Animal-Assisted Therapy for PTSD: A Literature Review

Kristie M. Fuller

Wake Forest University – Online Counseling Master's Degree Program

CNS 721 Research and Statistical Analysis in Counseling

Assignment 5.3 Literature Review Due 07/31/216

Abstract

Posttraumatic stress disorder (PTSD) is a potentially debilitating disorder, characterized by exposure to a traumatic event that results in negative psychological symptoms which include recurrent and distressing memories and dreams of the event, flashbacks, and avoidance of possible triggers (American Psychiatric Association [APA], 2013. In addition, changes in cognition and mood are often present, including difficulty remembering the events clearly, negative self-beliefs, negative emotional states such as fear, helplessness, guilt, or shame, decreased interest in daily and extracurricular activities, inability to experience positive emotions, feelings of detachment, hypervigilance, irritability and outbursts, concentration issues, increased startle response, and problems sleeping (APA, 2013). The Veteran's Affairs provides two types of cognitive behavioral therapies in the treatment of PTSD: cognitive processing therapy (CPT) and prolonged exposure therapy (PE) (U.S. Department of Veteran's Affairs, 2016). The purpose of this literature review is to describe and evaluate the use of Animal-Assisted Therapy (AAT) as an adjunct to current, accepted evidence-based treatments for this potentially devastating disorder. In this literature review, evidence will be explored to determine if the use of animals in therapy can facilitate the therapeutic relationship and thus reduce symptoms and improve outcomes for individuals in therapy for PTSD.

Animal-Assisted Therapy for PTSD: A Literature Review

Introduction

Posttraumatic stress disorder (PTSD) is a potentially devastating disease affecting 2-17% of combat veterans, with a lifetime risk of 6-31% for this same population (Richardson, Frueh, & Acierno, 2010). For the general population, PTSD has a lifetime risk of 8.7%, however higher rates of prevalence exist not only for veterans, but also among first responders and other high-risk occupations (American Psychiatric Association [APA], 2013). The highest prevalence rates are found in "survivors of rape, military combat or captivity, and ethnically or politically motivated internment and genocide" (APA, 2013). Symptoms of PTSD develop after exposure to a traumatic event and include recurrent and distressing memories and dreams of the event, flashbacks, avoidance of possible triggers, as well as changes in cognition and mood. These changes can include difficulty remembering the traumatic events clearly, negative self-beliefs, negative emotional states such as fear, helplessness, guilt, or shame, decreased interest in daily and extracurricular activities, inability to experience positive emotions, feelings of detachment, hypervigilance, irritability and outbursts, concentration issues, increased startle response, and problems sleeping (APA, 2013). To receive a diagnosis of PTSD, symptoms must exist for more than one month and must significantly interfere with the individuals' ability to function appropriately in social, occupational or other settings (APA, 2013).

The purpose of this literature review is to describe and evaluate the use of Animal-Assisted Therapy (AAT) as an adjunct to current, evidence-based treatments for this potentially devastating disorder. The Veteran's Affairs provides two type of cognitive behavioral therapies in the treatment of PTSD: cognitive processing therapy (CPT) and prolonged exposure therapy (PE) (U.S. Department of Veteran's Affairs, 2016). These treatment modalities have already

been researched and determined to be effective, however the addition of animal-assisted therapy has seen increased popularity in the last decades in the treatment of many disorders. There have been many books published that espouse the benefits of animals in therapy (Hayes, 2015; DePrekel, 2012) and many organizations and programs currently exist including Therapy Animals Supporting Kids (TASK; Phillips & McQuarrie, n.d.), the Bee Kind Garden Project, Taking the Reins (http://takingthereins.org/), and many others.

Recently, the Veteran's Affairs has begun exploring the use of complementary and alternative modalities (CAM) for the treatment of PTSD, specifically the use of dogs (Yount, Ritchie, Laurent, Chumley, & Olmert, 2013). The literature exploring the effectiveness of animal-assisted therapies is lacking in quantitative studies, but there is a plethora of qualitative research. Only recently have researchers begun to study the effects of AAT quantitatively, however, the results look promising for those suffering from disorders highlighted by stress, anxiety, or fear.

Method

In order to conduct this literature review, it was decided to utilize as many databases as possible in order to return the most possible results. Primary databases included ProQuest, EBSCO, PsycINFO, and PubMed. A basic search for "PTSD" yielded too many results, as did "Animal-Assisted Therapy". In order to reduce the number of results, the advanced search option was utilized, in which the following options were selected: "limit to full text", "peer-reviewed". Using the "AND" operator, "PTSD" and "animal assisted therapy" were entered as the search terms. Additionally, "posttraumatic stress disorder", "post traumatic stress disorder", and "post-traumatic stress disorder" were also utilized in place of "PTSD" while "animal-assisted therapy", "animal-assisted psychotherapy", "equine assisted therapy", "canine assisted

therapy" were substituted for "animal assisted therapy". These substitutions were conducted because many of the results were qualitative in nature or were meta-analyses. While these types of research are useful, this literature review intended to review experimental, quantitative data in order to assess the efficacy of AAT.

Theoretical Foundations

According to attachment theory, social interactions with significant others fosters secure attachment and internal working models that contribute positively to self-worth, adaptive emotion regulation strategies, effective psychosocial functioning, and overall good mental health (Zilcha-Mano, Mikulincer, & Shaver, 2011; Escolas, Arata-Maiers, Hildebrant, Maiers, Mason, & Baker, 2012). According to Escolas et al (2012), "attachment theory provides a framework for understanding and addressing the central problems of PTSD that affect psychosocial functioning: emotion or affect regulation, interpersonal skills, and social support behaviors". People with PTSD tend to suffer "from extreme social difficulty" (Escolas et al, 2012). Support for an attachment perspective is provided by the findings of Escolas et al, (2012) in which individuals who reported low levels of PTSD symptoms were found to have more functional styles of attachment compared to those who reported higher levels of PTSD symptoms.

Further support for the use of animals in therapy from an attachment perspective is provided by a review of the literature conducted by Zilcha-Mano et al (2011) in which they found that human-animal relationships meet the four prerequisites for an attachment bond: proximity seeking, safe haven, secure base, and separation distress. Zilcha-Mano et al (2011) also highlight that there is plenty of literature regarding personal perceptions of the human-animal relationship: people feel emotionally close to their pets and they seek and enjoy this closeness, pet owners find their pet to be a source of support, comfort and relief, loss of a pet

often triggers sense of loss and triggers grieving process, and that pets "provide a secure base from which their owners can more confidently explore the world".

Zilcha-Mano et al (2011) created a self-report measure based around two main constructs: attachment anxiety and attachment avoidance, called the Pet Attachment Questionnaire (PAQ) which contained two subscales to capture anxiety and avoidance. They found that the higher an individual score on "measures of attachment insecurities (anxiety and/or avoidance) in human–human relationships, the higher their scores on the PAQ insecurity scales" (Zilcha-Mano et al., 2011). Based on their findings regarding the PAQ and Bowlby's claim that "the therapists' ability to function as an agent of change is through acting as a security-enhancing attachment figure" (Bowlby, 1988; as cited by Zilcha-Mano et al., 2011), they suggest that a therapy animal can potentially serve as the attachment figure instead of the counselor. This is especially useful when the therapist cannot create the sense of security, trust, and safety the client needs in order for attachment to form –for patients with insecure attachments, animals can bridge the gap.

Additionally, when working with children, the therapist can listen to what the child says to the animal or they may ask questions from the perspective of the pet. During therapy meetings, pets can be catalysts, ice-breakers, assist in the establishment of the client-counselor relationship, and help to lower inhibitions and resistance to beginning therapy (Zilcha-Mano et al., 2011). The attention and affection offered by the animal can reinforce to the client that they are worthy of love and attention, which can help the therapist establish an environment that is low in anxiety and worry as well as a possible bridge to a secure attachment to the therapist.

According to Gestalt theory, the body is a tool to be utilized in therapy; this is the premise that Equine-Assisted Psychotherapy (EAP) is based on according to the guidelines set

by Equine Assisted Growth and Learning Association (EAGALA) (Schultz, Remick-Barlow, & Robbins, 2007; EAGALA, 2010). The goal of EAP is to encourage client insight, which is also a Gestalt premise. For example, grooming is taught to participants, including how to clean the horse's hooves. Anyone who has ever worked with a horse knows that a horse will only lift hoof if it wants to – it's stronger than most people so it cannot be forced (Bachi, Terkel, & Teichman, 2011)!

When the horse won't lift its hoof, this can make the individual feel angry, inadequate, fearful or frustrated, but at this point the therapist can step in and help the client process those feelings. The client can then learn that the less fearful or angry they feel, the more likely the horse is to cooperate (Schultz et al., 2007). It is believed that the process of working through such issues and learning to recognize not only the animal's body language, but also to become aware of one's own body language and other non-verbal messages, that the healing process occurs.

Why Animals?

Equine-assisted psychotherapy uses horses because horses are similar to humans in social structures and behavior responses which can act as a mirror for clients. Additionally, as prey animals, horses are very aware of their surroundings, and as such are quite sensitive to the people around them (Bachi, Terkel, & Teichman, 2011). Horses are large animals with minds of their own which can mean that building a relationship may require the client to overcome many obstacles, which itself builds confidence, relationship skills, and problem-solving skills. Horses also have similar social traits to humans and as such, humans tend to relate to them easily

(EAGALA, 2010). EAP addresses self-esteem, confidence, communication, interpersonal effectiveness, trust, boundaries, limit setting, and group cohesion. (Schultz et al, 2007).

It was Carl Rogers who suggested that unconditional positive regard was necessary for successful therapy and the literature is beginning to suggest that animals can provide that unconditional warmth and love. Most people report feeling as though their dogs love them, even when they are grumpy (Stern et al., 2013). In a survey of 30 U.S. military veterans who mentioned owning a dog during an intake interview at the V.A., 80% have lived with their dog over one year, almost half own more than one dog, and two-thirds are sole caretaker of dog and take regular walks with their dog averaging 49 minutes a day (Stern et al., 2013). On average, they spent 14 hours a day with their dogs and 70% share their room with their dog. Of the participants in this survey, 93% had scores that met the cutoff for PTSD, all scored in the moderate to severe range of depression, and on the Veterans Short Form Health Survey and Health Behaviors Questionnaire (SF-36) scores indicated overall quality of life of these veterans was between 1.5 and 2.0 standard deviations below the norm for the United States (Stern et al., 2013).

All 30 vets reported very strong attachments to their dog, with 4 reporting the highest attachment level on the Lexington Attachment to Pets Scale (Stern et al., 2013). According to the responses provided on the Dog Relationship Questionnaire, most felt they had experienced improvement over a variety of their PTSD symptoms. Many reported “feeling calmer, less lonely, less depressed, less worried about their own and their family's safety, less irritable, and better about themselves as a person” (Stern et al., 2013). Flashbacks and bad dreams were not affected by having a dog, nor were they more easily able to discuss trauma, but they did say that their dog tried to calm them down/cheer them up when things were bad.

The U.S. Substance Abuse and Mental Health Services Administration (SAMHSA) identified six principles to be used in any setting when addressing trauma and to aid in the healing process: 1) Safety, 2) Trustworthiness and Transparency, 3) Peer Support and Mutual Self-help, 4) Collaboration and Mutuality, 5) Empowerment, Voice and Choice, and 6) Cultural, Historical, and Gender Issues (SAMHSA, 2015; Dell & Poole, 2015). In a recent study, Dell and Poole (2015) highlighted how the use of dogs can meet each of the six principles.

Following a case-study design, the intervention consisted of a dog handler and her therapy dog from the Saskatchewan St. John Ambulance Therapy Dog volunteer program and their interactions with inmates at the Region Psychiatric Centre (RPC). Every two weeks, the dog and handler met with six inmates (four women and two men) for an average of 10 visits each, ranging from 15 minutes to 1 hour, for an average of 30 minutes (Dell & Poole, 2015). The participants were selected due to the fact that they liked dogs and their attendance was voluntary. The diagnoses of all participants included a variety of mental health disorders and issues, including PTSD. The following list depicts the observations of the researchers:

- Principle 1: Safety: The presence of the dog made the inmate Rebecca feel safe so she put a picture of the therapy dog on the wall in her cell called her “comfort” zone because the dog exposed her belly to her the moment they met and that meant that the dog considered her a safe person.

- Principle 2: Trustworthiness & Transparency: Dogs are always transparent in their emotional displays and are not capable of lying. In one case, the inmate was being physically withdrawn so the dog responded similarly by putting space between them. In another situation, an inmate felt that dog loved him “unconditionally” because of the dog’s apparent affection for him.

- Principle 3: Peer Support & Mutual Self-Help: There was an inmate who did not originally want to visit because he felt he wasn't in the "right headspace", but he was encouraged to visit anyway and he complied. At first, the dog and the inmate simply sat quietly together. During the visit, the inmate visibly relaxed and the experience impacted him greatly, in a positive manner. There were many comments from the inmates that Kisbey (the therapy dog) "just makes them feel better". One inmate said that in the presence of the dogs he gets the courage to be more social with the people present.

- Principle 4: Collaboration & Mutuality: Some inmates, such as Jenny, were given tasks to complete with dog. Jenny's task was to stay focused (in general, not on a specific task). Others recognized that the support personnel were there as volunteers to make this program work for the inmates.

- Principle 5: Empowerment, Voice, & Choice: The dog handler utilized her role and ability to empower the inmates by dropping off photos of Kisbey with positive messages from the dog written on the back. Kisbey herself motivates positive change too, such as increased socialization.

- Principle 6: Cultural, Historical, & Gender Issues: the dog demonstrates the "ability to live nonjudgmentally and fully in the moment" by not knowing or caring about the inmates past indiscretions, their gender, or their culture. The dog connects directly with the human, regardless of background.

From a subjective standpoint, there is ample support for the use of animals. Nickolas et al (2012) examined the acceptableness of therapy dogs in an emergency department according to

the patients and staff. Of the 230 patients and staff surveyed, 93% of patients and 95% of staff felt that therapy dogs should visit the ER (Nickolas et al., 2012). In 2009, Wells conducted a review literature and published a summary of the research demonstrating the positive benefits of human-animal interaction. According to the review, physical interaction has been shown to decrease heart rates and blood pressure for both the animal and the human and simply being in the same room or space as an animal has been shown to have positive health benefits (Wells, 2009).

Being a pet owner may also be associated with positive health benefits such as less illnesses and speedier recoveries and companion animals have been shown to positively affect social interactions by acting as "social lubricants" (Wells, 2009). Pet ownership can reduce feelings of loneliness and isolation, and in hospital wards and institutions such as nursing homes, patients show positive benefits from animal interactions. Additionally, pet ownership has been associated with a reduction in depressive symptoms, and increases in self-esteem. Wells' (2009) review also explored research into the mechanisms of how interactions with animals improved human health. Some of the research seems to indicate that many pet owners consider their pet to be a part of the family, thus forming attachments to the animal as they would to a person. As stated previously, healthy, loving attachments improve psychological health.

Results: Effective Uses of Animal-Assisted Therapy

The very presence of a dog has been demonstrated to reduce the perception of stress and anxiety in individuals. In a recent study, 80 female participants were randomly divided into four groups of 20 participants each and were then subjected to a "traumatic experience" involving the viewing of a traumatic film clip (Lass-Hennemann, Peyk, Streb, Holz, & Michael, 2014). Each of the four groups watched the film but under varied circumstances: one group watched with

friendly dog, another with a friendly person, the third with a stuffed animal dog, and the control group watched the film alone (Lass-Hennemann et al., 2014).

Subjective stress and anxiety were measured using the State-Trait-Anxiety-Inventory-Trait (STAI-S) and the Positive and Negative Affect Schedule (PANAS) while physiological measures (ECG, blood pressure, and saliva measurements of cortisol) were also collected (Lass-Hennemann et al., 2014). Each measure was taken before, during, and after the traumatic film. In addition, the Pet Attitude Scale (PAS), an 18-item scale measuring the general attitude toward pets was also administered. The 11-minute film consists of a compilation of scenes from the 2002 French film "*Irreversible*", and depicts fictional scenes of physical and sexual violence (Lass Hennemann et al., 2014). Subjective results showed greater decreases in stress and anxiety in the dog group comparable to the social support group (watching with another person), but there were no reductions in the physiological measures of stress and anxiety (Lass-Hennemann et al., 2014). These results support the claim that dogs have a positive effect on client perceptions and experience of stress and anxiety.

Childhood sexual abuse (CSA) is often treated with trauma-focused cognitive behavioral therapy (TF-CBT) (Olafson, 2011; as cited by Signal, Taylor, Botros, Prentice, & Lazarus 2013). This can be problematic because it requires child to trust the therapist, but if an adult was the abuser and someone the family knows and trusts, then this trust may be absent. Additionally, if the child is too young, talk therapy can be difficult to engage in due to a lack of language skills. The use of animals can assist the therapist in building trust and engaging with children (Signal et al., 2013). As prey animals, horses are very sensitive to their surrounding environments and any changes. For clients, this includes their body language, breathing, vocalizations. If there is a

mismatch between the internal and external messages of the client, the horse gets mixed messages.

Signal and colleagues (2013) followed the EAGALA model in designing the equine-assisted therapy intervention utilized. Each exercise the participants take part in address a different issue, including trust, communication, boundaries, observation, body language, attitude and self-perception. Participants included 15 children, 15 adolescents, 14 adults who were referred for sexual abuse. Each participant was assessed at three time points: 1) intake, 2) prior to counseling, and 3) after the intervention (Signal et al., 2013). All participants received in-clinic counseling once a week, although there was wide variation on the length of counseling, ranging from as little as two weeks to as much as one year. The EAP consisted of a 90-minute session, one time per week, for an average of 9-10 weeks (Signal et al., 2013).

The Children's Depression Inventory for children and Beck Depression Inventory for the adolescents and adults was administered during each assessment. Between time 1 and time 2, there was no change in depressive symptoms, however, from time 2 to time 3, there was a statistically significant reduction in symptoms for all age groups (Signal et al., 2013).

Similar studies show similar results. Earles, Vernon, and Yetz (2015) found that PTSD symptoms decreased, as did anxiety, emotional distress, depressive symptoms, and alcohol use after a six-week intervention utilizing horses. The use of canine-assisted therapy shows similar reductions in PTSD symptoms (Hamama et al., 2011). Stefanini, Marino, Bacci, and Tani, (2016) found that the use of AAT provides a “verifiable reduction in emotional and behavioral symptoms and [an increase in] global competence and psychological functioning”.

In a randomized control trial, Stefanini and colleages (2016) recruited 40 children, ages 11-17, with severe psychiatric diagnoses from an inpatient facility in Florence. The treatment group consisted of 20 participants (9 males and 11 females) and a control group (Stefanini et al., 2016). Over the course of 14 months all participants engaged in standard treatment protocols, but treatment group also received AAT. The intervention consisted of 10 sessions, five of which were individual sessions and the other five were group sessions. Sessions were conducted on a weekly basis and lasted for 45 minutes (Stefanini et al., 2016).

Several measures were taken, including the Children Global Assessment Scale (C-GAS), which is a measure of social and psychiatric functioning, and is used to measure the overall severity of disturbances in children (Stefanini et al., 2016). The Italian version of the Youth Self Report (YSR) was administered in order to examine emotional-behavioral symptoms. The YSR has two scales: internalizing and externalizing behavioral problems. The internalizing scale has three subscales: withdrawn, somatic complaints, anxious/depressed, while the externalizing scale has two subscales: delinquent and aggressive behavior. Each session was video recorded and then coded using an observational form with six scales: participation, interaction w/animal, socialization with peer, socialization with adult, withdrawal behaviors, affection toward the animal (Stefanini et al., 2016).

The results support the use of animals in therapy. The treatment group had significant changes in YSR, C-GAS, with internalizing and externalizing problems significantly reduced as well as total competence and global functioning significantly increased (Stefanini et al., 2016). The control group saw improvements in global functioning, but no statistically significant changes in the internalizing or externalizing scales. Stefanini et al (2016) state in their

conclusion that "significant improvements …in patients treated with AAT was due to intensive, integrated, and multidisciplinary intervention"

Conclusion

The purpose of this literature review was to explore the evidence within the current literature in order to determine whether the use of animals in therapy facilitates the therapeutic relationship, reduces symptoms, and improves outcomes for individuals diagnosed with PTSD. According to the evidence reviewed, animal assisted therapy has been proven a useful addition to traditional therapy for PTSD, as well as any other disorder in which stress, anxiety, and fear are present. The presence of animals has been repeatedly shown to reduce these symptoms or at least reduce the individual perceptions and personal experience of stress and anxiety. Animals provide a bridge to therapy by offering clients honest, immediate feedback and a relationship that is based on trust and unconditional positive regard for one another without any of the human worries that can often create barriers to relationships.

There is still a need for more research into the use of AAT as a supplement to traditional therapies. It is yet unknown by what mechanism relief is provided to clients. Is the effectiveness due to the animal itself or due to the increased time spent focusing on the client? Further research will answer this question one day. Additionally, future research with increased sample sizes and operationalization of AAT techniques will expand our understanding of how AAT helps clients. Future research should also focus on theory-based approaches that utilize AAT, as Escolas et al (2012) and Zilcha-Mano et al (2011) have already begun to explore. As this body of knowledge continues to grow, it is likely there will be an increase in the acceptance of AAT as a useful adjunct to the treatment of PTSD and other disorders.

"Such short little lives our pets have to spend with us, and they spend most of it waiting for us to come home each day. It is amazing how much love and laughter they bring into our lives and even how much closer we become with each other because of them."

— John Grogan, from Marley and Me: Life and Love With the World's Worst Dog

References

American Psychiatric Association (2013). Diagnostic and Statistical Manual of Mental Disorders (5th ed.). Washington, DC: Author.

Bachi, K., Terkel, J., & Teichman, M. (2011). Equine-facilitated psychotherapy for at-risk adolescents: The influence on self-image, self-control, and trust. *Clinical Child Psychology & Psychiatry*, *17*(2), 298-312. http://dx.doi.org/10.1177/1359104511404177

Dell, C., & Poole, N. (2015). Taking a PAWS to reflect on how the work of a therapy dog supports a trauma-informed approach to prisoner health. *Journal of Forensic Nursing, 11*(3), 167-173. http://dx.doi.org/10.1097/JFN.0000000000000074.

DePrekel, M. (2012). Equine facilitated psychotherapy for the treatment of trauma. In K. S. Trotter, K. S. Trotter (Eds.), *Harnessing the power of equine-assisted counseling: Adding animal assisted therapy to your practice* (pp. 59-72). New York, NY, US: Routledge/Taylor & Francis Group.

Equine Assisted Growth and Learning Association (EAGALA). (2010). EAGALA: How it works. Retrieved from http://www.eagala.org/works

Earles, J. L., Vernon, L. L., & Yetz, J. P. (2015). Equine-assisted therapy for anxiety and posttraumatic stress symptoms. *Journal Of Traumatic Stress*, *28*(2), 149-152. http://dx.doi.org/10.1002/jts.21990

Escolas, S., Arata-Maiers, R., Hildebrant, E., Maiers, A., Mason, S., & Baker, M. (2012). The impact of attachment style on posttraumatic stress disorder symptoms in postdeployed military members. *The United States Army Medical Department Journal*, July-Sept 2012, 54-61. Retrieved from http://www.cs.amedd.army.mil/FileDownloadpublic.aspx?docid=2c12aea8-8adf-4591-b2c1-c8a47450fe0c

Grogan, J. (2009). *Marly & me: Life and love with the world's worst dog.* London: Hodder & Stoughton.

Hamama, L., Hamama-Raz, Y., Dagan, K., Greenfeld, H., Rubinstein, C., & Ben-Ezra, M. (2011). A preliminary study of group intervention along with basic canine training among traumatized teenagers: A 3-month longitudinal study. *Children And Youth Services Review*, *33*(10), 1975-1980. http://dx.doi.org/10.1016/j.childyouth.2011.05.021

Hayes, T. (2015). *Riding home: The power of horses to heal*. New York, NY, US: St Martin's Press.

Lass-Hennemann, J., Peyk, P., Streb, M., Holz, E., & Michael, T. (2014). Presence of a dog reduces subjective but not physiological stress responses to an analog trauma. *Frontiers in Pyschology, 9*(5), 1010. http://dx.doi.org/10.3389/fpsyg.2014.01010

Nickolas, N., Lubin, J., Lubin, J., Bankwitz, B., Castelaz, M., Chen, X., Shackson, J., Aggarwal, M., & Totten, V. (2012). Therapy dogs in the Emergency Department. *Western Journal of Emergency Medicine, 13*(4), 363-365. Retrieved from http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3421977/?tool=pmcentrez

Phillips, A., & McQuarrie, D. (n.d.). Therapy animals supporting kids (TASK)™ Program: Program Manual. *American Humane*. Retrieved from

http://www.americanhumane.org/assets/pdfs/children/therapy-animals-supporting-kids.pdf

Richardson, L., Frueh, B.C., & Acierno, R. (2010). Prevalence estimates of combat-related PTSD: A critical review. *Australian and New Zealand Journal of Psychiatry, 44*(1), 4-19. http://dx.doi.org/10.3109/00048670903393597. Retrieved from http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2891773/pdf/nihms206209.pdf

Schultz, P., Remick-Barlow, A., & Robbins, L. (2007). Equine-assisted psychotherapy: A mental health promotion/intervention modality for children who have experienced intra-family violence. *Health & Social Care in the Community, 15*(3),265-271. http://dx.doi.org/10.1111/j.1365-2524.2006.00684

Signal, T., Taylor, N., Botros, H., Prentice, K., & Lazarus, K. (2013). Whispering to horses: Childhood sexual abuse, depression and the efficacy of equine facilitated therapy. Sexual Abuse in Australia and New Zealand, 5(1), 24-32. Retrieved from http://go.libproxy.wakehealth.edu/login?url=http://search.proquest.com/docview/1355435482?accountid=14868

Stefanini, M., Marino, A., Bacci, B., & Tani, F. (2016). The effect of animal-assisted therapy on emotional and behavioral symptoms in children and adolescents hospitalized for acute mental disorders. *European Journal of Integrative Medicine, 8*(2), 81-88. http://dx.doi.org/10.1016/j.eujim.2016.03.001

Stern, S., Donahue, D., Allison, S., Hatch, J., Lancaster, C., Benson, T., & ... Peterson, A. L. (2013). Potential benefits of canine companionship for military veterans with posttraumatic stress disorder (PTSD). *Society & Animals, 21*(6), 568-581. http://dx.doi.org/10.1163/15685306-12341286

Substance Abuse and Mental Health Services Administration (SAMHSA). (2015). Trauma-informed approach and trauma-specific interventions. Retrieved from http://www.samhsa.gov/nctic/trauma-interventions

U.S. Department of Veteran's Affairs. (2016). PTSD: National Center for PTSD: Treatment. Retrieved from http://www.ptsd.va.gov/public/treatment/therapy-med/index.asp

Wells, D. (2009). The effects of animals on human health and well-being. *Journal of Social Sciences, 65*(3), 523-543.

Zilcha-Mano, S., Mikulincer, M., & Shaver, P. (2011) Pet in the therapy room: An attachment perspective on animal-assisted therapy. *Attachment & Human Development,* 13(6), 541-561, http://dx.doi.org/10.1080/14616734.2011.608987