Chapter 22

Treating Human Trauma with the Help of Animals: Trauma Informed Intervention for Child Maltreatment and Adult Post-Traumatic Stress

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When a traumatic life event shakes the foundation of an individual's willingness or ability to have a human relationship, the traditional "trusting" relationship that underpins any therapeutic intervention may no longer be functional as an intervention. Acutely traumatic experiences can disrupt the long-term development of an individual, interfering with normal patterns of interpersonal behavior that shape normal social and emotional function. This chapter explores two distinct applications of animal-assisted, trauma-focused intervention that differ with respect to the target population and the models through which therapeutic approaches are delivered. However, these models share a common understanding regarding the significance of animals in providing emotional security, psychophysiological and affect regulation, neurological recalibration, and other behavioral responses of humans to our social environment.

According to social ecological theory, the social environment is the "space" within which human behavior and development occur, where individuals are shaped either negatively or positively by the experiences of everyday life. The first therapeutic model presented in this chapter examines incorporation of animals in child psychotherapy, considering the impact of animals in shaping social environments, both the internal experience of emotional security and the external experience of safety. Researchers have established that key variables and changes to the social and emotional environment have significant impacts on the development of sense of safety, emotional security, and the development of acute trauma response (Ainsworth, 1991).

The second therapeutic model examines the application of animal-assisted therapy in treating post-traumatic stress disorder (PTSD), specifically in the context of combat veterans. Nearly half a million service members suffer from PTSD as a result of trauma experienced in combat theaters in both Afghanistan and Iraq. The Canine Warrior Connection Program, housed at the National Intrepid Center of Excellence at Walter Reed Medical Center, specializes in treating the symptoms of PTSD in combat veterans. This model explores the significance of animals in biopsychosocial interventions that pair therapists and specialized dog trainers with service members in an experiential treatment model to assist veterans in the management of their PTSD symptoms.

22.1 PSYCHODYNAMIC ANIMAL-ASSISTED PSYCHOTHERAPY FOR EFFECTS OF INTERPERSONAL TRAUMA

As in any type of animal-assisted therapy,[1] animal-assisted psychotherapy (AAP) follows the basic principles and methods of psychotherapy approaches. This section demonstrates how AAP expands these principles to make them more effective and to provide more options for their use in psychodynamic AAP with children suffering from trauma as a result of abuse and/or severe neglect.

Trauma may be disaster-related (e.g., auto accident, earthquake, tornado, war) or more interpersonal in nature. In the aftermath of interpersonal trauma, an individual frequently experiences anxiety, emotional numbness, and/or either personal

1. Animal-assisted therapy is an umbrella term referring to any recognized therapy field integrating animals into its practice.

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or social disconnection. Trauma that is not properly processed with the goal of returning a sense of control and sense of self-awareness to the traumatized individual may progress to PTSD.

22.1.1 Implications of Interpersonal Trauma

Interpersonal trauma is more complicated than faceless disaster. Complex trauma disorder, caused by ongoing abuse of an interpersonal nature, usually within the family context and usually during childhood, results in the persistent distrust of others. In the case of abuse by a known person, the traumatic experience goes hand in hand with, and is worsened by, the loss of trust in a once-trusted ally (family member, care-taker, neighbor, etc.) or person who serves a trusted role (babysitter, medical professional). Other potentially supportive figures may be unaware of the abuse or choose "not to see." Without the empathy and support of another person, the ability to trust others is severely damaged, leading to insecure attachment.[2] Long-term implications of insecure attachment include such issues as difficulty in creating healthy relationships, in turn leading to further emotional problems, such as loneliness, isolation, distorted perceptions of others, lack of ability to cooperate in tasks with others, lack of willingness to look for help in time of need, inability to depend on others, etc. In this case, an individual may seek assistance in therapy but, because of lack of trust in the therapist, may not be able to benefit from the therapeutic process. The experience of interpersonal trauma may prevent progress in the process of psychotherapy in children in a number of ways.

Collapse of Potential Space

Whether the medium for therapy is that of play (in the case of children) or direct discussion (in the case of adults), the existence of *potential space*[3] is a critical element in the process of therapy. Potential space exists only in a setting that feels safe to the client, allowing for the re-enactment and re-experiencing of trauma without fear of actual danger, as well as offering a safe environment for emotional expression, observation, and contemplation of thoughts, emotions and dynamics, and for the freedom to consider options and possible solutions. However contact with one's inner world of emotions and content related to the trauma is likely to raise the trauma survivor's anxiety, leading to re-experiencing the danger associated with the trauma, the collapse of the potential space, and to escape from this emotionally dangerous content into the real world. When this occurs, the client is emotionally unavailable for therapy.

Shame and the Presentation of False Self

In research that focuses on trauma in general and abuse in particular, shame is a prevalent and significant factor resulting in the delay of disclosure of the abuse by the victim (Eisikovits & Lev-Wiesel, 2013; Hershkowitz, Lanes, & Lamb, 2007). Furthermore, according to Feiring and Taska (2005), "Persistent shame may explain failure to process the abuse and the maintenance of posttraumatic stress disorder symptoms" (p. 337). The explanation behind this finding may lie in the unbearable shame that the abuse survivor feels as a result of the abuse and the need to hide that shame from others and also from oneself. This process leads the victim to present a *false self*[4] in order to hide the source of the shame, and to hide from the resulting emotional pain, resulting in the lack of emotional expression and self-disclosure of thoughts and events.

Poor Therapeutic Alliance

Lack of trust in the intentions of others is a common outcome of interpersonal trauma. This phenomenon is likely to have a negative effect on the establishment of the *therapeutic alliance*[5] and therefore result in a poorer outcome (Barber, Connolly, Crits-Christoph, Gladis, & Siqueland, 2009; Fluckiger, Del Re, Wampold, Symonds, & Horvath, 2012; Shirk, Karver, & Brown, 2011), low level of emotional self-expression and self-disclosure (Farber & Metzger, 2009; Hall & Farber, 2001),

2. John Bowlby (1969) was the source of one of the most influential and most researched theories in the area of human relationships and their effect on emotional development. Together with Mary Ainsworth, he focused on the study of the mother–child bond and its implications for relationships. Shaver, Hazan, Fraley, Mikulincer, and others have expanded attachment theory to study adult attachment patterns.

3. Coined by Winnicott (1971), the potential space is the intermediate area of experiencing, or transitional space between one's outer reality and inner world, allowing play that brings together elements of both worlds in such a way as to help the client to work through conflictual and anxiety-producing issues.

4. Winnicott (1965) referred to the authentic and spontaneous *real self* versus the *false self*, developed as a defense mechanism against impingement, of painful experience of the real self, leading to disconnectedness and a feeling of inner emptiness.

5. Considered to be the key to successful therapy, the therapeutic alliance is made up by the mutual agreement by the therapist and client concerning the goals of the therapy, the methods used to reach these goals, and therapist–client bond (Bordin, 1979). In children, this bond is the main, if not only, element of the therapeutic alliance (Fjermestad et al., 2012).

and a high drop-out rate (Sharf, Primavera, & Diener, 2010). In order to uncover the root of trauma responses in children and to successfully guide healing, the therapist must overcome resistance and defenses presented by these children in the therapy process. Cloitre, Stovall-Mclough, Miranda and Chemtob (2004) concluded from the results of their research that "the therapeutic relationship may be an especially 'active' ingredient in the remediation of childhood abuse-related PTSD" (p. 414). Psychodynamic AAP may be one way to enable the development of a trusting therapeutic relationship.

22.1.2 Psychodynamic AAP with Child Victims of Interpersonal Trauma—A Relational Approach to Psychotherapy Par Excellence

In her groundbreaking book, *Trauma and Recovery*, Herman (1997) stated that disconnection from others is a core experience of psychological trauma and therefore "recovery can take place only within the context of relationships" (p. 133).

Establishment of the Therapeutic Alliance

Although the context of relationships is necessary for recovery from trauma, research has pointed to the difficulty in establishing the therapeutic alliance with child victims of abuse and severe neglect who are suffering from avoidant attachment (Mallinckrodt, Gantt, & Coble, 1995). In other words, it is exactly that relationship that is so necessary to help the client work through the trauma and to grow that is the hardest to achieve. Yet some research has shown that the presence of an animal may solve this difficult issue by serving as a facilitator of social interaction (Corson, Corson, Gwynne, & Arnold, 1977; McNicholas & Collis, 2000; Messent, 1983).

Although this author is not aware of research concerning the influence of animals' presence in the therapy setting on the establishment of the therapeutic alliance with child victims of abuse who are resistant to that alliance, she and other AAP colleagues have witnessed many children in welfare institutions who exhibited signs of avoidant attachment in their behavior with adults, yet willingly and even happily came to AAP therapy sessions and created an unexpectedly quick therapy alliance. Recent research also indicates that pets serve as a safe haven and secure base[6] for their owners in the presence of a stranger (Zilcha-Mano, Mikulincer, & Shaver, 2012), and they may also serve these same attachment functions in a therapy setting (Zilcha-Mano, unpublished manuscript). This feeling of safety may then help the client feel safe enough to dare to attempt to create a relationship with the therapist. Children in this therapeutic context may observe the therapist's relationship with the animals as they turn to the therapist for protection, or enjoy the presence and attention of the therapist. Once the child understands that the therapist is a secure base and a safe haven for the animals, the child's identification with the animals may allow the child to bring down his or her defenses and to feel that he or she may also find the therapist to be a source of safety and enjoyment, thus opening the way for the therapeutic alliance.

> *"I saw that the animals trusted you, so I thought I could trust you, too." "You treated the animals so well. I thought you would treat me well, too." "I never trust any adult. But if I happen to see that they are okay with animals, then I know that they are okay."*

Children traumatized by abuse have had very hurtful experiences with adults and feel that they have little reason to trust adults, including therapists, and to see them in a positive light. However, the attitude toward AAP therapists might be different. Lockwood (1983) showed children pictures of various images. Each picture had two versions that were identical except that one version included an animal and the other did not. Lockwood found that the situations in the pictures with an animal in them were perceived in a more positive light, and the person in the picture was perceived with more positive regard. One may infer from this research that a therapist accompanied by an animal will be seen in a more positive light than one without the animal, facilitating the establishment of the therapeutic alliance.

Relationship-Based Theories

Because problematic past (or present, as in the case of children) relationships are the source for most psychopathologies, therapy for trauma must take place within the context of relationships. Whereas in other types of psychotherapy the only relationship in the therapy setting is that between the client and the therapist, in AAP, a number of potential relationships exist simultaneously, suggesting that AAP would provide a rich and appropriate context for trauma work. The presence of one or more animals in the therapy setting, along with the therapist and client, allows for an array of relationships to occur in the "here-and-now" in a very real and concrete way. At the same time, many other relationships from the client's life "come to life" as the animals come to represent, through re-enactment or through play, people from the client's object

6. In attachment theory, securely attached children use an attachment figure as a secure base from which they may explore, and as a safe haven to which they may return in times of distress or regression (Ainsworth, 1991).

world. The animal serves as a rich and flexible medium in therapy (Oren & Parish-Plass, 2013; Parish-Plass & Oren, 2013a,b), allowing the expression of the client's inner world, consisting of people and relationships with those individuals, which otherwise may be too threatening to express. The animals provide reality but at a safe psychological distance. Unlike dolls, they actually move, make spontaneous movements and sounds, express emotions, eat, give birth, are sick, play, and die. To the client in this therapeutic setting, the animals are like humans but are not humans. Therefore clients feel safer entering into interactions with the animals, creating relationships with them, becoming angry at them, touching them, playing with them, worrying about them, being frightened of them, or missing them, as they would with other human beings.

Object Relations,[7] Attachment, and the AAP Therapy Triangle

Whereas the conventional psychotherapy relationship is made up of a dyad, specifically the therapist and the client, AAP consists of three (or more) individuals. If, in the former, the clients may only have the therapist on whom they may transfer objects from their inner object world, in AAP there are more opportunities for transference. This is especially critical in the case of children who suffered from maltreatment in the preverbal stage of development, resulting in difficulty in symbolization. Such children will be less likely to use dolls, for instance, to represent people in a play therapy situation. Animals' very aliveness invites projections and transferences, whether intentionally or not, allowing emotional expression that might be too dangerous emotionally or otherwise in a more direct manner.

> *In reaction to the dog who excitedly barked and wagged her tail at seeing the 10-year-old girl she had played with often, the girl said "You have eyes like a tiger, just like Daddy. You have black hair just like Daddy. I hate when you yell at me. I hate when you hit me. You're not my friend."*

This expanded presence in the room is often referred to as a therapy triangle consisting of therapist, client, and animal, increasing the number of relationships in the room and the roles made possible by each of the participants in the setting. That is, there exists a relationship between the therapist and client, between the therapist and the animal, and between the client and the animal. In the case that the setting includes more than one animal, there are also the relationships between the animals.

In AAP, the triangle allows for a type of group (Ish-Lev & Amit, 2013), consisting of the client, the therapist, and the animals. In the AAP triangle, the client may choose to interact with the therapist or the animals or both, or may choose to observe the animals or the interactions between the therapist and animals. The observation by the client of the therapist interacting with the animals often leads clients to perceive the therapist as the parent of the animals. Many people seek therapy because of emotional difficulties resulting from problematic relationships in the past that affect their functioning and sense of well-being in the present. Bowlby posited that all human beings base their social interactions on internal working models formed in interactions with their parents. This style is carried into other relationships, as well as into the therapy situation. These models may be worked on within therapy. More positive models may be developed through the therapist's relationship with the animals, and through identification (Bellak, 1975), the child is able to feel that her or she also deserves such care.

The observation by the client of the relationship between the therapist and the animals allows the client to form an opinion of the therapist that might positively affect the therapy process, as was shown earlier in connection with the therapy alliance. Also mentioned earlier was the negative effect of the shame associated with abuse on the expression of the client's real self, thus undermining the therapy process. In AAP, clients witness the unconditional positive regard and acceptance of the therapist toward the animals, despite their difficult histories and expression of negative emotions, and may feel that the therapist will also accept them and all their parts.

> *A 6-year-old girl, a survivor of sexual abuse, was known for her sexualized behaviors, but she denied their existence in discussions with childcare workers and with the AAP therapist. In one session, she said, "I'm cute just like Cuddly (the cockatiel who had a wide range of behaviors, including threatening and trying to bite). But people tell me that I act not nicely with my body. I don't understand." This statement came after a conversation about Cuddly's many behaviors and emotions and the therapist's subsequent expression of love for Cuddly.*

Both the number and types of relationships increase in the AAP setting. For instance, the client may have one type of relationship with the dog and another type of relationship with the hamster. This point shows the great advantage afforded by AAP for psychotherapy with an object relations approach. Either the therapist or any given animal may represent a person from the client's inner object world, and therefore the client's relationship with each will be expressed in different ways. In a classic therapy setting with a child coming from a family of a strict hierarchy, the child may always act in a deferential manner to the therapist. However, with animals present, the therapist may represent the child's father and the small hamster a younger sibling over which the child demands total control. Such therapy may allow disclosure of issues

7. Object relations theory suggests that people relate to others and situations in their adult lives based on their childhood experiences with significant others.

and information in a richer and more intricate way than a typical psychotherapy setting, allowing expanded re-enactments of situations that might have brought the child to therapy.

> *In one AAP clinic there was an array of animals, among them two birds and three lab rats. The therapist explained that one must be careful that the rats not come near to the bird, for they might try to attack the bird. The teenage girl had been repeatedly sexually harassed by classmates and once held down by some as others fondled her. The social worker commented that she had cooperated in order to garner acceptance into the group. As the therapist took the bird out of the cage, she put her hand over his head so he would not hit his head on the top bar of the opening. The girl said, "Ahhh – I know why you are doing that—so he won't be able to resist." She related to the bird as a victim. During the first stage of therapy, she seemed mostly interested in creating a relationship with the rats, ignoring the rats' attempts to reach the bird. As the therapy progressed and there was discussion of whether the bird had the right to be to be protected, she began to express anger at the rats, controlling their every movement.[8] For the first time, she started to talk of the need to punish the abusers and to protect other girls.*

In this example, one can see that the "group" of animals provided the opportunity of different roles, or representations, being assigned to different animals. The therapy needs of the girl for the presence of both an aggressor and a victim, for the purpose of re-enactment and working through her issues, were fulfilled by the presence of a number of animals. Here, the client and the animals are active in the building of the story, whereas the therapist is the observer, reflecting on the actions of the client and the animals, mediating between them, and sometimes interpreting. Also, change in the client's behavior and emotional expression toward the rats/aggressors is evident as the therapy progressed to a higher stage of working through and insight.

Additional Mechanisms of AAP Helpful for Therapy with Victims of Interpersonal Trauma Projection

Often clients will use the defense mechanism of *splitting* through projection of self onto the animal through identification with that animal (as mentioned earlier in the discussion of Bellak (1975)) as someone small and helpless. Projection of parts of oneself onto the animal allows the clients to talk about their fears from a safe and nonthreatening psychological distance, while keeping up the very important façade, or self-image, of being strong, functioning, and in control—feelings that are critical to dealing successfully with a trauma situation. These clients will feel more comfortable talking about issues ("I feel great, but the dog is: scared, angry, the attacker, the victim, etc.") in an indirect manner. This allows clients to still feel strong while talking about their weaknesses and fears without taking ownership for them at this stage (Ben David, 2013).

Reconnection of the Client to Real Self Through Interaction Between Physiological and Psychological Processes

The real self of a victim of abuse recedes and is taken over by a false self to the extent that causes psychopathology. For the process of psychotherapy to succeed, the therapist must gain access to the client's inner real self. This access is very difficult to achieve, especially in those who have lost trust in themselves and in others. It is the challenge of the psychotherapist to discover a way to bypass the defenses that the client has unconsciously created to survive and protect herself from further harm yet that also cut her off from potentially healthy relationships.

A unique contribution of AAP to the therapy process is this critical access to the inner world of the client through the presence of animals in the therapy setting. According to the *biophilia hypothesis* (Kellert & Wilson, 1993; Wilson, 1984), humans have an innate need for deep and intimate association with animals and an inclination to affiliate with life in order to achieve meaning and fulfillment. Support was found for this hypothesis in a study of the effect on the amygdala (the area of the brain performing a primary role in the processing of emotional reactions). Mormann et al. (2011) found a preferential response for pictures of animals (as opposed to people or landmarks) in the right amygdala, implying that our very brains may be wired to receive animals as a medium that touches us in a very deep and basic way. Thus, animals may be the access point needed to reach the client's inner emotional world.

Another cause of becoming cut off from one's inner world is the anxiety accompanying being in touch with frightening and threatening content of that inner world connected with the experiences of trauma. Some physical correlates of anxiety, such as high blood pressure, high rate of heartbeat, high cortisol levels, have been found to be ameliorated by the presence

8. It is important here to stress the role of the AAP therapist to always be aware of the client's movements with the animals and to put limits where needed to protect the animals from danger and stress. Not only does this protect the animals, but it also protects the client from the consequences of her own aggression. Any actual harm caused to the animal by the client would cause a collapse of the potential space, and the client would create a self-image of herself as harmful, with consequent emotional conflict and self-blame.

of animals (Nagasawa, Kikusui, Onaka, & Ohta, 2008; Odendaal, 2000; Odendaal & Meintjes, 2003; Zilcha-Mano et al., 2012). Beetz et al. (2011) found that a dog–child interaction lowered cortisol levels in children with insecure attachment patterns. Petting an animal (either furry or hard-shelled), as opposed to a furry toy, significantly lowers state anxiety (Shiloh, Sorek, & Terkel, 2003). Zilcha-Mano (unpublished manuscript) found evidence suggesting a resulting reduction in anxiety within the AAP therapy meeting. The oxytocin levels in the clients may increase as a result of their interactions with the animals, creating a greater feeling of calm. Although "patting a dog and feeling good" is not a goal of AAP, it does create a condition that is conducive to allowing clients to be in touch with distressing and frightening content of their inner world without falling apart. The neurological access point to one's emotional processing is joined by the animals' authentic and nonjudgmental nature and behavior, as well as the physiological effects of interactions with the animals that lower anxiety and promote trust.

Joey acted much too mature for his young age (12) and always seemed calm and in control. His explanations for his avoidance of long-term friendships were presented in a logical fashion but lacked emotion and were unconvincing to the AAP therapist. One day he agonizingly admitted that there were things he did not understand in his relationships with others, and this caused him a great amount of visible distress. He went to the mattress in the corner of the room, where the dog had been sleeping. He dropped down next to her, lying around her in a fetal position for about 15 minutes. This proved to be a breakthrough in the therapy process as in the next few sessions, he arrived at many insights, always while sitting and patting the dog.

A well-known consequence of trauma, especially in the case of sexual abuse, is the experience of emotional and sensory numbness, and loss of sense of real self as the false self takes over. The process of contact with animals in a therapy setting, with mediation by an AAP therapist who understands the mechanisms of AAP, can help the client return to contact with her real self and start to feel, both emotionally and physically.

In an AAP therapy session at a welfare clinic, a young teenage girl who had been raped and was later found sexually abusing others said "I'm not scared and it doesn't hurt" as she jerked away from the cockatiel who was walking on her bare leg and threatening her with his beak. The therapist reflected to her the gap between her words and her body language as she played with the cockatiel whom she loved very much. She was fascinated but speechless and confused. The next week, there was a supervised meeting with her father, who suffered from mental illness and was given to unexplained angry outbursts, scheduled immediately after the therapy session. When she heard the father's voice outside calling her name, she continued with the session as usual, but with a frozen expression. Again the therapist reflected to her the gap between her functioning and her emotional expression. In the next session, for the first time, she talked of her fear of being around her father due to his extreme and unexpected outbursts.

22.1.3 Summary

Through the interaction between the psychological and physiological processes inherent in the human–animal bond, AAP may be an especially effective way of breaking through this anxiety, distrust, and difficulty in the area of interpersonal relationships, and to provide a "safe place," in order to self-disclose and proclaim traumatic experiences, to process and work through them, to ameliorate the effects of the trauma, and even to grow from the experience through working through the issues involved, but at a safe psychological distance. The expansion of the potential space due to the animals' presence in therapy (Parish-Plass, 2013), which facilitates play and transference by the fact that the animals are real and similar to humans but not human, is a unique characteristic of AAP that is especially useful in the treatment of trauma. A virtual laboratory for relationships, AAP provides opportunities for re-enacting and working through many types of past and present relationships, within the context of multiple relationships in the here-and-now, contemplating them, arriving at insights through the mediation of the therapist, and trying new options within these relationships.

22.2 WARRIOR CANINE CONNECTION SERVICE DOG TRAINING THERAPY: CLINICAL FOUNDATIONS, PRACTICE GUILDLINES, AND SCIENTIFIC RATIONALE

22.2.1 Introduction

In 2010, the Veterans Health Administration treated 400,000 veterans who served in Iraq and Afghanistan. Twenty-six percent (130,000) were diagnosed with PTSD (CBO, 2012). Despite great cost and effort to provide our wounded Warriors with the best, empirically supported PTSD interventions, 50–60% of patients can still meet the criteria for PTSD after treatment (Monson, Schnurr, Resick, Freidman, Young-Xu, & Stevens, 2006; Schnurr, Friedman, Engel, Foa, Shea, Chow, et al. 2007).

The limited efficacy of conventional therapies to provide long-term relief from the symptoms of combat trauma, combined with the increased danger of pharmaceutical use and abuse, and the devastating social and economic cost to military families and our country, have increased support from military leadership for the use of alternative medical interventions including animal assisted therapies. *The Warrior Canine Connection* program is a multi-level service-dog training intervention designed to address this critical need for a safe, effective, nonpharmaceutical adjunctive treatment for the "invisible wounds of war."

22.2.2 Background

In 2005, social worker and professional service dog trainer, Rick Yount created a service dog training program designed primarily as a therapeutic intervention for combat veterans suffering from PTSD. The secondary goal was to provide these life-enhancing, Warrior-trained skilled service dogs to wounded veterans. Yount incorporated clinical theory into positive service dog training methodology to create experiential learning opportunities that effectively shape the behavior of both trainer and dog.

The pilot program was launched in July 2008 at The Men's and Women's Trauma Recovery Program, at the Veterans Hospital in Menlo Park, California. Over the next 2 years, this volunteer program proved to be highly popular and to have a very low drop-out rate. Approximately 200 service members participated in the program, five service dogs were placed with Veterans, and two WTs have become accredited service dog-trainers and are pursuing careers in this field.

In 2009, Yount and the VA team presented anecdotal program observations at the Veterans Administration National Mental Health Conference and the annual meeting of the International Society for Traumatic Stress Studies suggesting that the program was successful in reducing the following symptoms of PTSD:

- Increased patience, impulse control, emotional regulation
- Improved ability to display affect, decreased emotional numbness
- Improved sleep
- Decreased depression, increased positive sense of purpose
- Decreased startle responses
- Decreased pain perception
- Increased sense of belongingness/acceptance
- Increased assertive communication skills
- Improved parenting skills and family dynamics
- Fewer war stories and more in-the-moment thinking
- Lowered stress levels, increased sense of calm

Yount, Lee, and Olmert (2012).

In 2011, Yount established the *Warrior Canine Connection* (WCC) therapy program at the National Intrepid Center of Excellence (NICoE) at Walter Reed National Military Medical Center (WRNMMC) in Bethesda, Maryland, as a voluntary, adjunct treatment for PTSD and traumatic brain injury. WCC's staff are professional service dog trainers with clinical backgrounds. Since the inception of WCC, 3000 Service Members (SMs) and veterans have benefited from participation in the therapeutic training of WCC Service Dogs at NICoE, WRNMMC, Ft Belvoir, VA, the VA hospital in Menlo Park, California, and NeuroRestorative's residential treatment program in Germantown, Maryland. Since 2011, WCC has been able to place 11 warrior-trained service dogs with veterans in need of mobility or social support.

> *While in the treatment program at NICoE I learned a lot about PTSD and gained many tools to help me cope with the disorder, but there was one part of the program that stood apart: the service dog training program. Soon after signing up to train the dogs I found myself sleeping better and was in a surprisingly good mood, before I knew it I was not hiding in my room anymore. I started laughing again, I began to feel good.*

22.2.3 The Warrior Ethos—Helping Others/Helping Self

The 2013 meeting of the *American Psychiatric Association* highlighted the problems of effectively treating combat trauma. Citing recent studies, Major Gary Wynn, a psychiatrist at Walter Reed Army Institute, reported that fewer than half of soldiers who need mental health care receive it and of those who do start treatment, 20–40% walk away before completion. One of the key reasons stated for treatment drop-out is a soldier's general lack of trust for any mental health professional. Major Wynn emphasized that the key to improving mental health outcomes is keeping the individuals enrolled in PTSD treatment from dropping out. He called for better matching of evidence-based therapies with patient care preferences (Levin, 2012).

The Warrior Canine Connection program takes therapeutic advantage of the fact that even the most severely wounded veteran can still form social bonds with dogs. WCC's Labrador and Golden Retrievers are specially bred for a calm, sociable temperament that will make them reliable and valuable mobility service dogs (Turscan, Kubinyi, & Miklosi, 2011). Their open, friendly temperament engages even the most socially isolated service member and offers them a safe and inviting alternative way to develop a rewarding social relationship that can produce a stress-buffering effect. It is estimated that drop-out rate for this volunteer program is less than 5%.

I felt good about myself and what I was doing: helping to train this dog for a fellow Veteran.

22.2.4 WCC: A Therapeutic Alternative for Posttraumatic Stress

The Warrior Canine Connection program was designed to reduce the three main symptom categories of PTSD—re-experiencing, avoidance/numbing, and increased arousal. The service-dog training exercises include a range of methodologies included in standard PTSD therapies such as cognitive behavior therapies and prolonged exposure—all experienced while maintaining the high-quality focus and communication necessary to shape the behavior of the WCC dog.

Re-experiencing

A critical part of training a service dog is to accustom the dog to a wide variety of social and sensory stimulation. This requires our WTs to lead their dogs confidently into environments that they themselves may find anxiety inducing. Entering an escalator into a dark subway tunnel, perusing a crowded market, or walking in a cheering sports stadium can bring back crippling traumatic memories. With the support of our skilled clinician/dog trainers and the presence of these very special dogs, our WTs learn to challenge their automatic thoughts and regulate their emotions in order to teach their dogs that the world is a safe place.

WTs learn to project positive emotional reinforcement to their dogs when loud or startling things happen. These critical "teachable moments" can be capitalized on only by focusing on the dog's "real time" point of view. This diversion into the dog's "here and now" changes the context and anchors the Warrior-trainer in the present, reminding the soldier that he or she is no longer in previously dangerous circumstances. If the patient soldier/trainee does experience a trigger for symptoms, the presence of the dog can also lower anxiety levels.

Another struggle is self restraint and patience, and working with a dog will test your patience. If at any time I feel uneasy or start to have a little anxiety all I have to do is reach down and pet my dog or maybe even bend down and give him a hug, and it seems that everything is going to be just fine.

Avoidance and Numbing

The need to socialize the dogs and to participate in public exposure training exercises also offers novel ways to help the WT overcome social isolation and reintegrate into civilian life. The core value of taking care of a fellow veteran in need serves as the powerful motivation to compel WTs go into public places that they would otherwise avoid. Dogs are a natural social lubricant, and it is nearly impossible to isolate during this part of the training. WCC's highly charismatic dogs attract the friendly approach of dog lovers who want to meet the dog and talk about the program. Encounters with strangers can be another trigger of PTSD anxiety, and WTs can find these first experiences challenging. However, they quickly discover that these dog-centric conversations are nonthreatening and even enjoyable. The dogs also invite conversation with other service members that can naturally lead to the cathartic sharing of traumatic experiences that would otherwise not be discussed.

Going out and not isolating was a huge leap forward for me. When you are with one of these dogs everyone wants to stop you and talk to you. This is not the most comfortable thing for someone with PTSD. After a while I was having conversation with complete strangers. They come with such a positive attitude that it reinforces that not all people in the world are bad and it begins to rebuild trust, which is one of the many things that one with PTSD struggles with.

Emotional numbing, an inability to express or experience emotions, occurs in those who have been traumatized. Young dogs, however, respond most effectively to enthusiastic, high-pitched praise. WTs with PTS/TBI often have difficulty vocalizing positive emotion and initially need to be coached to fake these behaviors when training their dog. Soon, the thrill of success—for both the WT and his or her dog—inspires genuine affection and joy in the WT, leading to even better response from the dog. Many program participants have reported that regaining their ability to express positive emotions has improved their sense of well-being and had a significant impact on their family dynamic. They report that their spouses and children also respond to this positive "parenting" strategy.

The dog I am training bonded quickly with my daughter and me. I was given the opportunity to take the dog I bonded with overnight while my 4-year-old daughter was visiting. She was able to see a different side of me. Instead of being a strict father, she and the dog were getting praised for doing something right rather than being punished for something they did wrong. It brought to light a different parenting technique that she responded to better. The dog allowed us to connect in a very positive way. Working with the dog has taught me patience, which also carries over to being a parent.

Attending to the basic daily needs of the dogs throughout the course of the day also provides an experiential antidote to social and emotional avoidance through participation in structured activities and in a purpose-based program that will ultimately benefit a comrade.

Now I have a reason to get up in the morning.

Hyperarousal

WCC service dogs are bred to be responsive to human emotions and needs. Their sensitivity to and reflection of their WT's emotional state provides their WT with immediate and honest emotional and behavioral feedback. This heightened self-awareness helps the WT to challenge his or her startle reactivity and project confident, positive leadership to their young dogs when faced with environmental challenges such as dumpster doors slamming or being approached by strangers.

WCC service dogs are also fostered to be affectionate and are bred to have a low-arousal temperament that puts their trainers at ease. With these dogs at their sides, trainers perceive greater relaxation and social competence and are able to shift out of their hypervigilant, defensive mode into a relaxed state that makes them ready and able to connect with others.

I taught my dog to accept noises such as sirens and loud blasts—noises that used to freak me.

Training these dogs helps me rebuild my confidence level and to feel I am functioning as an effective member of the Army and of society.

22.2.5 Gain from Loss

It takes approximately 2 years for a WCC dog to mature and to learn the many commands required to be a fully skilled, certified service dog. During that time, as many as 60 WTs may participate in the training of a single dog. WCC is an adjunctive therapy, and the duration of participation in the program is based on the WT's overall treatment plan. The bond that forms between the WT and dog can have little to do with the duration of the WT's time in the program, and everything to do with the individual's experience of the dog and the dog's experience of the WT. The formation of a close, respectful relationship between the dog and WT is essential to the therapeutic success of the WT and the training and well-being of the dog.

The understanding of the WCC program as a "mission" to train a service dog for another Warrior provides a familiar reference and emotional context for WTs, who are highly service oriented, and who have learned to accept personal loss and deprivation for the protection of others. The WCC program provides soldiers with the opportunity to spend quality time with great dogs and to feel a sense of accomplishment and pride even during the difficult transition to new ownership or another trainer.

These mitigating factors allow WCC's WTs to experience a sense of "controlled loss" associated with a positive sense of self-sacrifice and achievement—quite distinct from the experience of overwhelming, tragic, sudden loss that can cause PTSD or inhibit recovery. Clinicians report that they have been able to effectively use a WT's emotions when separating from their dog as a bridge to access other, far more devastating and damaging losses that the WT had not been able to process therapeutically.

It's great knowing that I am helping to train a service dog for a service member who has physical disabilities.

22.2.6 Genomic and Neurobiological Basis of the Warrior Canine Connection

A comparison of the recently decoded genome of humans and dogs shows a significant overlap in the genes that were modified during the evolutionary process of domestication. This genetic overlap—especially in the genes related to emotion and behavior—helps to explain how we can form such profound social connections with dogs and why those connections exert such significant influence on the human health and well-being.

Any discussion of the genetics of the social behavior of mammals must consider the oxytocin gene and the gene for its receptor. Oxytocin is a mammalian neurohormone that is essential to our capacity to form social bonds (Carter, Grippo, Pournajafi-Nazarloo, Rucio, & Porges, 2008). DNA coding variations in the regulatory region of the human oxytocin receptor gene (OXTR) fine-tune our capacity to trust, empathize, and respond to social stress (Striepens, Kendrick, Maier, & Hurlemann, 2011).

Anna Kis and colleagues found that the dog OXTR gene contains similar coding variations (polymorphisms) that also relate to their capacity for social behavior. They identified three OXTR polymorphisms in border collies and German shepherds that correspond to the dogs' urge to be close to their owners and unfamiliar people, and to the dogs' friendliness toward strangers. Their finding led them to conclude that "the social behavior of dogs toward humans is influenced by the oxytocin system" (Kis et al., January, 2014). This genetic evidence received behavioral support from another study that manipulated the dogs' oxytocin system by giving some dogs an oxytocin inhalant. Those dogs (versus dogs who did not receive a whiff of oxytocin) showed higher social orientation toward their owners and higher affiliation and approach behaviors with familiar dogs. The oxytocin-inspired dog-to-dog contact increased the release of oxytocin in the dogs, demonstrating the positive social feedback capacity of oxytocin (Romero et al., 2014).

Oxytocin, produced in the hypothalamus of all mammals, was best known for triggering labor contractions and releasing breast milk. In the early 1980s, researchers discovered that this "female reproductive hormone" is also produced in the brain centers that control behavior and emotion. Here oxytocin (OT) interacts with neurotransmitters such as dopamine, serotonin, noradrenalin, GABA, ACTH, and the opioids to calm our fight/flight/freeze defensive reflexes and to promote the calm that allows social interaction. Specifically, OT reduces the amygdala's fear response while heightening our ability to read nonverbal social signals. It also inhibits the arousal centers of the brain and the hypothalamic–pituitary–adrenal stress axis and regulates the vagal nerve complex and the sympathetic nerves to modulate cardiac response to stress. All of these neurochemical brain systems have been shown to be functionally important in PTSD (McAllister, 2011; Olff, 2012; Olff, Langeland, Witteveen, & Denys, 2010). It is therefore therapeutically significant that a high degree of similarity has been found between the human and the dog oxytocin system, and that friendly contact between humans and dogs increases oxytocin levels in both species.

22.2.7 The Truamatized Social Brain

The danger and ambiguity of war waged against civilians or nonuniformed combatants (such as those in Iraq and Afghanistan) can result in hyperstimulation of the fight/flight/freeze brain response, posing a particular threat to the social brain system (Olff, 2012). Without the support of the "calm/connect" brain system the stress of reconnecting even with family and friends can be overwhelming. Fortunately, for thousands of returning Service Members and Veterans with PTSD, the human–dog bond appears to be particularly effective at activating oxytocin and the "calm/connect" brain system (Beetz, Uvnas-Moberg, Julius, & Kortshall, 2012; Neumann, 2009; Olmert, 2009; Yount et al., 2012).

Odendaal and Meintjes (2003) first showed that talking, stroking, and petting a dog produced a significant modulation of neurohormones related to stress reduction. He reported increases in β endorphin, prolactin, dopamine, and decreases in cortisol. The most impressive increase he found was in plasma levels of OT (doubling in both dog and human after an interaction session). Nagasawa, Kikusui, Onaka, & Ohta (2008) extended this finding by showing that eye contact between humans and dogs increased OT levels in the human (urine level). Miller, Kennedy, DeVoe, Hickey Nelson, & Kogan (2009) found that serum OT levels increased more for women when interacting with their dogs then when reading nonfiction material. Most recently, Handlin, Nilsson, Ejdeback, Hydbring-Sandberg, and Uvnas-Moberg (2012) found significant correlations between the OT levels of the owners and the dogs. For instance, they found higher oxytocin levels (and lower cortisol levels) in both dogs and their owners who reported kissing their dogs more. In another study, Handlin and associates showed a significant increase in serum OT in both dog and owner after 15 minutes of friendly interaction, along with a decrease in the heart rate of their owners. The authors conclude that this anti-stress effect, "may be a consequence of oxytocin released in the brain caused by sensory interaction," (Handlin et al., 2011). Neumann (2009) agrees that interactions with dogs most likely active oxytocin's brain pathway, "contributing to the positive mental and physical health effects of dog ownership."

22.2.8 WCC: A Safe Non-Pharmaceutical Alternative?

Twenty years ago, a research team led by psychiatrist, Roger Pitman and colleagues pioneered the study of OT for War veterans with PTSD and found that one intranasal dose of OT decreased physiologic responding to provoked combat memories (Pitman, Orr, & Lasko, 1993). Over the last two decades, research into oxytocin's role in pro-social/anti-stress regulation has supported and expanded our understanding of its central role in the social brain network and its potential

to improve the wide range of symptoms of PTSD. Oxytocin has been shown to reduce interpersonal conflict and negative communication, to promote trust of strangers, to increase gaze to the eye region of faces, to improve identification of the internal emotional state of another, to enhance the processing of positive social information compared to negative information, to reverse the effect of aversive conditioning of social stimuli, to enhance of the buffering effect of social support on stress responsiveness, and to reduce stress response in people with a history of early trauma (Meyer-Lindenberg, Domes, Kirsch, & Heinrichs, 2012).

As promising as the research is, pharmacological use of OT to treat symptoms of PTSD—or any psychosocial deficit—is most likely decades away, as research continues to explore how dosage and delivery systems of oxytocin can work as a treatment (Boccia, Goursaud, Bachevalier, Anderson, & Pedersen, 2007). Fortunately, mammals can safely and naturally engage the oxytocin system through warm social behavior.

Oxytocin is important to the social brain network because it is the key brain chemical that detects and responds to positive social signals and behavior. It is released by all forms of pleasant social stimuli such as smiles, dulcet tones, gentle touch, hugs and kisses, all nurturing behaviors that flow between loving parents and children and people and their dogs (Carter et al., 2008).

22.2.9 The Warrior Canine Connection

Once a service member or veteran agrees to become a WT, WCC's program can fan these same neurochemical sparks. The warmth, softness, and affection of our young dogs offer all the social and sensory stimulation known to activate the OT brain network. WCC staff also coach the WTs in positive training skills that require patience and empathy, dedicated attention, confident communication, leadership, and joyful emotion. These are the socio-cognitive behaviors that dogs seek, respect, and follow. They are also the basic tenants of effective parenting and social partnership that OT evolved to support. This WCC high-value support mission provides wounded Warriors the opportunity to engage in a non-threatening therapeutic social relationship that appears to neurobiologically quiet their fight/flight/freeze chemistry and reboot the calm-connect brain system that is so critical for recovery.

The development of brain-imaging technology has given us another window into how human and canine brains build powerful healing bonds. Functional magnetic resonance imaging studies show that dogs and human beings have similar brain reward circuitry and both respond when they detect something good. For dogs, the mere scent of their owner lights up this reward circuitry (Berns, Brooks, & Spivak, 2011). The brain reward centers in WCC dogs are groomed to respond to friendly human behavior from day 1. We invite Warriors and their families to pet, cuddle, and play with pups, imprinting these loving experiences in the young dogs' brain (Francis, Champagne, & Meaney, 2000). Puppy-petting also creates a socially therapeutic OT feedback system in which puppy-petters gain a greater sense of physical and mental well-being while sharpening the dog's ability to anticipate and respond to the needs of the WTs and the veterans whom they will serve.

Dogs have been shown to be highly empathic toward people when they are crying (Custance & Mayer, 2012). Our genetically and epigenetically primed dogs are able to detect and respond to the social need of a traumatized SM, even when that SM does not solicit the dog's attention. The dogs will approach these patients, sit close, gaze imploringly into their eyes, bump their nose to a hand, even jump up to give a gentle kiss.

22.2.10 The Canine Charm Offensive

A study of the human brain revealed it has neurons that respond solely to animals. These nerve cells sit in the amygdala, a brain center loaded with oxytocin neurons and critical to emotional evaluation and the stress response (Knobloch et al., 2012; Mormann et al., 2011).

The auditory centers of the dog's brain respond to human voice, and especially high-pitched notes associated with positive feelings (Andics, Gacsi, Farago, Kis, & Miklosi, 2014). As discussed earlier, WTs generally find it initially challenging to express this kind of high-pitched positive encouragement to their dogs. WCC staff coach the WTs to "fake it till they make it," not only so they will communicate effectively with their dog but because there is neurological evidence that engaging the facial muscles involved in smiling can activate their autonomic nervous system and produce a sense of well-being (Soussignan, 2002). Also, "socially supportive speech" (defined as the combination of prosodic and linguistic vocal cues) can be as effective as physical touch at triggering oxytocin release in human beings, providing a neurobiological layer of support for why our WTs say that these positive efforts make them feel better (Seltzer, Ziegler, & Pollak, 2010).

The presence of the WCC dog enables WTs to face a range of social and sensory experiences that had previously been uncomfortable or impossible for them. This observation that dogs can decrease anxiety even during a potential PTSD "trigger" stressor is supported the Hunt and Chizkov (2014) trauma essay study that found that the presence of a dog made the

recollection and written reporting of a trauma less unpleasant. The other significant finding from the combat trauma–essay study was that that introverted participants benefited the most from the presence of the dog.

Although this study did not look for biological effects, its findings of a reduction of background anxiety in the presence of a dog are similar to the Pitman et al., finding that oxytocin inhalant significantly decreased physiological stress response during playback of an audio recording of personal combat experiences. Studies of fear conditioning with rats found that oxytocin produces a unique effect of decreasing background anxiety without affecting learning or memory of a specific traumatic event (Missig, Ayers, Schulkin, & Rosen, 2010).

22.2.11 Secondary PTSD

Combat trauma is a significant factor in the failure of two out of three—more than 200,000—military marriages and being separated, divorced, and widowed (Price, Gros, Strachan, Ruggerio, & Acierno, 2013). This lack of social support may pose a serious risk for new post-deployment mental health problems, and underscores the need for social support services for returning veterans who are unmarried and/or without social support (Seal et al., 2009).

There is a growing body of evidence that increasing oxytocin can improve communication, reduce conflict between spouses (Ditzen et al., 2009), and help parents be more engaged with children (Feldman et al., 2010). These research findings echo the clinical observations of the improved spousal and parental relationships of our WTs and the Warriors with whom our dogs are partnered. Combined with the scientific evidence that nurturing social engagement between humans and dogs releases OT in both, it is highly likely that the significant improvement to the social and family life that we see at WCC is the result of a naturally enhanced OT feedback system.

Secondary trauma can also occur in health care providers who treat wounded Warriors, resulting in an impact on the quality and quantity of clinical support that they receive. Therefore it is important to also note the additional support role WCC has played in stress relief for the clinical staff at the facilities where WCC is offered as an adjunctive intervention. Clinicians at these facilities report that the presence of our WCC dogs reduces their sense of stress and makes their clinical practice and work environment more effective and enjoyable, which can be extremely important when working with patients who find it difficult to trust people and to form therapeutic relationships.

22.2.12 Summary

Our increasing awareness of the similarities between the neural, neurohormonal, and genetic mechanisms that regulate stress and social behaviors in all mammals, specifically the oxytocin system, supports the hypothesis first proposed by Olmert (2009) that oxytocin's "calm-connect" effects underlie the evolution of the human–animal bond, domestication, and civilization. It also illuminates how and why the human–canine bond can be so emotionally and therapeutically powerful, and why a therapy based on clinical theory and positive dog training skills can be effective at reducing the full range of symptoms in a condition as complex as PTSD. It is highly significant that the behaviors and stimuli that work best in the creation of these wonderful service dogs are the same positive, nurturing behaviors on which all human friendship and families thrive. Therefore, we propose that participating in the WCC service dog program can provide a safe, natural, and potent behavioral/neurobiological bridge that can help us to be more resilient to stress, more loving to our families, and functioning members of that great positive feedback system called humanity. Over the next several years, WCC, in partnership with researchers from the Uniformed Services University of Health Science, NICoE, WRNMMC, and the University of Maryland, will be testing this hypothesis in order to establish Warrior Canine Connection as an evidence-based therapy for the reduction of symptoms of combat-related PTSD.

22.3 CONCLUSION

Treatment of trauma remains at the forefront of clinical research and public discourse, particularly given the increasingly visible social problem of PTSD among the post-9/11 veteran community. The complexities of interpersonal trauma, as well as implications of treating and diagnosing PTSD in military culture imply a greater need to develop, test, and replicate appropriate, trauma-informed treatment models. Herman (1997) describes trauma recovery as a three-stage process, with a trauma survivor passing through stages of safety and stabilization/safety; remembrance and mourning, and, finally, reconnection. In their respective reviews of animal-assisted approaches to trauma recovery, Parish-Plass and Olmert and Yount point to increasing evidence that animals have the potential to play a critical role in the therapeutic process as a trauma survivor moves through these phases of recovery. In the review of AAP for children, Parish-Plass demonstrates the various applications of animal therapy in building and reinforcing a therapeutic alliance and trusting relationships, critical

for establishing the safety and stability necessary for meaningful therapy to occur. Olmert' and Yount's ethnographic review of the service dog training programs at WCC suggest that easing feelings of "controlled loss" can pave the way for clinical processing of traumatic loss through the transition to Warrior-trainer and canine partner. Olmert also references the significance of biophysiological changes that promote social behaviors, interpersonal connections, and emotional bonds among traumatized combat veterans and their service animals and social or family systems.

Empirical research regarding the clinical impact of animals in trauma recovery continues to evolve as innovative applications of the animal–human bond are increasingly integrated into therapeutic processes demonstrating the applicability of animal assisted approaches in trauma recovery, and as a relevant trauma-informed approach to reduce the longer-term implications of trauma response, and make a strong case for increased exploration of the important clinical relevance of the animal–human bond.

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