

Dog Ownership and Training Reduces Post-Traumatic Stress Symptoms and Increases Self-Compassion Among Veterans: Results of a Longitudinal Control Study

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Abstract

Objectives: The aims of this study were to measure the potential impact of a therapeutic dog ownership and training program for Veterans with symptoms of post-traumatic stress.

Design: The study used a quasi-experimental design with two cohorts of Veterans—a dog owner-trainer intervention and a wait list control group. Participants completed baseline and 12-month follow-up assessments.

Setting: Clear Path for Veterans, a nonclinical, open recreation facility whose mission is to support Veterans and their families in the reintegration process after military service.

Subjects: Participants ($n=48$) were either enrolled in the veterans therapeutic dog owner-trainer program (Dogs2Vets) or were placed in the wait list control group.

Intervention: Veterans were enrolled in the Dogs2Vets program, a 12-month structured dog owner-trainer program that engages veterans in the training and care of a dog that they ultimately adopt. The Dogs2Vets Program focuses on the healing aspects of the human-animal bond.

Outcome measures: PTSD Checklist, Military Version (PCL-M), perceived stress scale, self-compassion scale (SCS) composite, and SCS subscales for isolation and self-judgment.

Results: Veterans participating in the Dogs2Vets owner-trainer program experienced significant reductions in symptoms of post-traumatic stress, perceived stress, isolation, and self-judgment accompanied by significant increases in self-compassion. In contrast there were no significant improvements in these measures among veterans in the wait list control group. Qualitative data reinforced the statistical findings with themes of decreased isolation, unconditional acceptance and companionship, and a renewed sense of safety and purpose from their relationships with their dogs.

Conclusion: Veterans benefit significantly from dog ownership in combination with a structured dog training program. Not only do they experience significant decreases in stress and post-traumatic stress symptoms but also they experience less isolation and self-judgment while also experiencing significant improvements in self-compassion.

Keywords: post-traumatic stress disorder, self-compassion, veterans, animal assisted interventions, dog therapy, stress

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Introduction

THERE ARE MANY INDIVIDUAL AND systematic barriers to engaging military veterans in traditional clinical treatment for post-traumatic stress disorder (PTSD). Fewer than half of veterans in need of PTSD treatment will actually receive clinical services through the Veterans Administration (VA).¹⁻³ Therefore effective complementary and alternative strategies, outside of traditional clinical structures, are needed for veterans with PTSD. Animal assisted interventions (AAIs) are one of the promising nonclinical strategies for veterans with PTSD. AAIs have long been used to aid military veterans who experience a range of trauma-related problems. In fact, the earliest documented therapeutic use of animals in the United States was a program developed by the American Red Cross and the U.S. Army Air Corps Convalescent Center to assist veterans recovering from "battle fatigue" following World War II.⁴ Service dogs are one form of AAI that is increasingly being used to improve the quality of life for veterans with physical limitations and PTSD.⁵

AAIs can utilize a variety of animals and encompass a range of human-animal interactions—from brief therapeutic encounters to long-term pet ownership.⁵⁻⁷ AAIs are typically used as a complement to traditional medical, pharmacologic, and psychotherapeutic interventions, although some have suggested that AAIs may be considered in place of other treatments because there are fewer negative side effects and AAIs may be more cost effective.^{6,7} Across a range of populations, AAIs have been found to result in biopsychosocial benefits, such as decreased negative effect, increased adaptive functioning, decreased perceived pain, and decreased healthcare utilization.⁸⁻¹² AAIs have also been shown to improve psychosocial functioning in several areas, including loneliness,¹³ social support,¹⁴ stress reduction,¹⁵ and anxiety.¹⁶

Researchers have theorized that the benefits of human-animal interaction are related to three main mechanisms as follows: the reduction of anxiety and arousal, the facilitation of human to human social interaction, and by directly meeting people's fundamental social need for attachment.¹⁷ These three mechanisms involve interrelated neurobiologic and psychologic processes that also impact social interactions. Research is needed to better understand the mechanisms of change associated with AAIs and pet ownership.¹⁸ Although AAIs for returning veterans have found that such interventions are generally beneficial for PTSD symptoms and related mental health outcomes, the effect sizes vary and studies are plagued by methodological shortcomings, and there are inconsistencies in the outcomes for veterans.^{4,5,19,20}

There is substantive research on the physical health benefits of both AAIs and animal companionship/pet ownership programs. AAIs involve planned, time-limited one-time or recurrent interactions with an animal or animals designed to meet specified mental health or other biopsychosocial goals.²¹ Pet ownership programs, while they may also be planned and goal-directed and involve time-limited sessions with providers (such as animal trainers or clinical professionals), involve sustained animal companionship, with the animal or animals living in the dwelling of the program participant. Even brief visits with dogs have shown significant decreases in state anxiety, systolic pulmonary artery and capillary wedge pressure, epinephrine

levels, and norepinephrine levels during and after dog visitation.¹⁴ Some have theorized that the benefits of human-dog interactions result from neurobiologic changes, such as the release of oxytocin during calm interactions with canines, that facilitate reductions in anxiety and hyperarousal.²² Another often-reported physical benefit of dog ownership (as opposed to time-limited AAIs) is increased daily physical activity and cardiovascular benefits, which researchers suggest may be the result of participants walking their dog daily.²³

Research on AAIs has been limited by small sample sizes and lack of control groups, thus empirical studies with larger sample sizes are needed.²⁴ Although high-quality outcome studies of the effects of pet ownership on psychosocial functioning are few, there is some evidence that pet ownership also contributes to psychosocial well-being.²⁵⁻²⁷ Consistent anecdotal reports suggest that AAIs and pet ownership interventions may be especially well suited to people who are socially withdrawn and isolated, which are symptoms of post-traumatic stress among veterans; however, these assumptions are not necessarily based on empirical evidence.²⁶ Some researchers posit that the companionship of an alert dog may ameliorate hypervigilance and reduce depression²⁸ and anxiety.²⁹ Pets may be beneficial in alleviating stress, depression, and alienation, by providing a sense of comfort and motivation to live.²³ It is important to bear in mind that the psychologic benefits of pet ownership are not guaranteed and that pet ownership also introduces new stressors that may aggravate existing conditions; therefore, stress should also be measured in pet ownership intervention research.

Increasingly, researchers are emphasizing the importance of examining self-compassion as an outcome for interventions that aim to address chronic PTSD among military veterans.^{30,31} The cultivation of self-compassion is associated with decreased PTSD related symptoms of self-judgment, self-criticism, and rumination specifically among Iraq and Afghanistan War veterans.³⁰⁻³² Researchers note that the compassionate and nonjudgmental demeanor of dogs makes them well suited for veterans with PTSD who often experience hypervigilance, isolation, and reintegration challenges while also feeling the need to project a strong persona.²⁸ Thus the constructs of self-compassion and judgment are particularly salient for service dog programs and are important outcomes for the present study. To the best of their knowledge, research has not been conducted that has examined the effect of a service dog ownership program for veterans on self-compassion and PTSD. Thus, one purpose of this study was to explore the effect of a veterans' dog ownership and training program on facets of self-compassion among veterans with symptoms of post-traumatic stress.

The primary aim of the present study was to investigate the effect of a veteran dog owner-trainer program (Dogs2-Vets) on symptoms of post-traumatic stress among veterans; secondary outcomes include perceived stress, self-compassion, self-judgment, and isolation. The authors hypothesized that the dog owner-trainer program would decrease self-judgment and isolation while increasing self-compassion. The authors further hypothesized that participation in the Dogs2Vets program would significantly reduce symptoms of post-traumatic stress and perceived stress. In contrast, the authors hypothesized that veterans in the wait list control group would not experience significant improvements in any of these constructs.

Materials and Methods

This study was approved by the Syracuse University Human Subjects Institutional Review Board. The population recruited for this study included veterans enrolled in the Dogs2Vets program at Clear Path for Veterans, a nonclinical, open recreation facility whose mission is to support veterans and their families in the reintegration process after military service. Participants were military veterans who had symptoms of PTSD. Veterans may self-refer to the Dogs2Vets program or be referred by their psychotherapists at the regional VA Medical Center or Vet Center. Dogs2Vets is recommended as an additional tool in managing symptoms of post-traumatic stress and not as an alternative to clinical therapies.

Recruitment and sample

Potential participants were provided with verbal and written information about what the study entailed, and interested veterans were then engaged in the informed consent process. The recruitment pool included all veterans who enrolled in the Dogs2Vets program from 2014 to 2017 ($n=64$); 94% ($n=60$) of Dogs2Vets participants agreed to enroll in the study. Of the 60 who enrolled in the study, $n=12$ were omitted from the final analysis because they had only completed baseline data collection. In total, $n=48$ provided complete baseline and follow-up data, $n=14$ were wait list control participants, and $n=34$ were enrolled in the dog owner-trainer program. The wait list control group engaged with social programs through the agency while waiting to begin the Dogs2Vets program; these included volunteering and the Wingman (peer support) program. The average amount of time wait list control participants waited to be enrolled in the program was 12 months.

Military service related data were collected during enrollment in the Dogs2Vets program, including branch of military service, combat exposure, time since separation from military, and era of service in addition to age, race, and sex.

Description of Dogs2Vets program

The Dogs2Vets program is a structured dog training program that engages veterans in the training and care of a dog that they ultimately adopt. In many cases, both the veteran and the dog come to Clear Path somewhat displaced having experienced significant traumas and disruptions to important relationships. The Dogs2Vets Program at Clear Path for Veterans focuses on the healing aspects of the human-animal bond. Unlike many other organizations that provide trained service dogs to veterans, Dogs2Vets follows the owner-trainer model of training; each veteran selects a dog, and the veteran/dog team train with their dog under the guidance of a Dogs2Vets professional trainer. During training, participants learn to care for their dogs and learn dog behavioral management and training skills. Veteran/dog teams engage in 90-minute weekly dog training sessions for 12–18 months. Each team undergoes the American Kennel Club (AKC) testing for both Canine Good Citizen (CGC) and Community Canine. Upon passing the CGC evaluations, veteran/dog teams begin public access training and attend weekly sessions working in new environments where they practice in real world settings (e.g., stores and public events). Throughout this

process, veterans are encouraged to conduct several outings to enhance their dog's training and promote social engagement.

Measures

Post-traumatic stress symptoms were measured with the PTSD Checklist-Military Version (PCL-M). The PCL-M is a 17-item questionnaire in which respondents rate the degree to which they have been bothered by military related post-traumatic stress symptoms in the past month using a 5-point Likert scale from 1 (not at all) to 5 (extremely).^{33,34} Possible scores on the PCL-M range from 17 to 85. Internal consistency was high with a Cronbach's alpha of 0.83 at baseline.

The Perceived Stress Scale (PSS) is a psychometrically validated measure of the degree to which situations in one's life are appraised as stressful. The PSS is a 10-item scale designed to tap how unpredictable, uncontrollable, and overloaded respondents find their lives to be in the past month.³⁵ The PSS was used to measure life stressors over time and to assess potential additional stressors of dog ownership. Internal consistency of the PSS was high with a baseline Cronbach's alpha of 0.87.

Self-compassion was measured using the Self-Compassion Scale Short Form (SCS-SF), a 12-item scale in which respondents rate how they typically act toward themselves ranging from 1=almost never to 5=almost always.³⁶ The SCS-SF yields a total composite score and can be used to compute subscale scores for isolation, self-judgment, over-identification, self-kindness, common humanity, and mindfulness. SCS-SF subscales are computed by calculating the mean for the subscale item responses. The SCS composite score is computed by reverse scoring the negative subscale items for self-judgment, isolation, and over-identification (i.e., 1=5, 2=4, 3=3, 4=2, 5=1) and computing a total mean.³⁷ The baseline Cronbach's alpha for the composite SCS-SF was 0.89; the alphas for the SCS-SF subscale measures for isolation and self-judgment were both 0.90.

Statistical approach

The first step in the analysis entailed calculating means and standard deviations for each of the outcome variables and paired-sample *t* tests to measure within group differences from baseline to 12-month follow-up. Due to the small sample size, the authors used bootstrapping with 1,000 samples for the within group analyses. Between group effect size (d_{ppc2}) was calculated according to Morris's recommendations for different sample sizes and potential differences in baseline/pretest values. Morris recommends using the pooled baseline/pretest standard deviation for weighting the differences of the pre-post means.^{38,39} The final step in their analysis was simple linear regression, to examine changes in outcome scores by group (Dogs2Vets=1; wait list control=0) through linear regression models where group was the selection variable, baseline scores the independent variables, and the dependent variables were PTSD, perceived stress, isolation, self-judgment, and self-compassion. Relevant assumptions were evaluated and determined to be within acceptable parameters; these included normality, linearity, independence, and homoscedasticity.

Qualitative feedback was also collected from participants in the Dogs2Vets program at 12-month follow-up through written responses to an open-ended question placed at the end of the survey e-mailed directly to participants. The

TABLE 1. WITHIN GROUP *T* TESTS AND BETWEEN GROUP EFFECT SIZES FOR INTERVENTION AND CONTROL GROUPS

Measure	Dogs to Vets (n=31)			Control (n=14)			Between group Effect size <i>d</i> _{ppc2}
	Baseline	Follow-up	<i>p</i>	Baseline	Follow-up	<i>p</i>	
PCL-M	63.9 (9.2)	60 (8.8)	0.03	64.5 (10.8)	63.4 (12.6)	0.82	-0.28
PCL-M score change		-4.2 (8.5)			0.5 (8.1)		
Perceived stress	20.9 (6)	18 (6.2)	0.02	21.8 (5)	22.4 (7.3)	0.87	-0.6
Self-compassion	4.7 (1.4)	5.2 (1)	0.02	4.3 (1.7)	4.3 (1.5)	0.91	0.37
Self-judgment	3.8 (0.9)	3.3 (1)	0.01	3.4 (1.2)	3.8 (1.1)	0.55	-0.9
Isolation	4.1 (0.8)	3.6 (1)	0.02	3.9 (1.2)	4.0 (1.1)	0.18	-0.64

Bootstrap results based on 1,000 bootstrap samples.
PCL-M, PTSD Checklist, Military Version.

question asked participants to write a response in a text box to the question “How did the Dogs2Vets program benefit you?” The aim of this inquiry was to explore the relationship between the veterans and the dogs and to better understand the veteran’s experience with the program. In step one, participants’ responses were reviewed independently by two researchers who clustered responses into themes; the researchers then triangulated their findings to establish consensus and confirmation of thematic classifications. Open-ended responses were ultimately clustered into five themes and are presented at the conclusion of the results section.

Results

Baseline characteristics

The majority (84%) of the veterans identified as Caucasian/white, 8% identified as African American, and 8% identified as Hispanic. Fifty percent of the veterans had served in the U.S. Army, 30% served in the Marines, 7% had been in the Air Force, 7% had been in the Navy, 3% had served in the Army National Guard, and 3% in the Marine National Guard. There was substantial variation in the number of years the veterans had been separated from service with a mean of 12.9 years (SD 12.3) ranging from 1 to 32 years. The variation in years of service is also reflected in the diversity of the era of their military service; 20% had served in the Vietnam War, whereas the remaining 80% were post-9/11 military veterans.

The mean age at the time of baseline survey data collection for the Dogs2Vets participants was 41 (SD 12) and 43 (SD 11) for the wait list control group. There were no statistically significant differences ($p \geq 0.05$) in age or outcome measures at baseline between veterans who completed the baseline and follow-up surveys ($n=48$) and those who completed only baseline surveys ($n=12$) (age $p=0.63$; PTSD $p=0.93$; perceived stress $p=0.24$; self-compassion $p=0.16$; judgment $p=0.50$; or isolation $p=0.43$).

Dogs2Vets and wait list control participants completed follow-up assessments 12 months after baseline assessments. Paired sample *t* tests were conducted to measure within group baseline to follow-up differences, and significant improvements were found for each of the outcome measures among Dogs2Vets participants ($p \leq 0.05$); however, there were no significant changes among the wait list control group. The means, standard deviations, within group paired sample *t* tests, and between group effect sizes are presented in Table 1. The authors also conducted simple linear regression for their final

step of the analysis; these results are presented in Table 2. There were significant improvements ($p \leq 0.05$) across all measures when the Dogs2Vets participants were compared to the wait list control group, with the exception of the measure for isolation.

Changes in post-traumatic stress symptoms

At baseline all participants scored above 36, which is the low end of the cut point score on the PCL-M for post-traumatic stress symptoms when PTSD is assessed in specialized medical clinics or VA primary care. The mean baseline PCL-M score was 64 (SD 9.6) with a range of 39–85 for the entire group. There were no significant between group (intervention vs. control) differences in baseline PCL-M scores. Among Dogs2Vets participants there was a significant decline ($p=0.03$) in PCL-M scores with a mean decline of 4.2 (SD 8.5) points. However, there were no significant changes at follow-up among the control group; in fact, there was even a moderate increase of 0.5 (SD 8.1) points. The effect size for between group differences in the Dogs2Vets and control group for PCL-M score was moderate at -0.28. Changes in PCL-M scores for each group are presented in Figure 1 and Table 1. The authors also conducted linear regression to examine the main effect of the Dogs2Vets intervention on PCL-M scores at 12 months. The results indicate that participation in the Dogs2Vets program significantly predicted reductions in PCL-M scores at follow-up ($p=0.01$). There were no significant changes in the regression model for the control group. Linear regression results for PCL-M scores are presented in Table 2.

Perceived stress

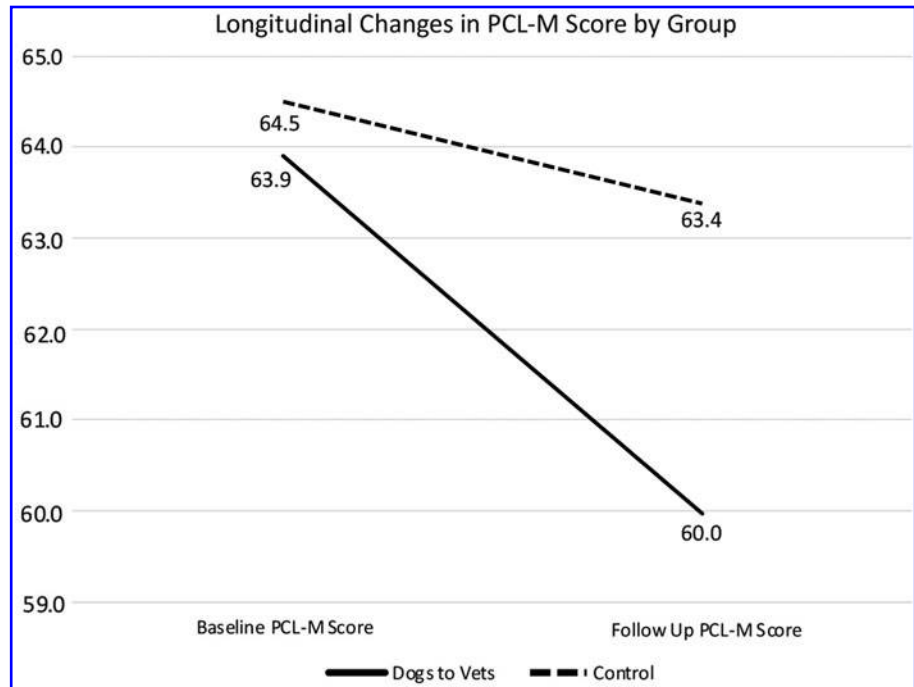
There were significant reductions in perceived stress among the Dogs2Vets group ($p=0.02$) at follow-up; however, there were no significant differences in the wait list

TABLE 2. LINEAR REGRESSION DOGS2VETS OUTCOMES

	B	SE B	β	t	<i>p</i>	ΔR^2
PCL-M	0.54	0.20	0.49	2.8	0.01	0.24
Perceived stress	0.66	0.13	0.72	5.2	≤ 0.001	0.52
Self-compassion	0.57	0.10	0.76	5.9	≤ 0.001	0.58
Self-judgment	0.65	0.19	0.55	3.4	0.002	0.30
Isolation	0.31	0.22	0.26	1.4	0.17	0.07

PCL-M, PTSD Checklist, Military Version.

FIG. 1. Longitudinal changes in PCL-M scores for Dogs2Vets intervention and control groups. PCL-M, PTSD Checklist, Military Version.

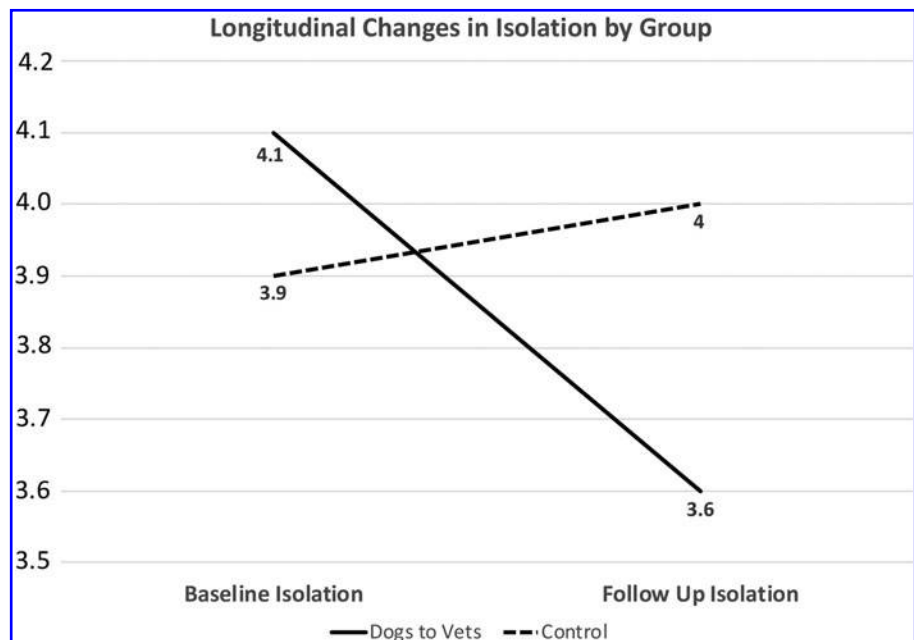


control group. The effect size between the Dogs2Vets and control group for perceived stress was moderate at -0.60 . Changes in perceived stress for each group are presented in Table 1 and Figure 2. Linear regression was conducted to examine the main effects of the Dogs2Vets intervention on 12-month follow-up for perceived stress scores and to measure potential increases in stress due to dog ownership responsibilities. Participation in the Dogs2Vets program significantly predicted reductions in perceived stress ($p \leq 0.001$). Thus, dog ownership did not have a negative effect on perceived stress. There were no significant changes in the regression model for the control group. Results of the linear regression for perceived stress are presented in Table 2.

Self-compassion

Analysis revealed significant within group increases from baseline to follow-up for self-compassion ($p = 0.02$) among Dogs2Vets participants while there were no significant changes within the control group. There was a moderate effect size of 0.37 between the groups for changes in self-compassion. The results of within group differences in self-compassion are presented in Table 1 and Figure 3. Linear regression was conducted to examine the main effects of the Dogs2Vets intervention for self-compassion using the composite SCS scores, and the results are presented in Table 2. Participation in the Dogs2Vets program significantly

FIG. 2. Longitudinal changes in perceived stress for Dogs2Vets intervention and control groups.



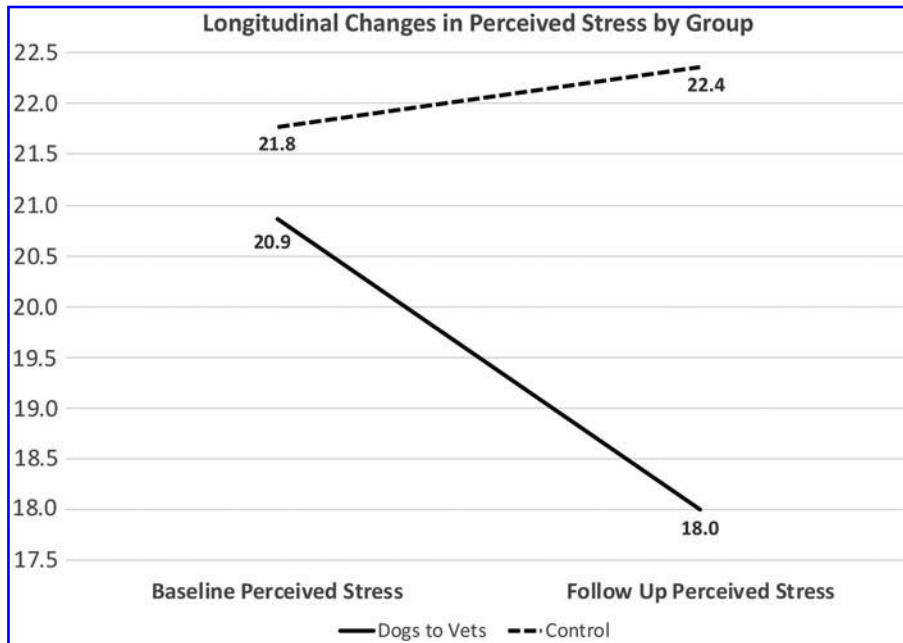


FIG. 3. Longitudinal changes in self-compassion for Dogs2Vets intervention and control groups.

predicted improvements in self-compassion at 12 months ($p \leq 0.001$). However, there were no significant changes in the regression model for the control group.

Self-judgment

Paired sample *t* tests revealed significant improvements in self-judgment within the Dogs2Vets participants ($p = 0.01$), while there were no significant within group differences for the control group. The effect size between the Dogs2Vets and control group for self-judgment was large, -0.90 . The within group changes in self-judgment are presented in Table 1 and Figure 4. Linear regression to examine the main effects of the Dogs2Vets intervention on self-judgment

produced results similar to their results for self-compassion. The results indicate that participation in the Dogs2Vets program significantly predicted decreased self-judgment ($p = 0.002$), whereas there were no significant changes in the regression model for the control group. Results of the linear regression are presented in Table 2.

Isolation

Paired sample *t* tests revealed significant within group declines for the measure of isolation among Dogs2Vets participants ($p = 0.02$), but no significant change for the control group. The effect size between the Dogs2Vets and control group was moderate for isolation at -0.64 . The

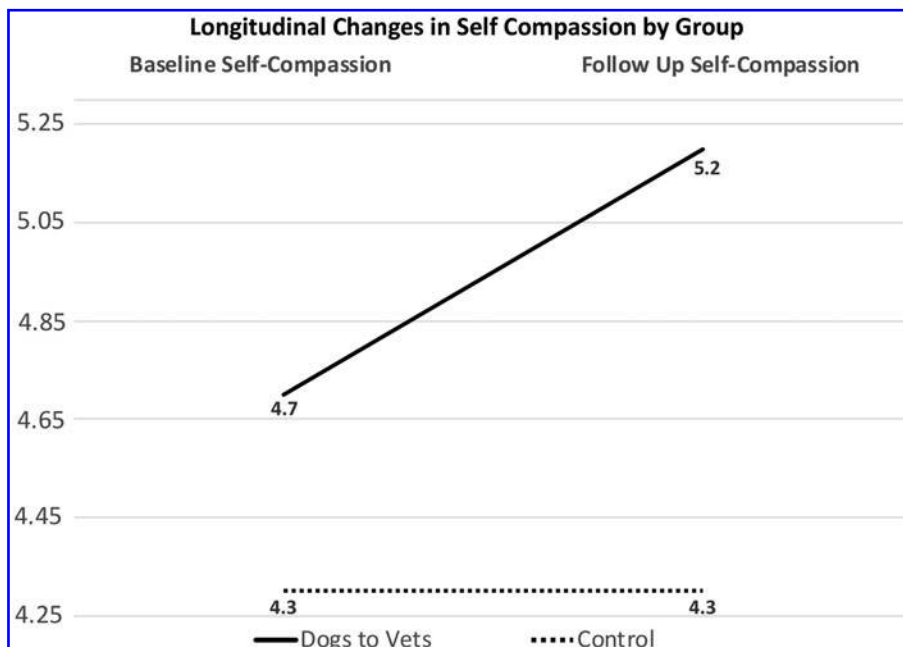
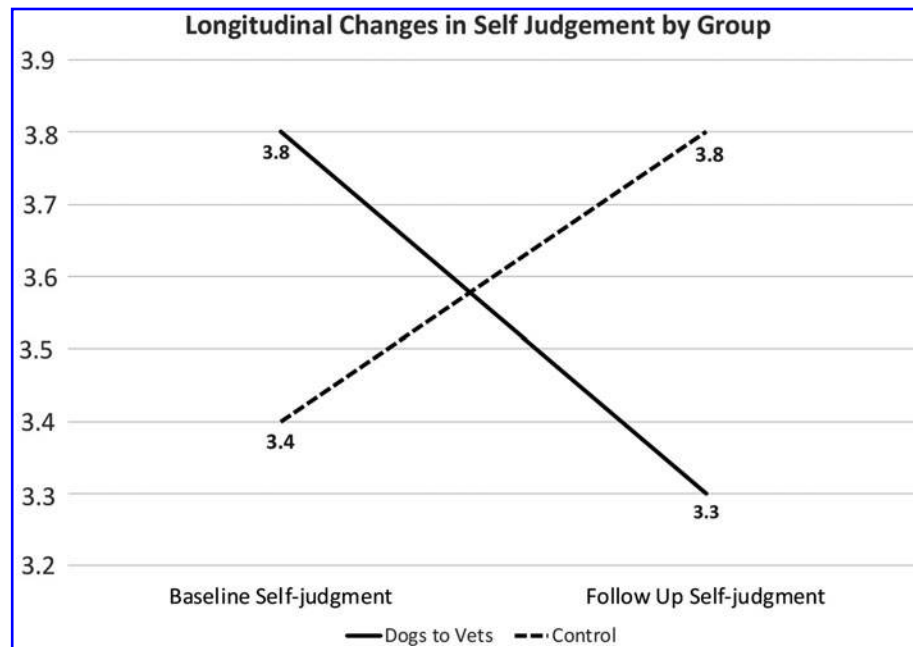


FIG. 4. Longitudinal changes in self-judgment for Dogs2Vets intervention and control groups.

FIG. 5. Longitudinal changes in isolation for Dogs2Vets intervention and control groups.



within group changes in isolation are presented in Table 1 and Figure 5. Linear regression did not reveal a significant main effect of the Dogs2Vets program on isolation; results are presented in Table 2.

Veterans perceptions of the impact of the Dogs2Vets program

Qualitative analysis of the veterans' open-ended comments regarding their experience with the Dogs2Vets program was analyzed for themes. One hundred percent ($n = 34$) of the Dogs2Vets participants provided written responses to the question on the follow-up survey that asked them to describe in their own words how the Dogs2Vets program has benefitted them. The analysis revealed five thematic types of benefits; in rank order of prevalence from highest to lowest they are as follows: (1) decreased isolation (47%, $n = 16$); (2) improved mental health and emotional well-being (44%, $n = 14$); (3) renewed sense of purpose, including the opportunity to apply service skills (35%, $n = 12$); (4) PTSD symptom management (12%, $n = 4$); and (5) increased physical activity (6%, $n = 2$).

There was overlap between these thematic areas such that improvements in mental well-being and PTSD symptoms were often related to decreased isolation and renewed sense of purpose. Examples of veteran's responses that reflect the interconnectedness between these facets include: "My dog has made me more comfortable in public places and around people I don't know. Having my dog with me reduces some of my hypervigilance"; "My dog has helped decrease my isolation by fostering my socialization and reducing my PTSD symptoms—particularly my hypervigilance"; "It has kept me sane"; "I believe the relationship with my dog has been positive for my mental state and happiness"; "My dog has helped greatly with my major depression"; "On my bad days my dog works to make me happy"; "When I feel upset my dog helps me feel better"; "My dog is able to help calm

me down a lot more than I could do on my own and she allows my anxiety to be less of an issue so that I can go to stores and be less awkward in social situations"; "The relationship I am developing with my dog is growing and making me feel better inside"; "Working with my dog has given me hope for the future because I don't feel so alone"; and "It is forcing me to be more social. I must ensure my dog gets to the park and other places I am very uncomfortable being."

One third of veterans reported that their dog provides a renewed sense of purpose: "Quantifying a feeling is difficult at best, but I feel like the tasks we complete in training together give me a sense of accomplishment and purpose. Much like I felt and had in the military. The teamwork and camaraderie have been great for my self-esteem." Within this theme several indicated that the training components of the program provided them with opportunities to apply military service skills again—"One of the greater satisfactions I had while in the military was teaching and training soldiers. I get some of those same feeling through the training with my dog."; "I feel like we are a team and my dog is my partner"; and "The biggest benefit thus far has been having another life that I am responsible for." The final thematic area that emerged was that of increased physical activity through interactions with their dogs—"Physically, I have become more active and enjoy being outdoors again" and "I have developed a strong bond with my dog and have been more active."

Discussion

Each of their hypotheses was confirmed. Veterans participating in the Dogs2Vets program experienced reductions in post-traumatic stress symptoms, perceived stress, isolation, and self-judgment and an overall increase in self-compassion. Although there was a significant decline in symptoms of PTSD, the mean decline was just below the

5-point change in PCL-M score that is considered to be the threshold for clinically determining whether an individual has responded to PTSD treatment.^{40,41} It is also notable that in contrast post-traumatic stress symptoms for the wait list control cohort increased moderately.

Dog ownership did not have a negative effect on perceived stress among Dogs2Vets participants, indicating that the additional stressors of pet ownership (such as the cost of supplies and veterinary care and time spent exercising, feeding, and caring for the dog) do not appear to add substantial stressors that would outweigh the benefits of the program. Although perceived stress declined among Dogs2Vets participants, it should be noted that the authors did not collect specific data or information about challenges or potential negative aspects of dog ownership.

The areas that demonstrated the strongest and most consistent statistical changes were the measures of self-compassion and self-judgment. These changes may be associated with the general orientation of empathy, nonjudgment, and acceptance that is associated with human-animal interactions.^{42,43} Researchers have observed that dogs provide a nonjudgmental entity for emotional attachment and support which may reduce self-judgment⁴⁴; their findings support this theory. The unique attachment and relationship with one's dog may facilitate increases in self-compassion, which is constructive because self-compassion is a protective factor against PTSD among military veterans.^{45,46} Increased self-compassion is important because higher levels of self-compassion are characterized by objective less distorted observation while also being associated with well-being, resilience, and lower rates of depression.^{36,37,46} Moreover, self-compassion entails being discerning and gentle toward oneself while recognizing that suffering, failure, and perceived inadequacies are part of the human condition and that everyone, including oneself, is worthy of compassion.^{37,45,46} Thus, the cognitive changes in self-compassion and self-judgment, brought about through service dog training and ownership, may prove to be important healing processes for returning veterans.

Dogs2Vets participants had a statistically significant decline in isolation over time, yet this decline was not significant when analyzed between groups using linear regression. However, participants' written responses strongly demonstrated ways in which the companionship of the dogs decreased their isolation. Moreover, veterans' written narratives illustrated ways in which the trained and certified service dogs enabled them to go out in public and interact socially. Those who were once isolated and unwilling to set foot outside the door are now frequently going into public places and working with their dog in socially stressful environments. The veterans' narratives also suggest that their dog may provide a bridge to social interaction, thus decreasing the barriers to being in public that PTSD symptoms can often present. The veterans' narratives also illustrated ways in which their active participation in the training of their dog provided a bridge from their military training roles to civilian life and engendered a renewed sense of purpose and responsibility for the life of another.

Limitations

The generalizability of the findings may be limited by the sample characteristics. Notably, all participants were military veterans, and they were predominantly white and male.

In addition, the sample size was small, which limited their statistical power. Despite these sampling limitations, the authors did find significant improvements among participants in the Dogs2Vets program. There were moderate effect sizes for post-traumatic stress symptoms, perceived stress, and isolation. However, moderate effect sizes based on small sample groups may be meaningful when implemented in larger groups. Another limitation of the present study may be the omission of measurements that reflect the changes associated with the training component of the Dogs2Vets program and the absence of questions to solicit information about potential challenges associated with dog ownership. Some participants indicated that training their dog enabled them to apply military service skills again, and this area would benefit from further exploration. Another limitation of the current study is the self-report measure of post-traumatic stress symptoms using the PCL-M rather than a clinically administered diagnostic evaluation of PTSD; future studies would benefit from including a clinician-administered diagnostic measure of PTSD. Additional studies are needed to more thoroughly understand the specific ways in which dog ownership and dog training programs reduce symptoms of trauma, stress, and isolation among veterans who participate in such programs.

Conclusion

The findings from the present study contribute to the field of research on complementary therapies for veterans with symptoms of post-traumatic stress by providing insight into the positive impact dog ownership and training has on self-compassion and self-judgment, which are understood to be beneficial for treating chronic PTSD symptoms.²⁹ Participation in this structured dog ownership and training program for veterans demonstrated reductions in perceived stress, as well as reductions in traumatic stress symptoms. Reductions in isolation experienced by veterans in the Dogs2Vets program may be attributed to the companionship of the dog, increased social engagement through their dog, decreased PTSD symptoms, or any combination of these factors. The qualitative findings reinforce the statistical findings that demonstrate decreased isolation, unconditional acceptance, and a renewed sense of safety and purpose that comes from the veterans' relationships with their dogs. Taken together the findings indicate that the veteran dog owner trainer model appears to operate by decreasing isolation through facilitation of human social interaction; increasing self-compassion while decreasing self-judgment; and reducing perceived stress and PTSD symptoms. As such, pet ownership and training programs, like this one, may facilitate further engagement with other forms of treatment, like psychotherapy or self-help groups, that require intense social interaction and may be experienced as exposing oneself to judgment.

Future research can build upon the findings of the present study with more advanced methods to examine the mechanisms of transformation and temporal order of changes in symptoms of post-traumatic stress, self-compassion, and its subscale facets of self-judgment and isolation. More research is also needed to replicate these findings and to facilitate better understanding of the ways in which this type of dog ownership and training program may impact

veterans' need for medications and use of clinical services over time.

Acknowledgment

This study was supported, in part, through funding from the National Science Foundation's Research Education for Undergraduates (NSF REU) awards No. 1063014, No. 1359358, and No. 1559793.

Author Disclosure Statement

No competing financial interests exist.

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