Effectiveness of Psychiatric Service Dogs in the Treatment of Post-Traumatic Stress Disorder among Veterans

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INTRODUCTION

Canine involvement in the military dates back to some of the earliest forms of organized combat. In ancient armies and battles dogs were trained and employed as canine soldiers and companions (Forster, 1941). In modern military combat this involvement continues with dogs as scouts, in communications and logistics, in battle, as a means of integration and intimidation, and in detecting weapons. During the Second World War canines were used for the first time in therapy, providing emotional support for those injured in battle. A celebrated war dog, Smoky – a four-pound Yorkshire terrier – is credited as the first military therapy dog for his work assisting nurses with the provision of care in 1944 in New Guinea (Wynne, 2007). Although animal assisted therapy in the military has been traced back as early as 1919 (Chumley, 2012), Smoky's transition from combat to caring in WW II foreshadowed the current trend toward using animals, particularly dogs, in therapy and companionship for veterans.

One of the outcomes of this canine involvement in the military is the formation of a close bond between dogs and soldiers. This relationship is not limited to active military engagement. Like with Smoky, relationships continue as veterans seek out dogs to assist them in the transition from active duty to civilian life. In this capacity, service dogs are used quite extensively to assist veterans in managing physical disabilities. It is widely recognized that service dogs are effective in assisting people with physical disabilities (Allen & Blascovich, 1996). As an extension of this form of assistance, *psychiatric service dogs* (*PSDs*) were introduced and are now used more extensively to help address the emotional and mental health needs of veterans (Fine, 2010). However, the evidence of effectiveness of service dogs in treating mental and emotional health is less definitive. As service dogs are employed in the treatment of mental health problems, such as *post-traumatic stress disorder* (*PTSD*), we are gaining a broader understanding of the benefits and challenges of canine-assisted therapy among veterans; however, there is a need for further research into the effectiveness of psychiatric service dogs among veterans with post-traumatic stress disorder.

This review assesses current literature on the effectiveness of psychiatric service dogs as a treatment for military veterans experiencing post-traumatic stress disorder. While our main area of concentration is on studies examining PSD, and veterans and PTSD, the review also situates this evidence within the broader research context of *animal assisted therapy (AAT)* and mental health more broadly. One of the central objectives of the review is assessing the strength of relevant research concerning PSDs, veterans, and PTSD, and help direct potential future studies in this area in Canada.

Methods used for this literature review included searching pertinent databases including Google Scholar, PubMed, PyschMed, Web of Knowledge, and the Social Science Citation Index. For

the initial search, terms were limited specifically to psychiatric service dogs, veterans and posttraumatic stress disorders. A wide search was conducted on a broader range of terms at the intersection of mental health, animal assisted therapy, veterans and the military. Scholarly works that address psychiatric service dogs, veterans and post-traumatic stress disorder specifically are the main focus of the analysis. A wide range of documents was considered including peer-reviewed articles and books, abstracts, government documents, and dissertations.

As a relatively new field, many different definitions and terms are used across research studies. This diversity may cause confusion (Parenti, Foreman, Meade & Wirth, 2013). While to some the boundaries of animal-assisted therapy may seem clear, other terms have been presented in the literature and have contributed to a sense of confusion (Parenti et al., 2013). Traditionally, animal-assisted therapies (AAT) have been referred to as "a form of therapy that involves using an animal as a fundamental part of a person's treatment" (Fine, 2010: x). More recently however, terms such as *animal-assisted activity (AAA)*, and *animal-assisted intervention (AAI)* have been used. AAI has been used by many as a blanket term, referring to any program that includes "animals as part of a therapeutic or ameliorative process" (Kruger & Serpell, 2006: 25). On the other hand, AAA commonly refers to mostly unstructured and/or recreational activities involving animals, without addressing specific treatment or outcome goals (Fine, 2010). Based on these definitions, both animal-assisted therapies and animal-assisted activities would fall under the realm of animal-assisted interventions.

Psychiatric service dogs are a relatively new form of intervention, and there does not appear to be widespread consensus on how exactly these service dogs fit into the existing literature. However, based on the definitions provided it seems intuitive consider and refer to psychiatric service dogs as a unique form of animal-assisted intervention, independent from animal-assisted activities, and animal-assisted therapies. The relationships that individuals have with their psychiatric service dogs consist of much more than casual interaction; for many, the dogs play an integral role in the treatment and management of their illness or disorder.

For the purposes of clarification and consistency, Appendix A features a list of definitions for common terms used in reference to service animals and animal assisted therapy.

The report is divided in two sections. The first section consists of a literature review exploring evidence as it pertains to a series of emergent issues directly relevant to PSD as a treatment for veterans with PTSD; they include safety, cost-effectiveness, training accessibility training, benefits and challenges, training and the level of expertise of canines in a companion, caring or service capacity. The review will contribute to our understanding of the current state of psychiatric service dog research in the realm of mental and emotional health, and the role that these animals play in the lives of veterans. In the second section we outline possible options for future research studies. Included in this discussion is a proposed program of research team composition, theoretical and methodological framework, and budget. The program of research

will articulate a direction forward with regards to studies in Canada about the effectiveness of PSDs in the treatment of PTSD among veterans. This research will be tied to current program and policy initiatives, and provide guidance as to how best to move forward in this area of support for veterans.

LITERATURE REVIEW

Research on the use of service animals, and service dogs more specifically, is a quickly expanding field of inquiry. Interest at the intersection between human health care and animals is growing among policy makers, health care providers and various individuals with health problems. In a recent study of media coverage of service dog use among veterans, Taylor et al. (2013) found that this interest is translating into growing public acceptance of the contribution of animals, not only as a form of assistance for those with physical disabilities, but as a mental health treatment or intervention. A body of conceptual and empirical knowledge is emerging on the effectiveness of service dogs in a therapeutic context. This research provides the basis for future direction in research and policy development.

This analytical review is organized around emergent and salient themes in research on PSD and PTSD among veterans. The themes are: *Benefits* (biomedical; psychological; emotional/mental; social); *Safety Concerns*; *Cost Effectiveness*; *PSD as a Treatment*; *Training*, *Placement* and *Regulation*; and *Challenges*. With the limited research on this specific topic, each theme there is reference to broader literature on AAT and mental health that attends to effectiveness, broadly defined. The conclusion will address the most prevalent theme found in the literature – that there is a great need for more empirical evidence. This theme is discussed in the relation to potential studies that could be conducted in Canada, as well as how these potential studies may fit with current and future studies on the international stage.

Understanding the Complexity of Using PSD for Veterans with PTSD

The most appropriate means by which to understand and evaluate the effectiveness of animals as treatments in the area of health and mental health is a subject of debate. A trend toward evidenced-based medicine in health care has drawn attention to the need for rigorous, scientific studies that can be used to inform best practice guidelines. This approach uses randomized clinical control trials as a ‘gold standard’ for evidence of effective treatment (Guyatt et al., 1992). At the same time, there is also a growing recognition for the need to take into consideration interpretative research that, while still following a rigorous research design, explores the social, political, historical and cultural components of treatment effectiveness (Mykhalovskiy & Weir, 2004). Understanding the complexity of treatment effectiveness means, if possible, relying on both approaches to research.

The use of PSD in the treatment for post-traumatic stress disorder among veterans is a particular complex topic of research. As a mental health problem, post-traumatic stress disorder is itself multidimensional. PTSD is often difficult to diagnose, and is experienced with different severities and in different forms. The response to available treatments is difficult to predict with

certainty (Green et al., 1989). And, there are a range of psychological, personal, cultural and social factors that influence how it is both experienced and managed (Yehuda & McFarlane, 1995). Further to this, as Marmar (2009) notes, the mental health care needs of veterans involved in recent military action (specifically, Iraq and Afghanistan) are distinct from those experienced by veterans, for example, who participated in the Second World War. Yet, our understanding of how to respond to their needs is still routed through structures introduced 50 years ago. Meeting the treatment needs of veterans who serviced in Iraq and Afghanistan requires responding to their specific and distinct perspectives on trauma and mental health problems. Added to this issue is that the use of psychiatric service dogs is a relatively new treatment for trauma and mental health problems and is debated within the literature on animals-assisted interventions. In fact, many researchers disagree about whether to consider and define psychiatric service dogs as tools, devices, treatments or companions (Tedeschi et al., 2010; Fine, 2010)

The stance taken in this review is that, when available, it is valuable to take into consideration both scientific and interpretative research on the effectiveness of PSD in assisting veterans with PTSD. This broad approach to the literature allows for insight into complexity of the topic. It sets the foundation for an understanding not only of specific measures of effectiveness, but also the conditions - personal, interpersonal and social – that can facilitate effectiveness. We turn now to the key themes that emerged from a review of the literature. The themes pertain specifically to PSD and veterans with PTSD but also set the context for further research that can improve our understanding of mental health concerns for current veterans, and what animals may be able to contribute to treatment. The literature review is structured this way with the intention of informing research that can directly influence policy and program development.

Benefits of PSD for Veterans with PTSD

One of the rationales for using PSD in the treatment of PTSD stems from research on the use of service animals to treat psychiatric symptoms in conditions like severe anxiety (Barker & Dawson, 1998; Mason & Hagan, 1999). Clinicians working in the area of mental health began to notice that people with PTSD also relied on their animals for support and care. In a commentary for the Annals of Clinical Psychiatry, Altschuler (1999: 29) writes

> *In many cases PTSD can prove notoriously resistant to treatment by either medications or therapy. A patient with PTSD recently told me that his anxiety was much increased at times when he had to be separated from his pet. Reflection on the patient's comment has caused me to consider the idea that pet facilitated therapy (PFT) might be a useful adjuvant for treatment of PTSD.*

In this research, the potential benefits of animals in the treatment and/or management of mental health was seen to fall along two broad spectrums. First is the distinction between direct and indirect benefits, and the second is benefits across the bio/psycho/social continuum.

Literature suggests that animals as companions, such as in AAT and AAI, are seen to have both direct and indirect effects on the management of mental health. Direct effects refer to improved markers of health, like reduced feelings of anxiety or blood pressure that result from partnering with a service or therapy animal (Morrison, 2007). Indirect effects are benefits that resulted from participation with animals, in everyday life and social interaction that can lead to positive health outcomes (Whitmarsh, 2005). This indirect benefit can also result from the bond generated between human and animal (Zilcha-Mano et al., 2011). Given the complexity of mental health and its management for individuals it is valuable to attend to a broad range of effects from animals, both immediate and ancillary, as indicated in relevant literature.

Research on animals and mental health also addresses benefits on a spectrum across the biological, psychological and social. In recognition of the limitations of a purely biomedical perspective, studies in the field of health over the last thirty years have expanded their scope to include psychological and social perspectives, as well as the relationship between the '*biopsychosocial*' (Engel, 1977). While the subject of criticism, this model is conventionally considered a comprehensive model of understanding effects and effectiveness in a broad context (Davidson & Strauss, 1995). Studies of effectiveness in the realm of animals and mental health, and the effects of animals on health generally, can be organized around these three different levels of effect. Few studies have taken into consider all three, although there is a greater attention to not limiting the scope solely to biomedical markers of effectiveness in the case of animal interventions in health care.

The remainder of this section on benefits examines research on effectiveness at each of the three levels: biomedical, psychological and social. With the lack of research directly on PSD and veterans with post-traumatic stress disorder, each subsection frames evidence on that specific issue within the context of broader research on effectiveness in studies of animals and mental health broadly.

Biomedical

With greater attention to the use of animals as treatments in health care, more attention is also being devoted to understanding the physiological and biological responses that occur in humans as a result of their interactions with dogs, horses, and other companion species. A number of studies have been conducted on the release of neurochemicals resulting from human and animal encounters in a variety of contexts (Johnson et al., 2002). In an interesting experiment, Odendaal & Lehmann (2000), for instance, found that the neurotransmitter phenylethylamine – which can improve mood – is released in both the animal and the human during positive encounters between species. Similar research has examined changes in blood pressure and other conventional physiological markers of health in human animal encounters (Baun et al., 1984; Allen et al., 1991). Inquiry into the physiological dynamics across species opened up a general interest in more thoroughly exploring the potential measureable health benefits of AAT and AAI

programs and activities. However, there is debate about whether there is an actual direct animal effect (Straatman et al., 1997; Herzog, 2011). Clinical trials of AAT are an example of research planned and/or ongoing that seeks to give evidence of an animal effect as it occurs physiologically in general and specifically for people managing illness or seeking to improve health.

In the specific case of psychiatric service dogs and veterans with post-traumatic stress disorder, media and community organizations have made particular note of the positive physiological effects of interactions with service animals. In 2012, for instance, an article in the *Smithsonian Magazine* began with the headline, "How Dogs Can Help Veterans Overcome PTSD." In this piece Colin (2012) describes new research findings that claim to show that partnering with a psychiatric service dog can release the hormone oxytocin, which can counter some of the symptoms associated with posttraumatic stress disorder. The challenge with this kind of public discourse is that it makes reference to research that is currently ongoing rather than published in scientific journals and is preliminary at best. Similar yet more indirect claims are made in the literature on PSD and PTSD among veterans. In a study of training programs, Yount and colleagues (2012) make an association between the use of oxytocin in the treatment of PTSD and research by Odendaal & Meintjes (2003) that show the neurophysiological effect of the bond between human and animals. While possible, as Yount et al. (2012) point out themselves, it is premature to make such claims without published evidence from research studies examining this relationship. The connection between animal interactions and hormones like oxytocin are still the subject of scholarly debate in ongoing research (Beetz et al., 2012). Beyond hormone and neurophysiology effects, using evidence from personal accounts in the media, Taylor (2013) notes that veterans do express a change in physiological response to trauma and stress pre- and post-service dog ownership. With the kinds of symptoms associated with PTSD there are opportunities in empirical scientific research to explore biomedical markers of illness management and improved health as a result of animal interactions. There are indications that this research is underway at several sites in the United States (Yount et al., 2012).

Psychological

Literature on the psychological benefits of animals to human health is as expansive as it is extensive. In a review of literature on dogs, Wells (2007) discusses the range of research attesting to the contributions of canines to psychological well-being in addressing problems like anxiety and depression (Folse et al., 1994), and bolstering psychological resilience (Walsh, 2009; Beck & Katcher, 1983). These findings may contribute indirectly to positive psychological states in the form of, for instance, encouraging social interaction through physical activity (Toohey & Rock, 2011). The evidence for psychological benefits extends to the area animal assisted interventions and mental health concerns (Cirulli et al., 2011). Research on service dogs for instance shows they improve a range of psychological function and attitude indicators for people with physical and mental disabilities (Allen & Blascovich, 1996). There continues to be

questions regarding the methodological rigor of many studies on psychological well-being. However, whether benefits are defined narrowly in the reduction of specific symptoms or behavior or more generally in promoting a positive outlook, there is a growing body of evidence suggesting that dogs and animals generally contribute positively to managing mental health problems (Herzog, 2011; Fine, 2010).

The development of psychiatric service dogs emerged, in part, out of this recognition that animals in an assistance or therapeutic capacity can contribute to the psychological well-being of their human companions. Research on psychiatric service animals is sparse and constitutes a significant gap in the literature on the contribution of animals to managing illness and promoting health. An exception, in describing their role in psychiatric service, Tedeschi and colleagues (2010) set out broad parameters for the domain of psychiatric service animals. Drawing on work from Froling (2003) they identify the tasks of PSDs as, beyond emotional and psychological support (Lane et al., 1998), providing assistance in medical crises and with treatments, and also providing security. Additionally, drawing on Esnayra & Love (2008), they also identify the work done in engaging the human companion in cognitive behavior skills, in areas related to the dog's natural ability, and in prompting strategies for self-regulation. In distinguishing between an emotional support animal, which do not receive specialized training, Tedeschi and colleagues (2010) emphasize that psychiatric service dogs do not simply help their human companions cope or provide them with support, but play a specified series of functions and forms of assistance that are attuned to the management of mental health. Further to this, Vredenburgh & Zackowitz (2012) make the point that unlike emotional support dogs, PSDs are recognized legally and given special rights to accompany their human companion and provide assistance and care.

Interestingly, similar to the physiological benefits that abound in public discourse, there are wide ranging claims in the media as to the psychological benefits of PSDs for veterans with PTSD, yet there exist few studies that confirm or refute such claims. Veterans who use a PSD to manage their PTSD reported that their psychological symptoms decreased as result of the assistance and support from their service animal (Esnyra & Love, 2008). Similarly, in a media analysis of self-reporting veterans, Taylor et al (2013) identified psychological benefits of PSD use on several levels: improvements in maladaptive emotional states; a greater ability to bond and trust; and a reduction of psychological symptoms overall. A study of PSD training programs by Yount et al., (2012) identified similar self-reporting benefits from veterans who were diagnosed with PTSD and were using a service animal as a means of managing their condition.

Stern and colleagues (2013) recently published findings from study they conducted on the benefits of companion animals for veterans with PTSD. While not about PSD directly, this research provides evidence that dogs do assist veterans in managing their mental health at a psychological level. The study indicates that veterans who adopted dogs experienced a decrease in symptoms associated with PTSD like anxiety, depression, isolation and concerns about security. Stern et al. (2013:568) conclude that their "results suggest that living with a companion

dog may help relieve some of the psychological distress associated with PTSD in some veterans." Extrapolating from the study, it is very likely that PSD would play a similar function in the lives of veterans as did the adopted dogs.

The findings of research to date on PSD and PTSD are limited and rely entirely on self-reporting data from a small sample of veterans. However, studies on the contribution of animals in managing mental health indicate that there is evidence to suggest that service animals can make a contribution to the management of mental health problems at the level of alleviating psychological symptoms and increasing psychological resilience and capacity. Knisely & Barker (2012), for instance, show that there is evidence of psychological improvements among veterans who use AAI in non-military settings. Similarly, using data from survey and interviews, Wisdom et al. (2009) found that their use of service animals contributed to the capacity in recovering from mental illness and managing symptoms like anxiety (Barker & Dawson, 1998). The few studies cited here are examples of a much broader literature on service animals and the management of psychiatric and psychological symptoms resulting from mental illnesses like PTSD. This research helps to frame the limited evidence on PSD and the treatment of PTSD among veterans in a broader context and points to ways of moving forward with future research.

Social

Literature on the social benefits of interactions with animals for human health is extensive (Serpell, 1991). Even within this field, studies specifically on the positive social effects of animals for the elderly, as an example, are far reaching in number. Companion species have been found to mitigate loneness and isolation (Garrity et al., 1989), help negotiate and facilitate interactions with care providers (Siegel, 1993) and improve overall quality of life (Siegel, 1990) among older adults. In much of this literature on social benefits locates the positive effect of animals as the indirect consequence of assistance and companionship (Edney, 1995). When exploring social phenomena, the parameters of the indirect influence on health can vary widely (Collis & McNicholas, 1998). In some instances the benefit is located at the level of everyday routines, as in the case of dog walking or the patterns and obligations of caring for animals (Knight & Edwards, 2008). Beyond the everyday, social benefits can extend to creating a bridge between the individual and broader public sphere, again in the case of a dog being a catalyst for social interactions at the park or in social settings (Cutt et al., 2007).

Studies that explore social benefits take a more interpretative research design when compared with research on the biomedical and psychological. While questioned as being less rigorous or empirically valid, research of this kind provide important insight in the social, cultural political and historical dimensions of effectiveness with regards to companion and service animals.

Attention to social benefits is evident in the limited published research on PSD and veterans with PSTD. The effects at the social level – community participation, destigmatization, and social

interaction and membership – are substantiated in studies on the animals and their influence on managing mental health. Most prominent of social benefits of PSD was the bridge that was created to social arenas hence helping to counter feelings of isolation and seclusion. Psychiatric service dogs assisted in helping people leave their homes and enter into the public in a safe and secure manner (Yount, et al., 2012). This community participation is a resounding theme in studies of service dogs and their human partners, and is generally seen to foster a sense of social integration (Camp, 2001; Rintala et al., 2002). A related but distinct benefit from PSD was their contribution to improving social interaction and social membership. A good example of this is findings showing that the introduction of a dog or PSD improved social relations within family structures (Yount, et al., 2012; Beck et al., 2012). While at the level of personal testimonial in studies of veterans with PTSD, the positive influence of service dogs and pets on family relationships well documented in the literature (Lane, et al., 1998; Collins et al., 2006). A third social benefit of PSD was its perception as a non-stigmatizing therapeutic intervention (Taylor et al., 2013). It was seen by veterans, in addition to the public, as an acceptable form of therapy and therefore did not need to be hidden and had the potential to be discussed openly. As discussed by Taylor and colleagues (2013), there is a need for non-stigmatizing therapies for veterans with PTSD (McNally, 2012). The non-stigmatizing, and potentially de-stigmatizing qualities of animal-assisted interventions have been documented in the field, and are considered to be a key advantage of this approach (Velde et al., 2005).

Overall, taking into consideration the literature on the biological, psychological and social benefits there is evidence of effectiveness for animal assisted interventions in the area of managing mental health. The lack of research on PSD and posttraumatic stress disorder specifically poses limits on the whether it is also the case with veterans. When examining the intersections between the levels of effectiveness the ideas of improved well-being and quality of life are used to capture the benefit of companion animals, or service animals, in the lives of people who are managing mental health problems (Nordgren & Engstrom, 2014). While not easily quantifiable, in the case of conditions as complex and dynamic as PTSD, the operationalizing of concepts like well-being may be useful to identify and measure the intersecting benefits of animals as therapeutic modalities across the biological, psychological and social.

Safety Concerns of Using PSD

Safety is an important concern when using of psychiatric service dogs in a health care capacity. Specifically, the safety of the animal, the human companion, the handler, and the general public are important considerations (Hume, 2010). This question of safety is an ongoing debate in research on the use of animals in managing health and illness, with varying accounts of whether the risk of using animals is greater than the benefits. There is an acknowledgement of risks to safety through zoonosis, allergic reactions and the potential unpredictability that is inherent in relations between species (Shubert, 2012). Hume (2010) presents a balanced account of the risks

and steps to prevent them with regard to animal assisted interventions. There is an understanding that while animals pose distinct challenges with regard to safety, there are risks to all therapeutic interventions, and if precautions are taken can be sufficiently mitigated. This mitigation of risk is an issue that has been carefully considered and addressed in equine assisted therapy effectively (Klontz et al, 2007).

In the literature on the use of PSD among veterans with PTSD there is an attention to the way animals create a sense of safety and security for their human companions; yet, an equal attention needs to be paid to the safety and welfare of PSD (Esnayra & Love, 2008; LaFrance et al., 2007; Lane et al., 1998). In their study of media accounts, Taylor and colleagues (2013) raise concerns that the psychological demands of providing ongoing care for a human with PTSD may jeopardize the health and welfare of a PSD over time. This concern is addressed in research on service animals in other contexts such as children with autism (Burrows et al., 2008; Tedeschi et al., 2010). In addressing the welfare of animals emphasis is placed on the role of training, so that the dogs are prepared, and on placement so that there is an appropriate match between the human and service animal (Taylor, 2013; Hume, 2010). Another factor is the importance of ongoing veterinary care, continued monitoring and training, and education of all those involved including the general public (Shubert et al., 2012). Education and training of health care professions and care providers on the role of PSD is seen to be essential to their effectiveness in managing mental health (Johnson, et al., 2002)

Existing evidence does not suggest that service animals pose a significant risk to the safety of those involved though there are concerns about safety that need to be met (Duncan, 2000). Though unusual, there are provisions in place in many jurisdictions that if a service animal is deemed to pose a risk to the safety of others, the animal and their handler may be denied access to businesses (Modlin, 2012). Perceptions of safety in general public and among health care professionals given the relatively recent trend toward interspecies health care are important considerations for future research. Studies are beginning to explore in more depth policies and procedures about incorporating service animals and animals in general in health care, including family medicine clinics, which may be the most appropriate setting for their use (Smith, 2002). The literature suggests the value of an integrated approach to research and program development in which care providers, veterinarians, trainers, PSDs and their human partners work together to identify and develop strategies for preventing risks to safety.

Cost Effectiveness of PSD

At this early stage in research on psychiatric service dogs in the treatment of posttraumatic stress order, it is difficult to assess their cost effectiveness with any certainty or confidence. Accounts and estimates of the expenses incurred in breading, training and caring for a service dog differ greatly. Costs of training and providing dogs across organizations doing this work are contextual, varying according to factors such as geography and financial support from donations. Added to

this are costs of food and upkeep, regular veterinary care and ongoing training. Few studies look directly at this question of cost effectiveness. Yount, Olmert & Lee (2012) described a specific service dog training program in the United States – Wounded Warrior Connection – and argue for its cost effectiveness based on the non-profit foundation status of the organization. Through a variety of different sources of funding, dogs are trained and provided to veterans at little or no cost and the ongoing training and care were incorporated into the program. Esnayra & Love (2008) in a survey of mental health patients found that most had available sufficient resources to care and own a psychiatric service dog. It remains a question for future research whether veterans are in a similar position to afford the care of PSD.

The case of the Wounded Warrior Connection demonstrates that at a non-profit organization level, costs of PSD can be kept to a minimum particularly in relation to what is required financially from veterans; however, there is a lack of data as to whether in a broader context the use of PSD reduce the overall cost burden of care for veterans with PTSD. The evidence from studies of service dog use among veterans with physical disabilities is clearer. In a widely cited article, Allen and Blascovich (1996) demonstrate in a randomized control trial that service dog use is cost effective in the provision of care. The case made in this study is that service dogs are effective in reducing the reliance of patients on health care services that provide assistance in the home. This study has been questioned in its estimation of the cost value of service animals and the reported benefits (Beck & Fine, 2000). However, more recent findings were reported in studies of improve function in patients (Fairman & Heubner, 2000), in the treatment of schizophrenia (Villatla-Gil et al., 2009) and in the case of the other types of service or therapy animals, as found in a study by Dilts et al., (2011) on the use of Dolphins with children who have special needs.

In a consideration of cost effectiveness in the case of AAT, Kamioka et al., (2014) note the increasing need to ensure that therapeutic interventions follow best practices guidelines that take into consideration cost benefit and cost effectiveness. Yet, without sufficient research on PSD and PTSD among veterans makes it difficult to assess cost or to integrate cost into best practices. It is evident that in future research the costs of PSD need to be examined in relation to the overall financial burden of mental health problems for veterans. The relative benefit of a service dog versus a dog that requires less training is a factor to be considered when evaluating the costs of canine therapeutic interventions. Also the involvement of government and the public and private sector in subsidizing costs, as noted by Yeager & Irwin (2012), is another significant factor in determining the overall financial effectiveness of PSD for veterans with PTSD.

Using PSD as a Treatment

Animals are being used in a therapeutic capacity in increasingly diverse ways. The types of service animal used are increasing in number, as are their roles in managing illness and improving health. An issue raised by this trend is how to define the parameters for psychiatric

dogs as a form of treatment. This theme was one that emerged in the literature on PSD and veterans with PTSD and in broader related studies. As a relatively new phenomenon, the concept of PSD as a treatment, like treatment modalities in general, is contested on several levels as this new practice is taken up by veterans with PTSD, their care givers and health care providers.

A key component of this issue is classifying what it is that PSD do for a person who is living with and managing a mental health problem. In the case of PTSD and veterans, Taylor et al., (2013) describe PSD as serving a number of functions: practical tasks usually associated with service dogs (turning on lights, finding keys), psychological and emotional support in stressful situations, and companionship at home and in social settings (Morris & Esnayra, 2011). Love and Esnayra (2009) go in more detail when describing their proposed study of symptom relief through PSD among veterans with PTSD. The role of PSD in their study includes physical tasks directed at both assisting veterans remember scheduled activities and accompany them in public spaces to helping them to manage emotional stressors and responses including suicide prevention. The conceptualization of PSD offered in initial studies moves the definition of a service dog beyond that of a device; moreover, the PSD becomes a means of alleviating symptoms, managing mental health problems and preventing future occurrences of responses and situations related to ongoing trauma, stress and anxiety. A PSD is a hybrid of device/treatment/companion/caregiver.

The assumption that PSD operate not only as a form of assistance but also as a treatment for psychological and mental health problems is reinforced in the broader literature. Studies of PSD among mental health patients in general claim that dogs do play a therapeutic role in a capacity akin to that of dogs and animals used in AAT (Esnayra & Love, 2008; reference). This finding is consistent with studies on the benefits of companion animals in general (Huss, 2009) and in the case of mental health specifically (Peacock, 2012). In studies of self-reported benefits, companion animals are found to be effective; however, more recent studies using a more narrow definition of health have found less evidence of actual changes in human health, as in lowering the risk of disease or decreasing the use of health care services (McNnicholas et al., 2005). The overall consensus to this point, if there is one at all, is that while there appears to be an ‘animal effect’ it can only be substantiated scientifically as a concept to be tested in further research rather than a fact in all cases (Herzog, 2011; Wells, 2009).

The issue of actual improvements in health versus perceived or indirect improvements in health as a result of companion animals or AAT continues to be a contentious issue (McNicholas, et al., 2005). Regardless of the debate on the relative merits (direct or indirect), animals are being increasingly medicalized and taken up as treatments or interventions or therapies in a variety of care and health care contexts (Willens, 2013). In the case of autism and childhood cancer there are efforts in place to conduct more rigorous clinical trials to advance the scientific evidence on the animal effect in different modalities and in different contexts (O’Haire, 2013). An interest in clinical studies as a means of further assessing the value of animals in human health is advancing

particularly as a means of addressing mental health problems like anxiety, dementia, schizophrenia and trauma including PTSD (Peacock et al., 2012). This research will further position animals as treatments and also provide guidance as to their potential purpose in managing illness and promoting health. Evidence of this nature will be important to legitimating the use of animals in care, potentially, and serve to shift policy and resource allocation regarding their integration in formal forms of care giving and health care.

This research raises a number of important questions for the use PSD in the treatment of PTSD among veterans. First is whether the locus of therapeutic value for veterans is primarily in: companionship and its social effect; the therapeutic program surrounding the use of dogs (and equines) as in the case of AAT; or the assistance that is result of extensive training and expertise that are a feature of service dogs (Collins et al., 2006). In the case of PSD it is possible that, as treatment for PTSD, there is an effect from all three levels; this is a question that can only be answered through further empirical research (Huss, 2010). If the benefits of canines are primarily at the level of companionship it elevates the role of emotional support dogs as an alternative less expensive form of treatment at least for veterans who have less severe or debilitating symptoms from PTSD.

With regards to symptom management, a second question in considering PSD as a treatment is whether they serve as an adjunct treatment for conventional modalities, like counseling and medications, creating the conditions by which conventional treatments can be effective for a patient (Esnayra & Love, 2008). Or, whether it is possible, as has been suggested anecdotally at this point, that the PSD can be a treatment itself for PTSD; the dog serving to provide veterans with the assistance and support necessary for them to manage their illness without being reliant, partially or fully, on pharmaceuticals or other conventional treatments (Taylor et al., 2013). In a survey of veterans with PTSD, 40% reported having to use medications less often as a treatment as result of their partnering with a psychiatric service dog (Esnayra & Love, 2008). Each type of classification of canines as fulfilling a therapeutic function has wide reaching policy, legal ramifications for the use animals in health care generally and the use of PSD as a treatment for PTSD among veterans (Vredenburgh & Zackowitz, 2012).

Training, Placement and Regulation

Of the prominent themes emerging from literature on the use of animals in managing health, training, placement and regulation is treated seriously as an important component of effectiveness but is not in the foreground of many studies (Duncan, 1998). There are numerous issues raised about training and placement including, though not limited to, the selection process (Weiss, 1997) consistency in temperament (Svartberg et al., 2005) the ethical considerations of appropriately matching dogs with humans (Burrows et al., 2008) and ongoing training and education (Taylor et al., 2013). A related concern raised is the consistency of training across different contexts and the regulation or standardization of training and expertise among dogs

(Danziel, 2003). Yet, despite this work, there does appear to be a disconnection between research on the use of animals in health care and research on the ongoing processes involved in their training and placement (Walsh & Merton, 1994).

Training and placement is taken up in the literature on PSD and the management of PTSD by veterans. A recurring theme is the importance of placement between an animal and a person in the effectiveness of the intervention in managing PTSD and mental health in general (Taylor, 2013; Zapf & Rough, 2002). Another prominent theme was on the nature of training programs and their organizations and development. Yount and colleagues (2012) analyze the development of PSD training program in the United States associated with a nonprofit organization. This description gives insight into the amount of work, effort and funds go into the training and placement process. As in this case, the training of psychiatric service dogs in general is a thorough process that can be very time-consuming (Furst, 2006). The entire procedure can take up to two years for animals with specific service assets (Dalziel et al, 2003). The cost of training PSDs is also high, and can cost up to USD $24,000 (Dalziel et al, 2003). In the United States or Canada, the training of these dogs is also a highly varied process, as there are currently no accreditation bodies to set standards for training (Modlin, 2012). Individual handlers and owners can also choose to train their own dogs (Modlin, 2012; Wisdom et al., 2009; Tedeschi, et al., 2010). Furthermore, the American Disabilities Act does not require individuals with service animals to carry training documentation with them (Modlin, 2012). This means that in some cases, individuals may successfully handle personal pets as service animals and not immediately be denied access. PSDs can also be trained to do very specific tasks, and are often trained specifically to assist with the unique needs of the individual (Esnayra & Love, 2008). In order to cut down on some of the costs that may be associated with carefully training dogs for specific tasks, some trainers have begun to train dogs from animal shelters and pounds (Weiss & Greenberg, 1997). There are also many prison-based animal programs (PAPs) in existence that involve inmates in the training of service animals (Furst, 2006).

Although there are many clear advantages to using psychiatric service dogs, there are several challenges that must be addressed at the level of training, placement and regulation. In the United States, access laws pertaining to service animals exist at both local and state levels, creating a potential for conflicting regulations (Modlin, 2012). Additionally, under the American Disabilities Act, handlers and owners of service animals are not required to outfit their animals in vests or tags for identification (Modlin, 2012). While this provides owners with a certain level of choice and freedom concerning their animals, it may be difficult for business owners and law enforcement to decipher between service animals and pets. The cost of training and maintaining service animals is another challenge faced by handlers and trainers (Weiss & Greenberg, 1997). As mentioned above, some trainers have begun acquiring and working with dogs from shelters, but the costs may still be quite high (Weiss & Greenberg, 1997). Longitudinal studies assessing the cost-effectiveness of psychiatric service dogs appear to be lacking. The lack of accreditation and regulatory bodies may also create a challenge for those involved in the training process

(Modlin, 2012). This lack of standardization has contributed to the existence of many not-for- and for-profit organizations involved in providing service animals to those in need.

Conclusion

This literature review provides a broad overview of research on PSD and their use in treating PTSD among veterans. Key themes that emerged were the benefits, safety concerns, cost effectiveness, using animals as a treatment, and training, placement and regulation. In each theme there was an attention to situating the relatively limited research on PSD and PTSD among veterans in relation to broader studies in the field of animal assisted interventions in mental health and well-being. The review frames the question of effectiveness in relation to a wide range of research in this area. The broader research on AAI provides a solid foundation around which to situate this future inquiry. What is clear from the analysis is that the use of PSD as a means of managing PTSD among veterans is a new, complex and dynamic phenomena in health care.

The overarching theme in the literature that cut across those addressed in this review was the need for further empirical research. It is evident given the extent of anecdotal evidence that PSD are effective in the management of PTSD. There are challenges and difficulties with the use of PSD as a treatment as indicated in the review. And the evidence, whether scientific or interpretative, about the exact nature of the challenges and the effectiveness, including the conditions that influence effectiveness, is still lacking. Nonetheless, regardless of the availability of this evidence, as we see in practice and in the media, veterans with PTSD are seeking out dogs as a mean to improve their mental health. In some cases they are formally trained PSD provided by a nonprofit organization through the donations from advocacy groups and concerned citizens. In other cases, veterans are training their own dogs either on their own or with the assistance of trainers to help them manage their health. There is wide public support for the use of dogs in this capacity as a non-stigmatizing intervention (Taylor, 2013).

As made evident by Chumley (2012), canines are woven into the culture of the military through their historical involvement in combat. This involvement is extending into the lives of veterans who are returning from duty and developing strategies to manage this transition. To inform and develop effective programs and policies it is necessary that further research be conducted on the complexity of PSD use in managing PTSD among veterans. Understanding this complexity will require ongoing research that is closely tied to the lives of veterans using dogs, the programs that provide them, the care givers involved, and institutional authorities and decision makers.

PROGRAM OF RESEARCH: Psychiatric Service Dogs and Veterans Living with Post-traumatic Stress Disorder.

One of the strategies that veterans diagnosed with PTSD are using to manage their mental health is canine assisted interventions (CAI). In many cases this intervention takes the form of a psychiatric service dog (PSD) provided through the assistance of a canine training non-profit organization. Alternatively, a veteran may elect to use an emotional support dog or train their own companion dog to provide support and care in managing symptoms arising from PTSD. Regardless of the form, canines are being taken up as a treatment by veterans and this approach to their mental health is receiving widespread support by veteran organizations and the general public.

Yet, despite the growing popularity of CAI among veterans – and Animal Assisted Interventions in health care generally – the evidence of their effectiveness is limited (Nauert, 2010). Discussions about the contribution of psychiatric service dogs to the treatment of PTSD in the media begin by attesting to the anecdotal evidence of their effectiveness and end noting the need for more research. With this lack of evidence on effectiveness, and the increase in use among veterans, research is needed to gain a broader understanding of the contribution of PSD in the management of PTSD. As the prior literature review demonstrates there are few studies directly on the effectiveness of PSD in treating PTSD; however, there are studies of Animal Assisted Interventions, particularly in the area of mental health, that provide evidence for the positive contribution of canines in managing illness and promoting well-being.

The current direction of research on animal assisted intervention is divided. There is trend toward evaluating the therapeutic value of animals as any intervention or treatment would be evaluated, using randomized clinical controlled trials. The advantage of this approach, or some variation of a clinical trial, is the findings are scientifically rigorous and recognized as highly reliable and valid measures of effectiveness. Currently there are a number of ongoing large clinical controlled trials underway in the area of AAI including a study of PSD and PTSD in the United States. Results from this research will be very valuable in assisting to develop best practices in care with regards to the use of animals to treat illness. The challenge of a clinical trial approach is it is resource intensive and requires a large sample to yield statistically significant findings. Furthermore, evaluating animals as a treatment using the same criterion as a medication or medical technology fails to fully take account of the animal as living agent that provides support, care and assistance through the bond that is formed with his or her human partner and his needs that need to be addressed.

In contrast to clinical trials, a second trend in AAI research is toward interpretative research that seeks to understand the personal, social psychological, historical, political, cultural and economic components of twinning animals with humans to manage illness. This approach follows a rigorous methodology and seeks to produce valid and reliable findings but with an attention to the complexity of effectiveness within a specific historical and social context. This context, it is argued, cannot be controlled for in scientific studies and in fact shapes and informs the relationship between canines and humans for the purposes of managing illness and promoting well-being. The value of an interpretative approach is it yields an in-depth understanding of why

a PSD, for instance, is effective for a veteran and the social factors that lead to or inhibit that effectiveness. It also links research more closely to the issues and concerns embedded in ongoing programs and practices using canines to manage illness and promote health. The limitation of an interpretative lens is that it cannot prove effectiveness in the purely scientific sense and as such is less useful in guiding evidence based best practices within a health care setting with regards to animals as a form of treatment for mental health.

In this program of research we propose using a one health model as a framework for bridging scientific and interpretative approaches to research. This framework provides a conceptual lens for bringing together different types of knowledge necessary for understanding and evaluating the effectiveness of PSD in the treatment of PTSD among veterans. Our program begins by proposing an empirical study of effectiveness across three parameters – biomedical, psychological, and social – among a cohort of veterans who have been already placed with a professionally trained psychiatric service dog in Canada.

Following this we describe directions for future research that build upon and extend this initial study of effectiveness. Moving forward, further research is required in the following areas: (1) comparing effectiveness across canines with different forms of training (PSD, emotional support dogs, self-trained companion dogs); (2) tracing effectiveness longitudinally with dogs placed with veterans as component of the research design; (3) identifying and examining the practices of organizations in Canada currently training and placing PSD and ESD for veterans; (4) exploring collaborations with researchers internationally in order to generate comparative studies of effectiveness across different social contexts.

PURPOSE

To outline a program of research on the use of canine assisted interventions (CAI) to manage mental health and promote well-being by veterans diagnosed with posttraumatic stress disorder.

Objective One: To investigate the effectiveness of PSD as a treatment for PTSD across three parameters – bio/psycho/social – with an attention to the partnership that is created between the dog and the veteran.

Objective Two: To identify directions for future research and knowledge exchange along three strategic lines of inquiry; extending the study of effectiveness; examining the organization and socioeconomic dynamics of training and placing of dogs; and, form international collaborative research on CAI and mental health among veterans.

This research seeks to understand the complexities of CAI and engage directly with the practices and perspectives of veterans living with PTSD so as to inform policy decisions and program development.

CURRENT STATE OF KNOWLEDGE

Studies on the contribution of animals to health and health care have grown exponentially over the last two decades. In universities animals studies programs and departments are growing

rapidly. Journals specifically dedicated to this area are increasing in number. Reflecting on this expansion, Kruger & Serpell (2006) argue that inquiry on animal assisted interventions lack a theoretical or conceptual framework capable of bringing together the diversity of activities that fall under this rubric and the types of research in this field. For the purposes of this program of research, we are adopting a One Health model as a unifying conceptual framework for understanding the contribution of canines to mental health. Although by no means a new concept, this model is being used increasingly in research and practice not only on the prevention of zoonosis but all research that seeks to cross boundaries between human and animal health and health care (Zinsstag, etal, 2009).

William Osler introduced the term 'One Medicine' to convey the importance of integrated medicine encompassing both human and animals together (Conrad et al., 2009; Tjaart, 1998). Since the first use of the term scholars have sought to encourage an understanding of health that cuts across the professionalized categories of human and veterinary medicine (Conrad et al., 2009). Schwabe (1984) adds that this concept has never been more important than it is now in our changing global environment (Tjaart, 1998). However, the concept of One Medicine is often met with resistance in medical and clinical settings and does not currently carry much traction in medicine or health care. However, there are indications that One Health, as an alternative concept that builds on upon One Medicine, is gaining momentum in medical and veterinary education and as a guiding principle for public health initiatives particularly with a global scope (Kahn et al., 2007; Conrad, et al., 2009).

The concept of One Health emerged in hopes of promoting global health. A significant amount of attention has been directed at fighting infectious zoonotic disease, in part because seventy five percent of infectious diseases are zoonotic in origin (Conrad et al., 2009). However, this framework is relevant beyond zoonotic disease prevention and public health. It recognizes the centrality of the human-animal-ecosystem interrelationship and the positive and negative influences each of these components can have on one another (Min et al., 2013). In the study of PSD and PTSD a One Health model emphasizes the centrality of the inter-relationship between the human, the dog, and the environment (social, physical, cultural, historical) as a triad in managing illness and promoting well-being.

A number of current studies of equine assisted interventions and PTSD adopt a One Health framework. Mills & Hall (2014) describe this approach in relation to a program in the United States, Horses for Heroes, that assist veterans with PTSD and those affected by PTSD manage their mental health. In Canada a similar project examines the outcomes of equine assisted therapy among veterans who have mental health and occupation health challenges (Russell, 2013). Research on this program is ongoing and promises to yield valuable test measurement tools of effectiveness and evidence to better determine the benefits of this intervention. While PSD constitute a fundamentally different kind of intervention than equine assisted therapy, there are points of intersection across the strategies involving animals that veterans are using to address the symptoms of PTSD and manage their health. It is useful to form points of collaboration in Canada between scholars conducting research on animal interventions and veterans and military health.

Not all current studies of animal assisted interventions and PTSD employ a One Health conceptual framework. A series of studies of effectiveness in the treatment of PSTD among veterans with PSD have been planned and are ongoing since as early as 2009 in the United States (Froling, 2011). There is a paucity of public information about this research. The overall approach appears to be to conduct clinical trials that address of a range research questions. One distinct characteristic of this research is may involve placing animals with veterans as a component of the research design. According to the National Institutes of Health Clinical Control Database, there are three studies planned. One examines whether PSD can improve activity and quality of life of veterans. A second looks at the feasibility of pet adoption as a mode for twinning veterans with a companion animal for therapeutic purposes. And the third explores the cost effectiveness of PSD, policy recommendations on the provision of PSD, and the influence of PSD on mental health outcomes and quality of life. The move toward randomized clinical controlled trials is important in moving this field and practice forward; however, it is necessarily to complement this research with in-depth interpretative and qualitative studies that can attend to the personal, social, historical and cultural dimensions of canine assisted interventions in mental health care.

The current state of knowledge in this area of inquiry provides insight into possible future directions for studies on PSD and Veterans with PTSD in Canada. Like the equine assisted therapy research, outcomes from the clinical trials ongoing in the United States hold great promise of improving our understanding of both the process by which to provide dogs to veterans and the contribution of service dogs to their health and well-being. Clinical trials like those that appear to be in place in the United States are very resource intensive; they require a large sample size and the training and placing of service dogs to veterans. Replicating a clinical controlled study in a Canadian context would be difficult and arguably not a viable or necessary direction for future research.

In what follows we describe the methods and timeline for a research study on the effectiveness of PSD as a treatment for PTSD across three parameters – bio/psycho/social – with an attention to the partnership that is created between the dog and the veteran. This study will build upon the knowledge outline in the prior literature review and draw on studies already ongoing in Canada and the United States in order to better understand the contribution of canine assisted interventions (CAI) in managing mental health and promoting well-being.

METHODS

The proposed two year study uses a longitudinal mixed methods research design, incorporating data collected from medical records, psychological assessments and in-depth semi structured interviews with veterans. Consistent with a One Health perspective, emphasis will be placed on the veteran and the dog as a partnership. With this focus, we will collect data about the dog as a participant in the study, directly through information collected from regular check-ups and indirectly by speaking with veteran about the dog and his or her partnership. Data collection and analysis will reflect the three different levels of analysis in the study: biological, psychological and social. Each level of analysis will examine measures and topics related to mental health and well-being in relation to managing PTSD.

Biological

The data collected that relates to the biological are twofold. First are biomedical markers of physical health in general and mental health specifically in relation to PTSD. Permission will be asked to have access to medical records of participants after their diagnosis and continuing until the end of the study. The records will be stripped of identifying information to ensure confidentiality of information. This data will be analyzed by looking at health outcomes over time pre and post introduction of the psychiatric dog partnership. Looking back at medical records in this way will help to identify changes in biological health outcomes after partnering with PSD. Similar types of data, if available, will be gathered about the PSD through the veterinarian. The second source of data drawn from medical records will be the use of health care services by the respondents over time. This data will be analyzed to determine any trends in health care utilization pre and post partnering with a PSD. With all respondents, at the beginning of the study a baseline measure of biological health will completed and followed up on an 8 month basis, or three times over the course of the study

Psychological

The data collected related to the psychological dimension of effectiveness will be in the form of several assessment tools related to measures of mental health (scales for depression, anxiety, and PTSD scales, for instance) and measures of resilience (the brief resilience scale, for instance). Assessments will be conducted through questionnaire at the beginning of the study to establish a baseline measure and repeated at 8 month intervals over the course of the study or three times. This data will be analyzed to identify trends or changes in psychological measures of mental health and psychological measures of resilience. After their regular check-up, veterinarians and the veterans will be asked to assess the psychological well-being of the dog. This data will be analyzed to identify trends or changes in the well-being of the service dog over the course of the study.

Social

The data collected that relate to the social will be through in-depth interviews with veterans. Interviews will be open ended and semi structured across a series of questions related to their partnership with a PSD and its contribution to managing their mental health and promoting their well-being. Questions will be organized around three broad themes. First is the influence of their partnership on their identity (feelings, sense of self, perception, emotion, judgment and capacity to adapt and cope with PTSD). Second is the influence of their partnership on their everyday life and well-being, including patterns of living, habits, routines, and activities. Third is the influence of their PSD partnership on their social interactions and social relationship, ranging from their family and close relations, to care providers and acquaintances, to people in the community more broadly. In the interviews, veterans will be given the opportunity to raise issues and concerns or topics that they feel are relevant to the central objectives of the study. In the interviews, a series of questions will be included about the veteran's perspective on the social lives of their service dogs and its influence on their well-being and the service dog's well-being. Interviews will be conducted at the beginning of the study and 8 month intervals or three times over the course of the study and will be from 45-90 minutes in length, approximately. This qualitative data will be analyzed in relation to the meanings of partnering with a PSD from the perspective of a veteran

with PTSD. Analysis of this data will concentrate on generating an in-depth understanding of why and how their partnership was effective or not effective as a means of managing mental health and promote well-being.

After each eight month interval, the data collected from the three levels identified will be analyzed in order to provide interim findings of the overall benefit or effectiveness across the bio/psycho/social measures. At the end of the study, all of the data will be analyzed longitudinally to shifts or trends across changes in bio/psycho/social measures among respondents.

Recruitment

Respondents for the study will be veterans who have been diagnosed with PTSD and recently placed with a psychiatric service dog. Given the scope of the study, the number of respondents will be limited to between thirty and fifty. As much as possible the cohort will be selected so that it reflects the population of veterans with PTSD overall in Canada in terms of gender, ethnicity, geographic location, term of duty and length of diagnosis. Identifying prospective respondents will be done through the community stakeholder organizations that have expressed an interest in being involved in research. The involvement of organizations who are directly involved in service animals and veterans will also assist in the collection of data in the study. Working with several organizations will help to ensure a national scope to the study.

FUTURE RESEARCH DIRECTIONS

With limited research directly on PSD and PTSD it is sensible to begin with a manageable exploratory study like the one proposed in this program of research. There are a number of directions for current studies and future research. Building on this proposed study, and the current state of the knowledge, we outline three lines of inquiry.

Ongoing Research and Evaluation

The first direction is to extend and expand the proposal empirical study. This research is tied directly to organizations that are currently providing PSD, veteran organizations interested in addressing the needs of veterans, and veterans themselves. Continuing to collect longitudinal data from those involved in the study on the use of canines in managing mental health is not only valuable scientifically it can be directly linked to ongoing program evaluation and the development of best practices and policies.

Once the infrastructure is established for collecting data from veterans using PSD, another instructive way of expanding on this study is to introduce different types of canine assisted interventions. Emerging from the review of literature was the debate regarding the level of training for a dog that is necessary to assist veterans in managing mental health concerns arising from PTSD. Emotional support dogs, it is noted, may serve as an effective alternative to a psychiatric service dogs for some veterans depending on their experience and approach to managing PTSD.

Further to the distinction between emotional support dogs and PSD, there are indications that veterans are taking more of a do it yourself approach and training their own companion animals to be defacto service dogs. It would be valuable to explore this trend in more detail. Veterans who have a "lay service dog" or simply have a dog as opposed to a professionally trained service dog could be included in the study. Information on the training of dogs by veterans would be valuable in better understanding how to support those who wish to make use of canines in managing mental health and promoting well-being, both in the case of PTSD and veterans and other populations.

Service Dog Training Organizations

The growing use of canine assisted interventions in health and health care has given rise to a wide range of non-profit and for profit organizations dedicated to training and partnering service dogs. A second direction for future research is a study mapping out the current organizations in Canada that are doing this type of work. In conversations with those at service dog organizations, and after looking at the proceedings of the last two summits on military service dogs in Canada, there is already an interest in and movement toward trying to understand this sector in more depth.

A range of research questions emerge from the summit that could be explore in more depth. One issue, for instance, is the process by which organizations currently working on this issue can arrive at a set of accepted national policies and standards regarding the training and partnering of service dogs for military care. Another is identifying the range and diversity of organizations and groups that are doing this kind of work. The study could help to facilitative an open community of practice among stakeholders involved in this kind of work so as to ensure that veterans are involved in the process in a meaningful way and that they are receiving the best possible care.

International Collaborations

A final direction for future research is fostering international collaborations. In the United States there are studies ongoing in at least one center that promises to yield important findings on the use of PSD that could inform practices and policies in Canada. Establishing linkages across borders on this issue will help to foster knowledge that will assist veterans in both countries. While less developed at this point, there are researchers in Australia and in the United Kingdom who are interested in conducting this type of research and fostering collaborations. It would be valuable to start the planning process for an international symposium or summit on this topic across countries that are interested or involved in this research that so knowledge and expertise can be shared and put into practice so as to assist veterans better manage their health and promote their well-being.

CONTRIBUTIONS

Veterans are using dogs (service and otherwise) as an approach to manage their mental health. The interest and desire for canine companionship, service and support can be understood in relation to the history of dogs in the military. Dogs and soldiers have worked alongside one another for centuries and canines continue to play a central role in military activities. The use of service dogs in the provision of care and support for veterans is an extension of this ongoing

relationship and culture (Ritchie & Amaker, 2012). Yet, the claims for what service dogs can do to assist people with mental health challenges, and veterans with PTSD specifically, expound in public discourse. There is little question that dogs can and do help; it is in what way and to what extent that is not well understood, yet. The question, it would seem, is not whether to use dogs in this capacity but generating knowledge about how to do it in the most effective and cost efficient manner. An in-depth and rigorous understanding of the effectiveness of PSD for Veterans with PTSD is required in order to move forward with policy and program developments in this area.

Research that generates scientific and interpretative findings that describe and analyze the value of partnerships between veterans and service dogs will help to build toward articulating standards and best practices in the area of canine assisted interventions. This program of research will begin to move in that direction by conducting a study on the effectiveness of PSD for veterans with PTSD. It also sets the foundation for a longitudinal study that expands the scope of examining the perspectives of veterans who are partnering with dogs in a number of different ways to address their mental health and well-being. Further to this, it will collaborate with organizations that train and partner service dogs so as to build a community of practice with stakeholders in canine assisted interventions and the military in Canada. As this research unfolds, the knowledge generated can intersect with research internationally seeking to understand the contribution of PSD in the treatment of PTSD.

RESEARCH TEAM

The proposed research team is one that includes a diverse range of professionals, researchers, and various others with valuable expertise and backgrounds. Skills and experience among team members vary from veterans' health, chronic mental illness and mental health, as well as direct experience, both field and academic, with Animal-Assisted Therapies. Additionally, the team involves both a practicing veterinarian as well as two medical physicians.

Primary Investigator

Dr. James Gillett

The primary investigator, Dr. James Gillett, is experienced in research pertaining to chronic disease and illness. His work has also involved studying various relationships between humans and animals. Many of his publications, including books and peer-reviewed journal articles, concern chronic illness and animals. Dr. Gillett is currently an Associate Professor and Chair of the Department of Health, Aging & Society at McMaster University.

Co-Investigators

Dr. Colleen Dell

Co-investigator Dr. Colleen Dell has an established research background in animal-assisted therapies, community outreach, and trauma. She is currently a Tenured Professor at University of Saskatchewan.

Dr. Melanie Rock

Dr. Melanie Rock has direct experience with animal-assisted therapies. Additionally, Dr. Rock has expertise in areas of population health. She also has many publications pertaining to human-animal interactions in health care.

Bonnie Freeman

Bonnie Freeman is a social worker, and currently positioned as a Pre-Doctoral Fellow at McMaster University in the Department of Social Work. Her academic history involves work highly relevant to animal-assisted therapies and is currently involved in research on veterans and equine assisted therapy.

Dr. Christina Sinding

Dr. Cristina Sinding is currently a Professor at McMaster University. Her expertise lies within the realms of social work and the management of chronic illnesses. She also has published works concerning mental illness and recovery and health care management.

Dr. Victor Marshall

Dr. Victor Marshall is an expert in veterans' health, PTSD and community service. Dr. Marshall is also a retired member of the Royal Canadian Naval Reserve, providing him with direct insight into military matters. He holds the position of Professor Emeritus at both the University of Toronto, and the University of North Carolina at Chapel Hill.

Dr. Brent Wolfrom

Dr. Brent Wolfrom is a member of the College of Family Physicians of Canada, and is an Assistant Professor in the Department of Family Medicine at Queen's University. Dr. Wolfrom is experienced in veterans' health issues, as well as PTSD. In addition, he developed the curriculum for Military Family Medicine at Queen's University.

Dr. David Musson

Dr. David Musson is an expert in medicine and veterans' health. He is currently an Associate Professor with the Department of Anesthesia at McMaster University. He has previously been stationed as a Medical Officer and Flight Surgeon with the Canadian Forces.

Dr. Michelle Lem

Dr. Michelle Lem is a veterinarian, as well as the Founding and Executive Director for Community Veterinary Outreach, a registered charity. Her experience with animals is extensive, including work with animal-assisted therapies. Additionally, she has multiple publications and presentations on the 'One Health' model.

POTENTIAL COMMUNITY COLLABORATORS

Wounded Warriors

Wounded Warriors is a Canadian non-profit organization aimed at helping members of the Canadian Forces who have been injured during duty. Their primary focus is on mental health issues, including PTSD.

Courageous Canines

Courageous Canines is a program designed specifically training and partnership elite service dogs for veterans with PTSD. It is a component of the services offered by MSAR.

Canadian Canine Training Academy

Canadian Canine Training Academy is an established training centre for dogs of all kind. The organization was founded by Randy Chartrand, and has trained over 3,500 dogs to date.

Citadel Canine Society

Citadel Canine Society is a registered charitable organization that trains and delivers both service and companion animals to veterans and first responders with PTSD. Since its inception, this organization has trained and delivered dogs to veterans across the country, all at no charge to the recipients.

National Service Dogs

National Service Dogs is an organization aimed specifically at training Labrador Retrievers and Golden Retrievers, and providing them to individuals with unique physical and/or social needs. The organization has trained and graduated over 250 Certified Service Dog Teams, many of which have included dogs specifically trained for the treatment of PTSD.

Canadian Foundation for Animal Assisted Support Services

CFAS is an established foundation aimed at assisting individuals with various needs through companion and service animals. Additionally, this organization has sponsored, hosted, and facilitated two military service dog summits at the national level. Their commitment to both military and civilian animal assisted and services is exceptional, making them a valuable partner.

BUDGET

The majority of the budget for the proposed study consists of costs for research assistants and studentships. For project coordination, data collection and management two research assistants will be hired on a part time basis over the two years of the study. Funds will also be used to give a PhD student a stipend to work on this project as a component of his/her studies. The PhD student involvement will be at the level of data analysis and knowledge exchange. Funds

allocated for travel will used to collect data, travel to meetings, and disseminate findings. The infrastructure and operations needed to conduct this research will be provided in kind by the Department of Health Aging and Society at McMaster University. See attached Appendix for details of the budget.

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APPENDICES

APPENDIX A

Definitions of Animals Used in Healthcare Settings

There is a clear distinction between animals used as service animals and those who assist providers to attain desired outcomes for Veterans.

Service Animals

Service Dogs (SD): service dogs are trained to meet the care needs of an individual who takes full-time possession of the dog and is responsible for its care and maintenance. Service Dogs are trained to do work or perform tasks for the benefit of an individual with a disability, including a physical, sensory, psychiatric, intellectual, or other mental disability. A direct link must exist between the animal's work or tasks and the handler's disability.

Guide Dogs (GD): Guide dogs assist the visually impaired (blind or low vision) with navigation such as avoiding obstacles, stopping at curbs and steps, and negotiating traffic.

Hearing Service Dogs (HSD): Hearing dogs are trained to alert those with a hearing impairment (deaf or hard of hearing) to the presence of people or household and community sounds by making physical contact and, if appropriate, leading the handler to the source of the sound.

Psychiatric Service Dogs (PSD): Psychiatric Service Dogs assist individuals with psychiatric and neurological disabilities by preventing or interrupting impulsive or destructive behaviors, or mitigating behavioral health disabilities in other ways.

Mobility Service Dogs (MSD): Mobility Service Dogs assist individuals with chronic mobility impairments such as balance issues, or they are in wheelchairs or walk with assistive devices such as canes.

Therapy Animals – Animal-assisted Interventions

Animal-assisted Therapy (AAT): AAT is a goal-directed, individualized healthcare treatment plan for individuals with physical, social, emotional, or cognitive dysfunction, where the AAT intervention is documented in the patient's health record. AAT is conducted during scheduled visits or at regular intervals, and directed or delivered by a professional within the practice scope of a health/human service provider. (The pilot with Can Praxis is an example of AAT.)

Animal-assisted Activities (AAA): AAA provides opportunities for motivation, education, or recreation to enhance quality of life. AAA is delivered in a variety of environments by specially trained professionals, paraprofessionals, and/or volunteers in association with animals that meet specific criteria. (The VAC pilot Dog Visitation Program with the St. John Ambulance Canada is an example of AAA).

APPENDIX B

Budget

Year One Budget

BUDGET

Financial Assistance Required					**Year One**		
					Other Funding		
Research Staff (excluding trainees)	**No.**	**Salary**			**Cash***	**In-Kind***	**Total**
Research Assistants	2.0	45,000.00					45,000.00
Technicians	0.0						
Other personnel	0.0						
					Other Funding		
Research Trainees	**No.**	**Stipend**			**Cash***	**In-Kind***	**Total**
Postdoctoral Fellows (post PHD, MD,	0.0						
Graduate Students	1.0	17,500.00					17,500.00
Summer Students							
					Other Funding		
Materials, Supplies and Services					**Cash***	**In-Kind***	**Total**
Animals							
Expendables				750.00			750.00
Services							
Other (as specified in the Details of Financial Assistance Requested)							
					Other Funding		
					Cash*	**In-Kind***	**Total**
Travel				8000.0			8000.00
Total Operating							71,250.00
Administration							17812.50
Total Request							89,062.50

Year Two Budget

Financial Assistance Required **Year Two**

Research Staff (excluding trainees)	No.	Salary			Other Funding Cash*	Other Funding In-Kind*	Total
Research Assistants	2.0	45,000.00					45,000.00
Technicians	0.0						
Other personnel	0.0						
Research Trainees	**No.**	**Stipend**			**Other Funding Cash***	**Other Funding In-Kind***	**Total**
Postdoctoral Fellows (post PHD, MD,	0.0						
Graduate Students	1.0	17,500.00					17,500.00
Summer Students							
Materials, Supplies and Services					**Other Funding Cash***	**Other Funding In-Kind***	**Total**
Animals							
Expendables				750.00			750.00
Services							
Other (as specified in the Details of Financial Assistance Requested)							
					Other Funding Cash*	**Other Funding In-Kind***	**Total**
Travel				8000.0			8000.00
Total Operating							71,250.00
Administration							17812.50
Total Request							89,062.50

Total Requested Over Two Years **178,125.00**