experimental group briefly pet/play with a dog for up to ten minutes. The no-interaction control group viewed pictures of dogs. Lastly, the no-treatment control group was told by the experimenters that they would interact with the dogs, but the participants only waited for the dogs and did not get to play with them. Compared to the controls, interacting with the dog was accompanied by decreased anxiety and negative mood and increased positive mood. Stewart et al. (2014) investigated the potential of a single two-hour session with a therapy dog to impact anxiety and loneliness among college students. The students were able to interact with the dog and with other students during the session. Pre- and post-session measures indicated significant decreases in anxiety and loneliness. Further, the students rated the interaction with the dog as being the most beneficial aspect of the session.

Research has suggested that interaction with animals can be helpful for individuals with autism. However, Siewertsen, French, and Teramoto (2015) point that it is still unclear exactly what is causing the effects and how long-lasting they may be. As stated earlier, there is a lack of research on college students with autism (Roux, et al., 2015). More work in this area is needed so that

individuals with autism may be able to benefit from the growing trend of having therapy animals on college campuses.

It is possible, and perhaps even likely, that pet owners and people who do not own pets differ in ways that may interact with the potential benefits of animals on psychological health. A recent study (Bao & Schreer, 2016) indicated that pet ownership was correlated with higher life satisfaction, but not with increased happiness or decreased negative emotions. The authors stated that pet owners may be happier immediately after adopting a pet, but that this increase in happiness may diminish over time. The study also found that dog owners were more extraverted and agreeable than cat owners, which positively predicted wellbeing. (Bao & Schreer, 2016). Pet owners have been found to have lower heart rates and lower systolic and diastolic blood pressure when resting. It was also found that, during a mental arithmetic test, individuals who had pets had much lower heart rate, systolic blood pressure, and diastolic blood pressure rates and also had these levels return to their lower, baseline levels at much faster rates than their non-pet owner counterparts. During the arithmetic test, pet owners also produced more correct answers with fewer errors at faster rates than the non-pet owners (Allen, Blascovich, & Mendes, 2002). Another study (McConnell et al., 2011) found that pet owners had higher self-esteem, were more physically fit, and were less lonely. There were also personality differences, with pet owners being more extraverted and conscientious. Differences between those who do or do not own pets may help to account for differing effects of interacting with animals such as those seen in the Krause-Parello et al. (2012) study mentioned above.

One obstacle to using animals to address mental health concerns is that doing so may not always be practical. Students will

experience stress, anxiety, depression, and other conditions in situations where having an animal present may be inconvenient or may not be allowed. Individuals who make use of emotional support animals (ESA) may encounter the same difficulty; they may not always be permitted to take their animals with them wherever they go. For example, some universities may not allow pets on campus and may not consider ESAs to have the same status as psychiatric service animals (PSA). As a result, there will be some people who will not always be able to have their animals with them. Younggren, Boisvert, and Boness (2016) discuss the high number of individuals requesting documentation from their therapist stating they need an animal or pet with them for mental health reasons. The documentation being requested would allow the person to bring his or her pet with them into pet restricted areas, including housing and airplanes. The authors explain the legal differences between ESAs and service animals and discuss the legal and ethical issues of certifying ESAs. Since people will not always be able to have animals present, identifying effective proxies would be of great benefit. For example, if pictures, videos, or recorded audio of animals could be shown to have positive effects, students could benefit from having contact with animals in a wider variety of situations. Torres, Arnold, and Shutt (2016) investigated whether images of pets could affect math performance in a classroom setting. They found that, compared to images of desks or colored squares, images of cats and dogs resulted in participants experiencing less stress and being more distracted. However, participants actually solved fewer math problems than when presented with images of colored squares. Further study of this type of procedure might reveal ways to reduce stress in a classroom setting without a reduction in academic performance.



While there is a lot of evidence that animals can be useful in reducing stress and other psychological problems, not every study is supportive of this conclusion. For example, Straatman, Hanson, Endenburg, and Mol (1997) found that the presence of an unfamiliar dog did not reduce the stress associated with preparing and delivering a recorded speech. In another study, Henry and Crowley (2015) investigated the effects of incorporating a therapy dog into mindfulness training. The researchers found that the reductions in anxiety and depressive symptoms did not differ from those produced by mindfulness training alone. However, participants reported being more excited and satisfied during the mindfulness training when the dog was present. Younggren, Boisvert, and Boness (2016) state that a large assumption is being made that AAT has therapeutic effects and that more research is needed. Hoffmann et al. (2009) noted that many studies on AAT have lacked appropriate research designs or have failed to include standardized or physiological measures of anxiety. Crossman and Kazdin (2015) point out that more research is needed to determine: how effective animal-visitation programs (AVPs) are, which types of interactions with animals are most effective, how long sessions should last, the duration of post-session psychological benefits, and why interaction with animals has therapeutic effects.

In addition to potential direct benefits to psychological well-being, the use of animals in therapy settings may also result in greater participation and compliance with the therapy. Schramm, Hediger, and Lang (2015) investigated whether animal-assisted mindfulness training could be beneficial to patients undergoing mindfulness-based cognitive therapy (MBCT) and whether using the animals would reduce drop-out rates. Participants attended eight group

sessions during which sheep were incorporated into the therapy. The results were promising; all participants completed the program and attended every meeting. In addition to reducing the drop-out rate to zero, the procedure was successful in teaching mindfulness skills as well as decreasing rumination and depressive symptoms in the participants.

There are at least two ways in which pets and pet therapy may be useful in destigmatizing mental illness and increasing the chance that students will seek counseling. First, students who are seeking counseling may be open to pet therapy since they are already more likely to try alternative forms of therapy. Second, students who may be more uncomfortable with seeking counseling services may find obtaining a therapy dog to be an acceptable alternative since having a pet is common among college students and is not likely to cause much objection or judgment among friends and family. Having animals present might also be a way to increase participation in various campus activities and organizations.

Having therapy animals on campus may be a way for student counseling centers to promote their services. Daltry and Mehr (2015) found that many students at one university were unaware of the counseling services offered on campus before the implementation of a dog therapy program. Ninety-four percent of the students surveyed stated that they would not have stopped at the counseling center information table if the dogs were not there (Daltry and Mehr, 2015). So perhaps using animals may be an effective way of getting college students to seek therapy in the first place and to stick with it after they begin. In addition, the mere presence of animals may encourage students to visit counseling centers or even their professors' offices. Wells and Perrine (2001) found that college students' perception of

professors and their offices might be positively influenced by the presence of a dog in the professor's office. The results of this study also suggest that professors with dogs in their offices may be more approachable than professors with cats or no pets.

**Our experiences with a dog day and what we learned**

In 2015, our university decided to start an event called Puppies on the Quad. This was intended to help students deal with the stress of finals. The Student Alumni Association hosted the event on campus in collaboration with the Troy Animal Rescue Project (TARP). We decided to attend Puppies on the Quad in fall of 2016 to see for ourselves how it worked and to learn as much as we could so that we could offer advice to students from other universities on how they could set up something similar on their campuses. At the event, 36 dogs and cats were brought into a roped-off area outside the student activities center. After signing a waiver, students were allowed to enter the area and interact with the animals. The dogs were on leashes and the cats were provided with small enclosures in which they could hide. Students were free to play and interact with any of the animals in a loose, unstructured environment. We found the event to be quite popular; a quick count found that approximately 70-100 students were present at different times over the course of an hour. We later found that approximately 1,000 students participated throughout the day. Many others watched from outside the enclosed area and seemed to enjoy the event.

In addition to the fun of the day and the possible psychological benefits, the event served other purposes. At the sign-in table where students signed the waiver, the organizers had forms that students could use to apply to adopt any of the animals. By the end of the day, students had signed up to adopt all but eight of the animals (the lead

author adopted two of the cats). Sororities and fraternities collected donations for TARP and a prize (a puppy day) was awarded to the organization that collected the most money. Additional funds were raised by the selling of t-shirts. We used the opportunity to distribute flyers for the university student counseling services.

**How you can do this at your school**

When organizing an event like Puppies on the Quad, the first step is to determine where you will get the animals. Rescue organizations and animal shelters are good choices because they have suitable animals and students will have the opportunity to adopt them. Once the animal shelter has been identified and contacted, the next step would be to get approval for the event from the university. In our case, this involved the Student Alumni Association working with the Office of Student Services to get approval. The approval process will vary from campus to campus, but organizers should be aware that getting approval may be a multi-step process that could take weeks. We advise planning well in advance of the chosen date. Given that events like this are inexpensive, popular with students, and have been shown to be useful, most colleges will likely be open to granting approval, as long as appropriate safety measures are in place. A university-approved liability waiver is essential. Anyone entering the area to interact with the animals should be required to sign the waiver absolving the school of any responsibility should the person be injured or otherwise negatively impacted by the event.

Once the event has been approved, it is important to advertise. This could be done through flyers posted around campus, through email announcements, and through social media. In addition to increasing the number of people present, letting students know when and where you are hosting your event could also ensure that anyone with an

aversion to dogs is aware of the event taking place and is not caught unaware.

Choosing the right location and time will also increase participation. A good location will be highly visible, convenient for the students, and have plenty of room for the people and animals to move around. Because this event was hosted on our social quad it did attract a lot of attention even though little effort was put into advertising. As for physically setting up the event, it is a good idea to have a large area roped off with one entryway to ensure that the animals are contained, to minimize the risk of anyone entering the area without signing the waiver, and to ensure that no one would be able to walk off with any of the animals. We strongly recommend doing this in order to ensure the safety of both the students and the animals.

We also recommend hosting your event during the milder seasons and ensuring the organization that is supplying the animals has adequate water on hand to ensure the animals stay properly hydrated. Tents or natural shade will make the event more pleasant for students and the animals. Other authors (e.g. Reynolds & Rabschutz, 2011; Daltry & Mehr, 2015) have offered additional advice for anyone interested in bringing animals to campus.

### Conclusions

College students deal with a wide variety of psychological and adjustment issues. Some of which can be quite serious. While most colleges do offer psychological services, providing additional help to students could serve to improve both their quality of life and chances of academic success. Many studies have demonstrated the benefits of incorporating animals into therapy session and into less structured environments like Puppies on the Quad or simply owning a pet. As some authors have pointed out, more research is needed to better determine exactly how animals may be improving therapeutic

outcomes. Bringing more animals onto college campuses may be an effective, relatively inexpensive way to help students deal with psychological issues and may increase the chances that they will learn about, participate in, and continue with traditional college counseling services.

### References

- Adamle, K. N., Riley, T. A., & Carlson, T. (2009). Evaluating college student interest in pet therapy. *Journal of American College Health, 57*(5), 545-548. doi:10.3200/JACH.57.5.545-548
- Allen K., Blascovich J., & Mendes W. (2002). Cardiovascular reactivity and the presence of pets, friends, and spouses: The truth about cats and dogs. *Psychosomatic Medicine 64*,727-739. Retrieved from [http://wendyberymendes.com/cms/uploads/Allen2002\\_%20Cardiovascular%20reac.pdf](http://wendyberymendes.com/cms/uploads/Allen2002_%20Cardiovascular%20reac.pdf)
- Bao, K. J. & Schreer, G. (2016). Pets and happiness: Examining the association between pet ownership and wellbeing, *Anthrozoös, 29*(2), 283-296. doi: 10.1080/08927936.2016.1152721
- Beiter, R., Nach, R., McCrady, M., Rhoades, D., Linscomb, M., Clarahan, M., & Sammut, S. (2015). The prevalence and correlates of depression, anxiety, and stress in a sample of college students. *Journal of Affective Disorders, 173*90-96. doi:10.1016/j.jad.2014.10.054
- Binfet, J.T., & Passmore, H.A. (2016) Hounds and homesickness: The effects of an animal-assisted therapeutic intervention for first-year university students, *Anthrozoös, 29*(3), 441-454, doi: 10.1080/08927936.2016.1181364
- Castellano, J. (2015). Pet therapy is a nearly cost-free anxiety reducer on college campuses. Retrieved from <http://www.forbes.com/sites/jillcastellano/2015/07/06/pet-therapy-is-a-nearly-cost-free-anxiety-reducer-on-college-campuses/#36535044737d>
- Center for Collegiate Mental Health. (2016, January). 2015 Annual Report (Publication No. STA 15-108)
- Centers for Disease Control and Prevention. (2014). Ten leading causes of death by age group, United States – 2014. Retrieved from [http://www.cdc.gov/injury/wisqars/pdf/leading\\_causes\\_of\\_death\\_by\\_age\\_group\\_2014-a.pdf](http://www.cdc.gov/injury/wisqars/pdf/leading_causes_of_death_by_age_group_2014-a.pdf)
- Crossman, M. K., & Kazdin, A. E. (2015). Animal visitation programs in colleges and universities: An efficient model for reducing student stress. In A. H. Fine (Ed.), *Handbook on animal-assisted therapy: Foundations and guidelines for animal-assisted interventions, 4<sup>th</sup> ed.*, 333-337. doi:10.1016/B978-0-12-801292-5.00024-9
- Crossman, M. K., Kazdin, A. E., & Knudson, K. (2015). Brief unconstructed interaction with a dog reduces distress. *Anthrozoös, 28*(4), 649-659. doi:10.1080/08927936.2015.1070008-

- Daltry, R. M., & Mehr, K. E. (2015). Therapy dogs on campus: Recommendations for counseling center outreach. *Journal of College Student Psychotherapy* 29(1) 72-78.
- D'Amico, N., Mechling, B., Kemppainen, J., Ahern, N. R., & Lee, J. (2016). American college students' views of depression and utilization of on-campus counseling services. *Journal of the American Psychiatric Nurses Association*, 22(4), 302-311.
- Drum, D. J., Brownson, C., Burton Denmark, A., & Smith, S. E. (2009). New data on the nature of suicidal crises in college students: Shifting the paradigm. *Professional Psychology: Research and Practice*, 40(3), 213-222.
- Folse, E. B., Minder, C. C., Aycock, M. J., & Santana, R. T. (1994). Animal-assisted therapy and depression in adult college students. *Anthrozoös*, 7(3), 188-194. doi:10.2752/089279394787001880
- Granello, D. H., & Granello, P. F. (2000). Defining mental illness: The relationship between college students' beliefs about the definition of mental illness and tolerance. *Journal of College Counseling*, 3(2), 100.
- Henry, C. L., & Crowley, S. L. (2015). The psychological and physiological effects of using a therapy dog in mindfulness training. *Anthrozoös*, 28(3), 385-401. doi:10.1080/08927936.2015.1052272
- Hoffmann, A. O. M., Lee, A. H., Wertenaue, F., Ricken, R., Jansen, J. B., Gallinat, J., Lang, U. E. (2009). Dog-assisted intervention significantly reduces anxiety in hospitalized patients with major depression. *European Journal of Integrative Medicine*, doi:10.1016/j.eujim.2009.08.002
- Kim, J. E., Saw, A., & Zane, N. (2015). The influence of psychological symptoms on mental health literacy of college students. *American Journal of Orthopsychiatry*, 85(6), 620-630. doi:10.1037/ort0000074
- Krause-Parello, C. A., Tychowski, J., Gonzalez, A., & Boyd, Z. (2012). Human-canine interaction: Exploring stress indicator response patterns of salivary cortisol and immunoglobulin a. *Research and Theory for Nursing Practice: An International Journal*, 26(1), 25-40. doi:10.1891/1541-6577.26.1.25
- McConnell, A. R., Brown, C. M., Shoda, T. M., Stayton, L. E., & Martin, C. E. (2011). Friends with benefits: On the positive consequences of pet ownership. *Journal of Personality and Social Psychology*, 101(6), 1239-1252. doi:10.1037/a0024506
- Polheber, J., & Matchock, R. (2014). The presence of a dog attenuates cortisol and heart rate in the Trier Social Stress Test compared to human friends. *Journal of Behavioral Medicine*, 37(5), 860-867. doi:10.1007/s10865-013-9546-1
- Reynolds, J. A., & Rabschutz, L. (2011). Studying for Exams Just Got More Relaxing—Animal-Assisted Activities at the University of Connecticut Library. *College & Undergraduate Libraries*, 18(4), 359. doi:10.1080/10691316.2011.624934
- Roux, A. M., Shattuck, P. T., & Rast, J. E., Rava, J. A., Edwards, A.D., Wei, X., McCracken, M., Yu, J. W., (2015). Characteristics of two-year college students on the autism spectrum and their support services experiences. *Autism Research and Treatment*. 1-10, doi:10.1155/2015/391693
- Salzer, M. S. (2012). A comparative study of campus experiences of college students with mental illnesses versus a general college sample. *Journal of American College Health*, 60(1), 1-7. doi:10.1080/07448481.2011.552537
- Schramm, E., Hediger, K., & Lang, U. E. (2015). From animal behavior to human health: An animal-assisted mindfulness intervention for recurrent depression. *Zeitschrift Für Psychologie*, 223(3), 192-200.
- Schiffirin, H. H., & Nelson, S. K. (2010). Stressed and happy? Investigating the relationship between happiness and perceived stress. *Journal of Happiness Studies*, 11(1), 33-39. doi:10.1007/s10902-008-9104-7
- Shearer, A., Hunt, M., Chowdhury, M., & Nicol, L. (2016). Effects of a brief mindfulness meditation intervention on student stress and heart rate variability. *International Journal of Stress Management*, 23(2), 232-254. doi:10.1037/a0039814
- Shellenbarger, S. (2015, October 21). To Call Mom or Not? New Help for Homesick Students. *Wall Street Journal*. D1-D2.
- Stewart, L. A., Dispenza, F., Parker, L., Chang, C. Y., & Cunnien, T. (2014). A pilot study assessing the effectiveness of an animal-assisted outreach program. *Journal of Creativity in Mental Health*, 9(3), 332-345. doi:10.1080/15401383.2014.892862
- Somerville, J. W., Kruglikova, Y. A., Robertson, R. L., Hanson, L. M., & MacLin, O. H. (2008). Physiological responses by college students to a dog and a cat: Implications for pet therapy. *North American Journal of Psychology*, 10(3), 519-528.
- Straatman, I., Hanson, E. S., Endenburg, N., & Mol, J. A. (1997). The influence of a dog on male students during a stressor. *Anthrozoös*, (10)4, 191-197.
- Torres, A., Arnold, K. L., & Shutt, E. M. (2016). The effects of visual pet stimuli on stress and math performance. *College Student Journal*, 50(1), 112-120.
- Wells, M., & Perrine, R. (2001). Pets go to college: The influence of pets on students' perceptions of faculty and their offices. *Anthrozoös*. 14(3), 161-168.
- White S.W., Ollendick T. H. & Bray B. C. (2011). College students on the autism spectrum: Prevalence and associated problems. *SAGE Publications and The National Autistic Society*, 15(6), 683-701. doi: 10.1177/1362361310393363
- Wisdom, J. P., Saedi, G. A., & Green, C. A. (2009). Another breed of 'service' animals: STARS study findings about pet ownership and recovery from serious mental illness. *American Journal of Orthopsychiatry*, 79(3), 430-436.
- Younggren, J. N., Boisvert, J. A., & Boness, C. L. (2016). Examining emotional support animals and role conflicts in professional psychology. *Professional Psychology: Research and Practice*, 47(4), 255-260. doi:10.1037/pro0000083