

Service Dog Schools for PTSD as a Tertiary Prevention Modality: Assessment Based on Assistance Dogs International-Criteria and Theoretical Domains Framework

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Abstract

Psychiatric service dogs compensate in terms of social and physical cognition for people who suffer from chronic post-traumatic stress, reassuring them with their canine behavior in public places, at home and in relationships interpersonal skills with strangers. There are no certification and standards for schools that train service dogs in Canada and the United States. Does the fact that training is different from one school to another have an impact on the effectiveness of the assistance dog for his master? To identify all aspects that closely reflect tertiary prevention, this exploratory case study documents the processes and services supporting the assignment of service dogs to veterans with PTSD and the subsequent follow-up conducted at various dog training schools; and it evaluates and compares the processes and services in place. The case study included four data collection methods involving 31 veterans, 7 school delegates, 7 trainers and 23 dogs. Qualitative content analysis and all the information collected was rated according to the Theoretical Domains Framework (TDF) and Assistance Dogs International (ADI) criteria. Results indicated a TDF-scoring across 12 domains ranged from 6/24 to 16/24. The schools moderately reflected ADI-standards. Tertiary prevention recommendations were proposed for dog trainers to better address the domains that needed improving at the time of the study (knowledge about PTSD, beliefs about capabilities, behavioral regulation, environmental context and resources, beliefs about consequences, nature of behaviors).

Keywords: Mood, Sleep, Stress-Related disorders, Veterans, Service dog trainers, Dog training continuum, Quality of services.

Abbreviations: PTSD-Post-Traumatic Stress Disorder, TDF-Theoretical Domains Framework, ADI-Assistance Dogs International

Introduction

Psychiatric service dogs compensate in terms of social and physical cognition for people who suffer from chronic post-traumatic stress, reassuring them with their canine behavior in public places, at home and in relationships interpersonal skills with strangers. There are no certification and standards for schools that train service dogs in Canada and in United States. Statistics Canada reveals [1], based on the 2013 Canadian Forces Mental Health Survey data, that the 5.3% of regular force members suffer from Post-Traumatic Stress Disorder (PTSD) for 12 months. This is up from the reported 2.8% in 2002. The 2013 survey also revealed that lifetime prevalence of PTSD in regular force

members was 11.1%. Psychotherapeutic and pharmacologic treatments are available but a study of American veterans suggests that 60% of veterans still meet PTSD criteria after being treated with empirically supported interventions [2]. Psychiatric service dogs may be an Assistance Dogs International relevant alternative for improving existing treatments. As the rate of PTSD increased, especially after the war in Afghanistan, many dog training schools were created in Canada and the US [3]. Canine assistance is an emerging tool for individuals with PTSD, and studies report clinical and psychosocial effects at 3, 6 and 12 months after being paired with a dog [4-8]. According to a research report by Vincent et al., psychiatric service dogs help to

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decrease post-traumatic symptoms, improve sleep quality and reduce depression-related symptoms up to 12 months among veterans with PTSD [6]. After being paired with a service dog, veterans also reported having a better quality of life in many aspects, improved social integration in the community and feeling comfortable in public places. Lessard et al., define service dogs for veterans with PTSD as “a socialization agent, contributing to a feeling of safety, and detecting and intervening when the veteran is anxious, depressed or aggressive [9].”

Despite preliminary data supporting the potential beneficial effects of providing service dogs to veterans with PTSD [5], the services offered vary drastically across schools, from the start of the dog assignment process to being paired with a dog. Given that this is still a new field, there is no consensus on the conditions or standards that need to be met. To our knowledge, this is the first research project to focus on assessing the implementation of services at service dog schools and on dog trainer characteristics for training and assigning dogs to veterans with PTSD. PubMed and CINAHL searches were conducted using certain keywords in various word combinations (dog trainer, dog trainer education, service dogs, certified dog trainer, certified dog trainer, official dog trainer, service animal, assistance dog, professional dog trainer, professional trainer, dog and training) but yielded no practical results. To date, Assistance Dogs International [10] is the main organization that sets standards for its members worldwide. ADI stipulates 13 minimum requirements for trainers in its Standards for Trainers section. ADI includes partners from Taiwan, Japan, New Zealand, Australia, Assistance Dogs Europe, United States and Canada. Page 15 of ADI's Minimum Standards and Ethics document specifies what skills trainers must demonstrate and outlines its own responsibilities to the public. ADI staff must comply with the following two minimum standards: “demonstrate knowledge of the client's disabilities in relation to the services they provide” (p.9) and possess “canine knowledge and training experience that ensures established training” so that “client standards can be met” (p.14).

As preventative strategies for mood, sleep and stress-related disorders, much effort needs to be done before service dogs can become recognized as an evidence-based intervention. In other words, to demonstrate how dogs can be trained to compensate cognition difficulties and environmental perceptions the persons with people with chronic stress-related disorders. As reported by the Canadian Foundation for Animal-Assisted Support Services (CFAS) [11], there is no formal Canadian registry for service dogs, nor are there any national training standards or certification criteria. The lack of standardization might partly explain the dearth of information on the training process for these dogs in many schools across Canada and the United States [12]. Moreover, there are no national standards for the certification of service dog trainers. Hence, it is highly plausible that disparities exist among canine training processes and techniques. One of the problems identified by Krause-Parello, et al. is the absence of consensus on best practices for dog selection, canine training and interactions among all stakeholders (veteran organizations, dog training schools, and family members of veterans) [4].

Yount, et al. described a warrior-trained service-dog program in which service members with PTSD train assistance dogs to be paired with other disabled veterans in need [2]. This program is managed by a professional dog trainer and housed in a large veteran administration residential PTSD treatment center. The described benefits of this dog program are inspiring. The authors encouraged two service members with PTSD to become accredited service dog trainers and to pursue careers in the field. However, it is unclear what knowledge these service members had in recognizing, managing and offering help to people with disabilities and symptoms.

Goals of the Study and Research Questions

Understanding the needs of veterans and how a service dog should be trained to best match these needs is essential in best service delivery models. Otherwise, the service dog may not result in beneficial effects or the dog trainer may prove to be inefficient. The purpose of this study was therefore twofold. The first goal was to document the processes and services supporting the assignment of assistance dogs to veterans with PTSD and the subsequent follow-up conducted at various dog training schools. The second goal was to evaluate and compare the processes and services in place in dog training schools to identify all aspects that closely reflect tertiary prevention and good animal practices. To achieve the second goal, we adhered to the ADI [10] standards and conceptual framework developed by the TDF that incorporates 12 key domains [13]: Knowledge, Skills, Social and professional role and identity (self-standard), Beliefs about capabilities (self-efficacy), Beliefs about consequences (anticipated outcomes/attitude), Motivation and goals (intention), Memory, attention and decision processes, Environmental context and resources (constraints), Social influences (norms), Emotion, Behavioral regulation and Nature of the behaviors. This framework has been used previously in Lamontagne et al.'s study, which assesses the barriers and facilitators (at one dog training school only) involved in acquiring a service dog for functional disabilities relating to orthopedic, neuromuscular and neurologic impairments [14].

To achieve the first goal of this study, answers to four research questions were sought: 1) how do trainers select dog-veteran dyads and coordinate communication between stakeholders? 2) How do trainers describe dog school training methods, dog profiles, dog-human bonding processes and service dog tasks? 3) How do trainers perceived canine features that contribute to an effective dog-veteran pairing? and 4) What challenges and difficulties do veterans encounter during their training continuum, including rationale for dropping out. The second goal of this study was achieved by posing a fifth research question: 5) To what extent does the implementation of services at dog training schools comply with the criteria proposed by the Assistance Dogs International (ADI) and the Theoretical Domains' Framework (TDF)?

Method

An exploratory case study with mixed methods was conducted and included the following methods: contact reports with veterans, face-to-face questionnaires with open-ended questions, qualitative phone interviews, and dog school assessment grid. Ethical approval was obtained from the Research Ethics Committee of Université Laval (2015-118). Informed oral (audio-recorded) consent was given by the school delegates, trainers and veterans participating in the study, as requested by the Research Ethics Committee.

Sampling and participants

A convenience sample included four groups of participants: 31 veterans, 7 school delegates, 7 dog trainers and 23 dogs. It should be noted that five of the school delegates were also included in the group of dog trainers (5/7). All four groups of participants had already taken part in a longitudinal study with dogs from eight canine training schools to examine the potential effectiveness of psychiatric service dogs in Canada in 2016-2017 [6]. A recruitment poster was developed and widely distributed to notify veterans about the opportunity to participate in this research project (September 2015). Veterans who met all of the selection criteria and who had located a nearby dog training school communicated with the research coordinator [5]. The inclusion criteria were as follows: (a) a letter of authorization from a treating mental health professional to participate in the study, (b) a minimum cut-off score of ‘50’ on the PCL-M questionnaire, (c) must be between 20 and 65 years of age, (d) must like dogs, (e) must want to use a dog as a coping strategy, (f) must be willing to participate in the



pre-experimental group for 6 months as well as in the experimental group for an additional 12 months, and (g) must be willing to accept the dog chosen by the dog training school, if applicable. Exclusion criteria were: (a) want to use the dog as self-protection or as a weapon, (b) unable to take care of the dog 24/7, (c) want to bring personal dog to the training school (unless the dog had been with the veteran less than one month before the study), and (d) having been diagnosed with schizophrenia, schizoaffective disorder, bipolar disorder, severe substance use disorder (or in remission for less than 6 months), or being at an increased risk for homicide or suicide.

Data Collection Procedure

Contact reports, including email messages and phone conversations with veterans between 2016 and 2018 were managed by the research coordinator (FD) and chronicled in a logbook; we have named that data source the record of contacts with veterans. These contact reports comprised of issues raised by the 31 veterans in the study with their trainer or school delegate, including reasons for dropping out. Face-to-face questionnaires with open-ended questions were filled out during a visit at a dog training school. Six members of the research team visited the veterans in Canada and the United States over the course of 8 months (July 2016-March 2017).

During these visits, the researchers and co-authors (CV, FD, DHG, EA, VL and MB) completed a questionnaire with information gathered through observations and interviews with the school delegate identified at each site. The questionnaire was developed according to ADI criteria and the interdisciplinary interests of the research team (occupational therapy, physiatrist, physiotherapy, psychiatry and psychology). The content covered in the questionnaire included the processes and services supporting the assignment of assistance dogs to veterans with PTSD and the subsequent follow-up process involving dog selection. Questions specifically addressed the formation of dog-veteran dyads, communication among stakeholders, training modalities, and training continuum, the physical and human environment, human-dog bond as well as facilitators and potential obstacles. This questionnaire consisted of 4 checked items and 17 open-ended questions and required 90-120 minutes to complete, depending on the school's context. Qualitative phone interviews with dog trainers occurred three months after veterans were paired with dogs (20 interviews in English and 3 in French). – recorded interviews. They ranged between 22 and 54 minutes in length. The interview guide was developed by the research team and comprised four researcher-driven domains addressing the dyad training process: 1) delivery process, 2) veteran's responsibilities toward the service dog, 3) service dog's qualifications, and 4) minimum standards with respect to the service dog when in public.

As far as we know, there is no standard chart for assessing the services provided at dog training schools. This is why we proposed developing a dog school assessment grid. The content for such a grid is outlined in **Table 9**, with a column for the 12 TDF domains, a column for domain definitions [12], a column for the selected assessment themes/variables (we have underlined the ones we have assessed) and seven columns for each school's scores. A domain was considered optimum (2 points) for implementation if the themes/variables covered all ADI criteria, minimum (1 point) if the themes/variables partially covered the ADI criteria and problematic (0 point) if the themes/variables did not cover ADI criteria or did not support them. The scores added up to a maximum possible score of 24. The assessment (0,1,2) was done independently by CV, EBB and JB. They had in hands the dog school assessment grid, the ADI standards and the eight Word tables with the themes and variables of interest. They met afterwards for consensus.

Data Analysis Procedure

Socio-demographic and participant information were extracted from interview transcripts and questionnaires, and organized into three tables across all four groups of participants. Logbook data (record of contacts with veterans) were compiled in an MS Word table to summarize the obstacles that were encountered before and after service dog pairing. Dog school visit data was extracted from the open-ended questionnaires, compiled in an Excel file, and transferred into MS Word tables, while data from the 23 interview recordings were transcribed using Voice Base, except for the French ones (manual transcription). A deductive and inductive analysis [15] of the verbatim transcripts was done. Six themes/subthemes were devised using deductive analysis by taking the four researcher-driven areas addressing the dyads' training process and interview content into account. A list of themes was reviewed by the principal investigator (CV) and one other co-author (EB). A definition for each theme was developed based on dictionary entries. To ensure consistency and procedural accountability [16] a peer evaluation of one interview was performed. CV and EB coded the interview on paper separately and then compared coding. If there was any ambiguity with a theme, its definition was clarified by consensus. Two themes were combined to form broader themes as a result of this co-coding exercise and definitions were refined to create mutually exclusive and collectively exhaustive themes. A second inductive analysis of the verbatim transcripts was done using QDA Miner Lite Version 5TM [15]. The final list included six themes (with associated subthemes): dog selection prerequisites, coordination of training, training continuum, dog's physical characteristics, tell-tale behavioral attributes of the dog, and challenges encountered. All content for these themes and subthemes were compiled in Excel files and transferred into Word tables. Data from the evaluation grid of the dog schools was analyzed. First, the rating 0 (problematic), 1 (minimum) and 2 (optimal) made by the three evaluators was compared for each school and each TDF domain, in order to reach a final consensus. When the score was different, it was necessary to argue based on the data available in the eight Word tables and the corresponding ADI standard. Second, the summation of the TDF domains was done for each school (total score on 24).

Results

All qualitative results are presented in Word tables and text form, and align with research questions 1 to 5. These qualitative results are structured around 6 key themes and their associated subthemes. All themes and subthemes match the column titles listed in the tables. The definitions for these themes and subthemes are provided in their respective section under Results (All themes are based on: entry in the Merriam-Webster English dictionary and modified for particular situation).

How do trainers select dog-veteran dyads and coordinate communication between stakeholders?

The results outlined here correspond to two themes: Prerequisites-Essential conditions to the pairing or training of the dyad. Includes: requirements relating to the dogs, equipment, and veteran. veteran's family, veteran's house and communication with health practitioners. Training coordination-The process of organizing the dog selection, training and meetings with veterans so that the dog pairings run smoothly. Includes: the follow-ups before, during and after the training.

In terms of prerequisites, **Table 1** shows that the most cited selection criteria among the 13 reported items was medical prescription/recommendation for a service animal. Dog selection criteria varied widely, with 21 different items listed in this regard. The animal's temperament was specifically mentioned by six of the seven



	Veteran selection criteria	Dog selection criteria	First step in selecting the veteran	Follow-ups	% of dyads in place after 1 year	# of dyads per trainer per week	Training time (hours)	
School #1	Recommendation provided by a health professional, letter confirming diagnosis	Resilience, temperament, calm, good with children, no aggressive behaviours	Director	Contact when needed, annual recertification	65	1-2	347	10-20
School #2	Recommendation provided by a counsellor, free from VAC (veterans), authorization letter (RCMP), area outside house so dog can go outside, a landlord agreement letter (apartment), spouse approval	Temperament, match with the candidate, behaviour	Home visit, candidate assessment	-	100	1-4	2196	24-72
School #3	Known and managed PTSD, recommendation, motivated candidate, open to be noticed in public, no aggressive behaviours, no contraindication for a dog	Temperament, no aggressive behaviours, match with the candidate	Application form	Contact 3-4 months before annual recertification, invitation to come to the school once a month.	100	12	0	104
School #4	Recommendation, letter from doctor defining needs or potential benefits	Temperament, trainability, health, genetics, breed, gender, size, color and tasks required to meet the candidate's needs	-	First month: contact made every few days, weekly visits, annual evaluations, and training updates.	75	2	100-300	-
School #5	Medical prescription, reachable medical team, suitable home	Initiative, desire to learn, curiosity, temperament, not attracted to animals or food, health condition	Online form, selection committee, home visit, meet the family	1) 7 days in person follow-up, 2) once a month in person, 3) person may call service line at any time	75	2	600	-
School #6	Needs can be met by a service dog, motivated candidate	ADI criteria, compliant dogs	Discussion with the program manager, needs assessment	After 2-3 weeks: control visits: 2-3 visits per year for 3 years, every 3 years	100	-	7520- 8600	40
School #7	Application form completed	Personality, temperament, health condition	Application form, phone call	No formalized schedule. Couple of times by social media	80	15-20	2000	35

Note: BC=British Columbia, ADI=Assistance Dogs International, VAC = Veterans Affairs Canada, RCMP=Royal Canadian Mounted Police.

Table 1: Prerequisites for veteran-dog dyads and training coordination at seven dog training schools.

schools, as proposed in ADI's criteria. In terms of the first step in the selection process, the application form and home visit were the most cited items of the ten listed under 'First step in selecting the veteran' in Table 1. Follow-ups of dyads varied greatly among the schools, from minimal planning to a highly structured contact schedule. Dyads remained in place 65% to 100% of the time at the school's one-year anniversary date, with three schools reporting a 100% success rate. These percentages may not include the PTSD population. Each trainer worked with 1-20 dyads per week, with schools #3 and #7 being the most productive. Dog training was usually done without the veteran being present (86%, n=6), except in the case of school #3 where the veteran trained the dog under supervision.

How do trainers describe dog school training methods, dog profiles, dog-human bonding processes and service dog tasks?

The results presented below correspond to two themes: Training continuum-Coherent training characterized as a sequence of steps

toward making the service dog and veteran into an operational dyad. Includes: The tasks teaching tools bond and overall progression. Dog Characteristic-A distinguishing trait that will enter into the dog's Sociodemographic profile. Excludes: The dog's qualities and flaws. Based on: Merriam-Webster (English dictionary); modified for this particular situation.

Tables 2-5 present the profiles of our four groups of participants (veterans, dogs, trainers and school delegates). As Table 2 shows, the number of years of experience varied greatly among the schools, with three schools being relatively new to the field (in business for less than five years) and one having been open for more than 20 years. No school reported offering service dog certification. Differences were also found in the number of years the schools had been providing PTSD service dogs (0-20 years) and in the number of dyads the schools had trained (0- 500 dyads). All school delegates assumed a key administrative or management role within the school (n=7), although it is unclear whether they had any specific or recognized training or

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certification in the field of service dogs. Participating schools were located in four provinces across Canada (British Columbia, Alberta,

Ontario, Quebec) (86%, n=6) and in one U.S. state (Kansas) (Table 2).

Dog training schools #: years in operation	Country ^a	School delegate title ^b	# of years providing PTSD service dogs to veterans	Dyads trained for	
				PTSD ^c	All diagnoses
#1: <10 yrs to ≤20	Canada	Director	10	50	250
#2: ≤5 yrs	Canada	Director	4.5	46 – 47	46 – 47
#3: ≤5 yrs	Canada	Director & Mental Health Advisor	3.5	9	9
#4: >20 yrs	Canada	Director	17	30 – 40	50 – 60
#5: ≤5 yrs	Canada	President & Chair	0 ^d	0 ^d	30
#6: <10 yrs to ≤20	Canada	Program Manager	6	18 – 20	250
#7: >20 yrs	USA	Director	20	400 – 500	1610 – 2070

^aProvinces of British Columbia (n=2), Alberta, Ontario (n=2), Quebec and the U.S. state of Kansas. School names and cities must remain confidential. ^bFive of the school delegates are also dog trainers. ^cPTSD = post-traumatic stress disorder. ^dOne veteran with PTSD was waiting to receive his dog at the time of the study.

Table 2: Profile and experience of school delegates at seven dog training schools during 2016-2017.

Dog characteristic (n=23)		Dog trainer's sociodemographic (n=7)	
Age when training was initiated (months)	N	Age (years)	N
2-5	1	Under 20	1
16-10	9	Between 31 and 40	1
11-15	7	Between 41 and 50	3
16-20	4	Between 51 and 60	2
21-25	1	Experience (years)	
Unavailable	1	Between 0 and 5	2
Age when provided to the veteran (months)		Between 11 and 15	1
Less than 10	1	Between 16 and 20	1
11-15	11	Over 21 years	3
16-20	2	Gender	
21-25	7	Female	6
26-30	2	Male	1
Breed		Number of veterans trained per trainer ^a	
Bernese mountain dog	2	1	1
Chesapeake Bay retriever	1	2	5
Crossed races	7	10	1
German shepherd	2	Professional title ^b	
Golden retriever	1	Department director	1
Great pyrene	1	Director of another company	1
Labradoodle	1	Dog school manager	3
Labrador retriever	7	Dog trainer	2
Poodle	1	Dog trainer apprentice	1
Origin		Program manager	1
Breeder donation	2	School's director	1
Community donation	5	Veterinary behaviour technician	1
Organization's own breeding	5		
Rescued dog	8		
Service dog organization donation	3		

^a21 veterans completed their training with a dog; 2 dogs had to be replaced during training. ^bSome dog trainers have more than one title, which explains why n>7; no one reported having received service dog certification.

Table 3: Profile and level of expertise of the dogs and their trainers

Table 3 shows that the 23 service dogs were between 6 and 15 months of age (70%, n=16) at the beginning of their training, and 11 to 15 months old (48%, n=11) when they were assigned to the veterans. The most common breed was the Labrador retriever (30%, n=7) but breeds varied widely. Dogs primarily came from rescue shelters (35%, n=8). The origins of the dogs were from various types of donations (n=18) and from breeding programs (n=5). Most of the trainers were female (86%, n=6), with the mean age of trainers being 41-50 years of age (43%, n=3). Trainers held different profession titles (dog trainer, school director, etc.) and their level of experience ranged from 5 years to over 21 years). However, no trainer mentioned having any certification.

Table 4 shows that out of the seven training schools, most were not-for-profit organizations (57%, n=4), and most were located on ranches (57%, n=4). The schools delivered between 2 and 90 service dogs annually (not only for PTSD). Most schools had fewer than 50 employees (86%, n=6) and were small-and medium-sized enterprises. The 165 full-time employees at school #5 worked at the veterinary center and may have been partially involved in the school's operation. Customers included 13 client types other than veterans, with school #3 exclusively serving veterans with PTSD. The costs school incurred to fully train a working service dog ranged from CAN\$1800 to CAN\$26 500. Veterans paid between CAN\$0 and CAN\$6000 for the animal. Some schools preferred not to disclose their costs.

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	Type of organization	Building	Service dogs per year	Employees		Volunteers	Clients coming for a dog other than veterans	School's costs (\$) ^b		Client's costs (\$)
				Fulltime	Part-time			Dog	Training	Dog
School #1	For-profit	Ranch	20	3	4	2	Civilians with PTSD, fetal alcohol syndrome, autism, and physical disability	0	17 700	\$0 for the study but normally \$6000
School #2	Not-for-profit	No specific building ^a	10	0	33	5	Civilians with PTSD	-	-	0
School #3	Not-for-profit	Community centre	12	0	4	1	-	-	-	0
School #4	For-profit	Ranch	2-4	2-3	3-4	0	Pet owner, veterinarians, trainers	≤ 500	4700	2500
School #5	Not-for-profit	Veterinary hospital	5	165	20	40	Civilians with PTSD, autism	200-1400	1600-1800	0
School #6	Not-for-profit	Ranch	30	8	4	189	Civilians with PTSD, professors, social workers, autism	0	-	50
School #7	For-profit	Ranch	70-90	4	1	100	Professors, down syndrome, mobility, autism, diabetes	0	12500-26500	4700

Note: PTSD = Post-Traumatic Stress Disorder. ^aOrganization associated with various training schools across the country to fit the veteran's characteristics. ^b Training costs include yearly expenses associated with looking after the dog. All costs are expressed in Canadian dollars.

Table 4: Profile of dog training schools in terms of organization type, customers served and costs.

	Training area (ft ²)	Lodging				Dog's origin	Breeding program's yearly capacity	Dog's breed	Use of outdoor spaces
		Dog run	Enclosure	Crate	Kennel				
School #1	2016	20	20	4	2 ^a	Organization's own breeding & SPCA	20	White German shepherd, black Labrador	Community : subway, airport, church, physician's office
School #2	Varies ^b	0	0	0	0	Donations, rescue shelters & veteran	0	All breeds except: large dogs and those with a bad reputation	Varies ^b
School #3	-	0	0	1	0	Donations	0	All breeds except those with a bad reputation	Public places in town
School #4	2500	0	10	0	0	Local breeders, rescue shelters & veteran	0	All breeds except Labradoodle and bully breeds	City, airport, malls, museums, elevators, a livestock area
School #5	-	2	10	30	0	Rescue shelters & donations	0	Large working breeds	Streets, turf, grass, ceramic floor, shopping centers, restaurants, wet floor, rocks
School #6	4000	2	2	8	1 ^c	Organization's own breeding	30	Labrador, Labernese, Golden retriever, Labernese mixed with Golden retriever	Community, seasons
School #7	400-900	0	0	15	1 ^c	Organization's own breeding & donations	70-90	All breeds except Pitbull Chows. Occasionally German shepherds	Various places in town

Note: SPCA=Society for the Prevention of Cruelty to Animals. ^aThe kennel is moderately clean and organized. ^bTraining site differs according to the veteran's home location. ^cThe kennel is clean and well organized.

Table 5: Profile of dog training schools in terms of training areas, lodging, dog's origin, breeding program, dog's breed and use of outdoor spaces.

Table 5 shows various environmental aspects of the training schools. Dog training areas ranged from 400 ft² to 4000 ft² across all schools. Animals were accommodated with 0-20 dog runs, 0-20 enclosures, and/or 0-30 crates. Canines originated mostly from donations and rescue shelters. Three schools owned one or two kennels and bred between 20 and 90 dogs a year. The breeds used to train psychiatric service dogs were so varied that no consensus could be reached. Some schools preferred specific breeds, while other schools used almost any type of breed. Outdoor areas for training were mostly public and community environments.

Table 6 divides the dog skills training continuum into three stages: No training, Basic training and advanced training for PTSD. There are

skills that should not be taught if innate (n=6), some that should be taught for basic commands (n=5) and specific skills that must be taught for PTSD (n=6). Temperament and intervention tasks reported under 'No training' were most commonly considered not to be taught (innate). School #1 individually reported that all dogs had to complete competency training. However, three schools mentioned not teaching specific intervention tasks when they involved the dog's instinctive responses. As for skills taught and reported under 'Basic training', even if obedience, manners and basic commands were each cited twice, no consensus was reached among the schools. Advanced training mostly consisted of awareness and specific interventions for PTSD symptoms (e.g., pressure therapy and perimeter check). Pressure therapy involved the dog putting its weight somewhere on the veteran's

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	No training	Skills to teach the dog		Best role for dog	Paired training strategy	Bond Use of pain
		Basic training	Advance training for PTSD			
School #1	None	Desensitization to noise and affection	Response to emotional changes, terror rescue, deep pressure therapy, licks the hand during a dissociation crisis, applies pressure on individual during a walk	Detection and intervention, contributes to a feeling of safety, relaxation, reminder to take medication, helps hearing impaired veterans	Treats, task-oriented training, tone collar, long distance training	Yes
School #2	Temperament, specific intervention tasks	Obedience, manners in public	None	Detection and intervention, contributes to a feeling of safety, relaxation, helps with sleep issues, acts as an isolation breaker	Treats, positive reinforcement without verbal markers	Yes
School #3	Temperament, specific intervention tasks	None	Achievement of a set of tasks to become certified for public access	Detection and intervention, contributes to a feeling of safety, relaxation	Scent motivation, positive reinforcement	No
School #4	Confidence, trainability, genetic predisposition, instincts, fixed action patterns	Awareness of environmental cues, confidence in public areas	Awareness of and appropriate responses to dissociative state, panic attacks, abreactions, ongoing anxiety, night terrors, fainting, anger outbursts, migraines, onset pain	Contributes to a feeling of safety, relaxation	Treats, choke collar, clicker training	Yes
School #5	Innate competencies	Basic commands, obedience, behaviour with the service vest	How to help the veteran maintain a routine and go to bed	Detection and intervention, contributes to a feeling of safety, relaxation, socialization	Treats, clicker training	No
School #6	Specific intervention tasks, benefits of the animal's company	None	Ability to minimize incapacity, perimeter blocks, exposure therapy, clear the house, make sure the dog will tolerate any situation. Specific interventions for dissociations are encouraged	Detection and intervention, contributes to a feeling of safety, relaxation, is fully conscious of itself	Treats, clicker training	Yes
School #7	Personality, temperament, bond with candidate	Basic commands, manners	Block, pressure therapy, perimeter check, 'come to daddy' basic commands. Specific interventions are encouraged but are mainly instinctive and depend on the bond	Detection and intervention, contributes to a feeling of safety, relaxation	Positive reinforcement	No

Table 6: Challenges encountered during the training continuum related to dog skills training, roles for dog, paired training strategy and bonding process.

body to induce a calming effect (dog lying down or resting its head on the seated veteran's thighs). The dog's intervention is compared to a weighted blanket for children with autism. Some schools reported teaching each dog the same tasks, while other schools focused on the veteran's specific needs.

Eight best roles for service dogs are taught at the seven dog schools. School #1 teaches 6 of these roles. Detection and intervention, contributing to a feeling of safety and, Relaxation are the most taught. One to eight training strategies with veterans were reported, with school #1 using four of these strategies. Treats, positive reinforcement veterans. Only one school considered the use of pain, but this tactic is rather unusual (Table 6).

and clicker training are the most common training techniques used by Interviews with the schools' trainers revealed two subthemes within the training continuum: the human-dog bond and the service dog tasks. As reported by all the schools, the bond is an essential aspect of the dyad's training. It is considered to be what allows the dog to detect the veteran's emotional changes and when to intervene. Each trainer cited many service dog tasks, including intervening when the client was anxious or dissociating (nudging, getting on lap, hugging, etc.), positioning between people and the veteran to prevent others from getting too close, stopping/preventing nightmares, removing the handler out of stressful situations, and engaging in pressure therapy.

Table 7 presents the various training continua and specifics the order in which the dogs learned their tasks and at what point during the 24-

month period. The paired veteran-dog training varied considerably from one school to another. School #3 began paired training at 2 months, whereas school #6 waited until Month 22. The length of time dedicated to pair training ranged from 1-2 months (at five schools) to 13 months (at schools #2 and #3), depending on whether the school had its own breeding program or a foster family was used. Every school had different stages of training and spent a different amount of time on each one. For example, some schools worked on basic training at 2 or 4 months of age, other schools started at an earlier age if the dogs originated from donations. The level of standardization was not the same across all schools. It is important to note that these findings were not entirely supported by the training continuum data reported during the trainer interviews. The fact that there was no uniformity among the two data sources on which skills were taught and when confirms that variability has developed within each school over time. For example, the interview revealed that school #7 has a 3-month basic training period, but it appears that this training is done at correctional facilities with inmates rather than at the school. This was not mentioned during the school visit, nor was a suggestion made to speak with the trainers.

How do trainers perceived canine features that contribute to an effective dog-veteran pairing?

The results presented here pertain to the following theme: Dog behavioral attributes-Features that are considered to contribute to making a dog a successful or unsuccessful service animal.

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	Duration of Training (Month)																								
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
School #1	Breeding program and dog received from animal protection society. Socialization, basic obedience and desensitization * Veteran meets the dog before basic training.											Basic training				Advanced training				Pair training					
School #2	Dogs received from donations and evaluated		Basic training		Paired with veteran, training done once a week							Prepared for public access certification													
School #3	Dogs received from donations and evaluated		* Veteran meets the dog before basic training. Basic obedience, start to build a relationship (paired)			Advanced obedience. Test for the public access certification			Advanced obedience.		Public access. Pre-test for service dog credentials, work in public.														
School #4	Dogs received from donations and evaluated		Basic training		Exposure to public places		Advanced and customized training		Pair training																
School #5	Foster family						Training at the school: games with actors, treats, simulations				Advanced training at the school		service dog assigned and regular follow-ups												
School #6	Breeding program		Foster family		Assessment for service dog		Foster family and basic training											Advanced training				Pair training			
School #7	Dogs from breeding program or donation are placed in a social environment										Basic training			Advanced training		Pair training									

Table 7: Challenges encountered during the training continuum related to the order of the skills taught and when the skills were taught during the 24-month period, as reported by school delegates.

The interviews revealed four canine attributes that are considered to be key determinants of a successful service dog: temperament, proactivity, sensitivity toward the veteran and unique characteristics suited to its master. School delegates reported that the dog must have an even temperament and must hardly ever get startled or become scared. The service animal must take initiative in removing the veteran out of a situation when needed. To do this, the dog must be sensitive to the veteran's emotional state and must be able connect with him. Lastly, the animal's characteristics must fit the veteran's lifestyle and personality to ensure a successful and long-lasting dyad.

What challenges and difficulties do veterans encounter during their training continuum, including rationale for dropping out?

Challenges encountered-Demanding, threatening, provocative, stimulating, or inciting situations before, during or after the training procedures by any of the stakeholders, Includes: Any issue encountered by a school delegate, the dog, the veteran or the veteran's family. The veteran's readiness to complete the training.

The interviews revealed five different types of challenges: the dog's inadequate behavior, the veteran's inadequate behavior, the veteran's environment is not conducive to having a dog, public acceptability, and stress or anxiety associated with the training procedures. If not well selected, dogs can display a high prey drive (hunting instinct) leading them to bark unnecessarily or run after small pets. Predatory behaviors should be under the trainer's control. Dogs can also be anxious and overreact to their environment. Inconsistent discipline and difficulty perceiving the dog's response were reported as two 'inadequate veteran behaviors.' In such cases, the dog is not able to detect if is master is experiencing an anxious episode, and will therefore not be able to stop the veteran's stressful episode.

The veteran's proximal environment can impede success due to such things as a relative's allergy, inadequate discipline strategies or the presence of another dog with a strong personality. Being out in public can sometimes pose challenges such as people asking intrusive questions or lacking sufficient knowledge about the field of psychiatric service animals, leading them to deny the veteran and his service dog public access. Finally, anxiety and stress associated with training can be challenging for the veteran and the dog. It has been reported that veterans are generally out of their comfort zone during the training because they are outside of their typical environment and need to perform new tasks. Veterans must learn to cope with their difficulties in public in order to complete the training and begin developing a healthy relationship with the service dog.

Table 8 lists 15 conflicting issues that were reported by veterans in 6 of 7 dog training schools. These problems were reported between 1 and 7 times each, for a total of 31. The most reported issues were communication problems between the school and the veteran (6 times, 1 dropout), long complicated delay in receiving reimbursement from the VAC (4 times), dog's immature behavior (2 times, 1 dropout), severe discrepancy in program's expectations (2 dropouts) and unsuccessful at-home training (3 times). Over an 18-month follow-up period, 12 participants withdrew from the study (seven veterans dropped out before they received their dog, two returned their dogs and dropped out, and three kept their dog but dropped out of the study after 6 months (due to the research questionnaires being emotionally difficult and health problems). Depending on the difficulty, solutions included additional therapy sessions or a change in school or dog. Each difficulty that caused delays in participants receiving their dogs or resulted in being separated from their newly assigned dog was reported by participants as being emotionally and psychologically very difficult. Exchanging the dog for another dog also did not solve the difficult situation.



Difficulties reported by veterans (n=15)	f (n=31)	Dog training school	School that experienced dropouts ^a (n=12)	Solutions used to resolve difficulty (when a solution was used)
Administrative problem causing stress	1	# 1	None	Additional therapy sessions
Communication problems between the school and the veteran	7	# 1 x3 # 4 # 5 # 6 # 7	School # 1 2-14 days before training	Changed schools
Long, complex delay in receiving reimbursement from VAC	4	# 1 x2 # 4 # 7	None	Additional therapy sessions
Failed the home visit evaluation part of the application process	1	# 2	None	Changed schools
Dog's immature behaviour	2	# 5 # 7	School # 5 3 months after training	Returned the dog and eventually received a new service dog.
The process of filing research questionnaires was emotionally difficult ^a	2	# 7 x2	School # 7 6 months after training 12 months after training	Kept the dog but dropped out of study.
Veteran's health problems	1	# 6	School # 6 9 months after training	Kept the dog but dropped out of study
Dog's overprotective behaviour	1	# 1	None	Returned the dog and eventually received a new service dog.
Veteran realized he/she did not want a service dog	1	# 1	School # 1 3 months after training	N/A
Severe expectations discrepancy	2	# 1 # 5	School # 1 3 months before training School # 5 3 months after training	N/A
Severe unexpected allergy of a close relative	1	# 4	School # 4 9 months after training	N/A
Stigmatization barrier for employment	1	# 7	None	N/A
Stress due to a forbidden medication during the training ^b	1	# 7	None	Retraining in Canada
Undisclosed	3	# 1 # 5 # 7	School # 1 3 months before training School # 5 2-14 days before training School # 7 3 months before training	NA
Unsuccessful training at home	3	# 1 # 4 # 7	None	Changed the dog; one additional training week at the school

Note f = frequency of the difficulty reported. a There are seven possible data collection time points in the longitudinal study: 6 months before placement, 3 months before, 14 to 2 days before placement, 3, 6, 9 and 12 months after pairing dog and veteran). b Importing medical marijuana was forbidden in USA.

Table 8: Difficulties reported by veterans, frequency, dropouts and solutions used to prevent dropouts.

To what extent does the implementation of services at dog training schools comply with the criteria proposed by the ADI and the TDF?

It should be noted that the results are transversal and that they would no longer be the same today given that improvements were being made to the schools when the study ended. For optimum knowledge (Domain 1), schools had to have at least five years' experience in delivering PTSD service dogs, trained a minimum of five dyads for PTSD and experience with other diagnoses (to better recognize a broad spectrum of needs). Scores were considered 'optimum' for four schools, 'minimum' for two schools and 'problematic' for one school. For optimum skills (Domain 2), schools had to train dogs with good temperament/trainability/basic obedience skills, to behave in public and to master specific interventions related to specific client needs to help veterans manage their PTSD symptoms. Scores were 'optimum' for two schools, 'minimum' for four and 'problematic' for one. For social/professional roles and identity (Domain 3), no school received an 'optimum' grade, since there was insufficient information to determine how many of the employees help train dogs, answer veteran's questions, or simply clean the area as janitors. It was therefore impossible to judge how professionally capable the school was at receiving and assisting veterans, even though most schools were deemed to have a facilitating physical environment that included a specific building for training, dedicated employees and volunteers. To achieve a 'minimum' grade, schools had to offer clients manageable

costs and have a building with an open-concept environment to train the dogs. Scores were 'minimum' for four schools and 'problematic' for three. For optimum beliefs about capabilities (Domain 4), the schools' selection criteria were veterans who (at a minimum) have a home to welcome the dog and a recommendation/prescription for a service dog. The schools' selection criteria were dogs that (at a minimum) have a good temperament, are in good health and are a good match for the veteran. No school satisfied all the requirements. However, to receive a 'minimum' grade, the minimum selection criteria for either the veteran or the dog needed to be met. Five schools were evaluated as having a 'minimum' score, while the other two schools received a 'problematic' score.

In terms of beliefs about consequences (Domain 5), no school received an 'optimum' score, because no school had planned a visit or an informal meeting with the dog (in person or by videoconference) before starting the basic training sessions. At some schools, the dog's previous history was unknown, which made it difficult to assess temperament over the first two years of life. At other schools, the dog's previous history was known (e.g., school's own breeding program); however, veterans did not necessarily visit the dogs to see which dog displays an affinity for them. To receive a 'minimum' grade, schools needed to avoid using pain as a training strategy and consider the dog's best role for detecting, intervening and contributing to a feeling of safety/relaxation. Five schools obtained 'minimum' scores and two schools achieved "problematic" scores. For optimum client motivation

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and goals (Domain 6), schools had to have received no complaints related to a severe expectation discrepancy and no hesitation in committing to having a dog or stress due to a medication that was not permitted in the study. Four schools obtained 'optimum' scores and three schools received 'problematic' scores.

For optimum client memory, attention and decision processes (Domain 7), schools had to have received no complaints of unsuccessful training at home, or incidents of veterans waiting several months before being informed that they failed the home evaluation part of the application process. Scores were 'optimum' for three schools and 'problematic' for four schools. As for environmental context and resources (Domain 8), no school received an optimum grade because the veteran's lifestyle (e.g., elevator) and ecological environment should have been taken into consideration when choosing the outdoor areas for training. At least one follow-up should have been conducted at home three months after placement. To receive a 'minimum' grade, schools needed to use specific areas and a variety of public locations for training, or offer a wide-open training area. Scores were considered 'minimum' for five schools and 'problematic' for two schools.

In terms of optimum social influences (Domain 9), schools had to offer at least three months of training with the veteran and dog in a training continuum that specified basic training followed by advanced training. Scores were 'optimum' for one school, 'minimum' for five schools and "problematic" for one school. For optimum client emotion (Domain 10), schools needed to have received no complaint about the service dog as a stigmatization barrier. Scores were 'optimum' for six schools and 'problematic' for one school. For behavioral regulation (Domain 11), no school received an optimum score because none of them mentioned having a set schedule for these four follow-ups: 1) at least every three months until placement, 2) within one month of placement and at least every three months for the first year, 3) an in-home/community follow-up visit three months after placement by program staff or a program-trained individual, and 4) contact by staff or trained volunteers at least once a year to ensure that the standards achieved at graduation remained the same (as defined by ADI standards, 2018, p.24). For schools to receive a 'minimum' score, they needed to have a scheduled follow-up (frequency of contacts specified in days, months and/or years). Scores were 'minimum' for four schools and 'problematic' for three. For optimum nature of dog's and trainer's behaviors (Domain 12), schools had to have received no complaints about the dog's immature behavior or of communication problems. Scores were 'optimum' for two schools and problematic for five.

The scores of the 12 domains were summed to provide a total score for the implementation of the service dog program. This absolute value is only a global indicator to highlight differences across the different schools because the relative weight of each domain is unknown. The comparison of the total scores showed that school #3 had the highest score (16/24), and school #7, the lowest (6/24). School scores varied across all domains, but in the end, schools #2, #4 and #5 had scores around the 11/24 range (scores being 11, 12 and 10, respectively). Six of the seven schools met minimum ADI criteria. Veteran retention is also variable from one school to another. In this study, 19 of 31 Veterans (61%) were still in study 12 months after training. School #7 admitted 11 veterans and kept 8 at the end, and school #1 admitted 1 and lost it. Only school #2 kept their 2 veterans until 12 months after training.

Discussion

All research questions were answered with a sufficient level of description considering this was an explanatory case study.

Question 1: The study results show that trainers select dog-veteran dyads differently and coordinate communications between stakeholders (veterans, members of the veteran's family, medical personal, other

employees) differently from one school to another. This seems acceptable as ADI criteria state that follow-up communication can be coordinated by phone, email, video conferencing, mail, or in person. However, trainers or program-trained individuals at all schools should standardize the procedures and adhere to an established follow-up schedule. "Follow-up" is not supposed to be "training."

Question 2: The results of our study show that trainers describe training methods, dog selection criteria, the bonding process and service dog tasks differently from one school to another. Most services offered do not contradict ADI criteria, but based on the skills dogs need to learn (no training, basic training and advanced training), the schools clearly do not abide by the same length of training continua or the point in time that is dedicated to pair training. Training periods and follow-up contacts should be more defined.

Question 3: The results indicate that trainers at different schools can have very different definitions for significant dog features that contribute to an effective dog-veteran pairing. In fact, dog selection criteria are based on the dog's temperament and behavior but these features are not technically assessed. What tests are performed done in the training continuum to demonstrate that dogs show tolerance to a high level of stress, sensitivity without anxiety, the ability to perceive environmental and interpersonal cues, the ability to complete tasks in very difficult and emotional situations, no reactivity, possessiveness, guarding behaviors or increased anxiety (ADI, 2018, p.23)? The ADI criteria do not recommend tests to assess temperament and behaviors. This clearly represents a limitation with respect to the ADI criteria. An analysis of collected behavioral data on future Mira Foundation guide and assistance dogs over 37 years reinforces the value of conducting behavior assessments to properly choose a dog that will become a service dog. Their sample included 981 service dogs for motor impairments, 879 guide dogs and 560 dogs for Autism spectrum disorder and Pervasive developmental disorder [17]. Behavior was assessed when the dog was exposed to a cat, exposed to another dog, exposed to a running tractor, exposed to an odd stimuli (i.e., lion statue), walking on a very congested bridge, taking a simple walk inside or outside, exposed to stranger s, alone in a room, left with other dogs with a single bowl of food, in a room with someone eating food, walking outside at a park or exposed to the "mannequins corridor". Basically, during each type of exposure, someone observes the dog to determine whether it is calm and at ease in the awkward noisy environment or whether it is showing signs of fear, discomfort or aggression. Behavioral dimensions of personality among Mira Foundation dogs seem similar to those established by Jones and Gosling [18].

A response of fear/reactivity seems to be stable between the age of 6 and 12 months. The profiles for behavioral dimensions of personality vary according to breed [17]. Labradors seem to be better in the fear/reactivity dimension, compared to three other breeds. Bernese Mountain dogs appear to fare better with this activity compared to Labrador retrievers but are not as good as Labradors in terms of the fear/reactivity dimension. Lebanese dogs have a similar profile to Bernese Mountain dogs. The St-Pierre breed shows an intermediate profile between Bernese Mountain dogs and Labrador retrievers. Interestingly, 7 psychiatric service dogs for PTSD were Labrador retrievers and 2 were Bernese Mountain dogs in the present case study. The dogs originated from breeder donations (2) and the organization's own breeding program (5), meaning that it could have been possible to assess them at the optimal moment. Results of work by Dollion et al. [17] also show that questionnaires completed by foster families might be a valid source of information about a dog's behavior/personality, albeit with some limitations. These questionnaires assess the presence or absence of specific behaviors (e.g., problematic behavior, excitement or fear behavior) through closed-ended questions.

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TDF domain	The domain's construct for which specific information was available is <u>underlined</u>	Chosen variables	Assessment of school *						
			*Problematic=0 Minimum=1 Optimum=2						
			#1	#2	#3	#4	#5	#6	#7
(1) Knowledge	Knowledge, <u>knowledge about condition</u> /scientific rationale, schemas+mindsets+illness representations, procedural knowledge	Years in existence, years delivering PTSD service dog; dyads trained for veterans with PTSD and all diagnoses	2	1	1	2	0	2	2
(2) Skills	Skills, competence/ability/skill assessment, <u>practice/skills development</u> , interpersonal skills, coping strategies	Profession title; No training, Basic training, Advanced training for PTSD	1	0	1	2	1	1	2
(3) Social/Professional Role And Identity (Self-Standards)	Identity, professional identity/boundaries/role, <u>group/social identity</u> , social/group norms, alienation/organisational commitment	Type/mission of organization, Building, Client's costs	0	1	1	0	1	1	0
(4) Beliefs About Capabilities (Self-Efficacy)	Self-efficacy, <u>control of behaviour/ material/social environment</u> , perceived competence, self-confidence/professional confidence, empowerment, self-esteem, perceived behavioural control, optimism/pessimism	Veteran's selection criteria, Dog's selection criteria	0	1	1	1	1	1	0
(5) Beliefs About Consequences (Anticipated Outcomes/Attitude)	<u>Outcome expectancies</u> , anticipated regret, appraisal/evaluation/review, consequences, attitudes, contingencies, <u>reinforcement/punishment/consequences</u> , incentives/rewards, beliefs, unrealistic optimism, salient events/sensitisation/critical incidents, characteristics of outcome expectancies: physical/social/emotional, sanctions/rewards, proximal/distal, valued/not valued, probable/improbable, salient/not salient, perceived risk/threats	Best role for dog, Paired training strategy, Bond, Use of pain	1	1	1	0	1	1	0
(6) Motivation And Goals (Intention)	<u>Intention/stability of intention/certainty of intention</u> , goals (autonomous, controlled), goal target/setting, goal priority, intrinsic motivation, commitment, distal and proximal goals, transtheoretical model and stages of change	Veteran realizes he/she does not want a service dog, Severe expectations discrepancy, Stress due to a forbidden medication during the training.	0 ^b	2	2	2	0 ^a	2	0
(7) Memory, Attention And Decision Processes	Memory, attention, attention control, <u>decision making</u>	Does not pass the home visit evaluation, Unsuccessful training at home	0	0	2	0	2	2	0
(8) Environmental Context And Resources (Constraints)	<u>Resources/material resources (availability and management)</u> , environmental stressors, person-environment interaction, <u>knowledge of task environment</u>	Outdoor aspects utilized, Lodging, Training area, Dog run, Enclosure, Kennel, Crate	1	0	0	1	1	1	1
(9) Social Influences (Norms)	Social support, social/group norms, <u>organizational development</u> , leadership, teamwork, group conformity, organizational climate/culture, social pressure, power/hierarchy, professional boundaries/ roles, management commitment, supervision, inter-group conflict, champions, social comparisons, identity/group/social identity, organisational commitment/alienation, feedback, conflict-competing demands, conflicting roles, change management, crew resource management, negotiation, social support: personal/ professional/organisational, intra/interpersonal, society/community, social/group norms: subjective/descriptive/injunctive norms, learning and modelling	Training continuum progression (number and progression of tasks over 24 months)	1	1	2	1	0	1	1
(10) Emotion	<u>Affect</u> , stress, anticipated regret, fear, burn-out, cognitive overload/tiredness, threat, positive/negative affect, anxiety/depression	Paired training, Stigmatisation barrier	2	2	2	2	2	2	0 ^b
(11) Behavioural Regulation	Goal/target setting, implementation intention, action planning, self-monitoring, goal priority, generating alternatives, <u>feedback</u> , moderators of intention-behaviour gap, project management, barriers and facilitators	Follow-up	0	0	1	1	1	1	0
(12) Nature of the Behaviours	Routine/automatic/habit, breaking habit, <u>direct experience/past behaviour</u> , representation of tasks, stages of change model	Dog's immature behaviour, Communication problems with the school	0 ^a	2	2	0	0 ^a	0	0
Other variables	TDF final score (maximum 24 points)		8	11	16	12	10	15	6
	Veterans in study 12 months after training (19/31 or 61%)		4	0	2	1	3	1	8
	Total number of veterans who enrolled in study (n=31)		8	1 ^c	2	2	6	2	11

Table 9: Assessment of the implementation of services in seven dog training schools based on the Theoretical Domain Framework (TDF) and Assistance Dog International Criteria (2018).

Question 4: The results yielded four types of challenges among the veterans during the training continuum, 15 conflict issues (31 complaints) and 12 dropouts. In four schools, there were seven complaints associated with "Communication problems between the school and the veteran." This confirms the need to develop more

effective communication and possibly the integration of diversified communication modes (telephone, email, videoconferencing, etc.). However, there is no doubt that schools recognized their efforts invested in the 6 months before the pair training (eligibility, dog

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selection, agreements with VAC). Unfortunately, however, there were a greater number of difficulties and dropouts.

Question 5: Lastly, results also revealed disparity in the implementation of services at all seven dog training schools based on the criteria proposed by Assistance Dogs International (ADI) and the Theoretical Domains' Framework (sum of 12 TDF domains: 16/24 – 6/24).

This is the first study to use the ADI standards to evaluate dog training schools that provide service dogs to veterans with PTSD and the second study to use the TDF as a model for assessing service dogs [14]. Those authors also revealed that a challenge exists in the domain of environmental context and resources (constraints), which is similar to our case study, although it involved a single school, with civilians that had a physical impairment and functional disabilities who were paired with a mobility service dog. The ADI criteria also differ slightly in the target population. In our explanatory case study, no school was close to the maximum possible score of 24 reflecting complete adherence to all the standards proposed by ADI. The majority of the school obtained low scores, which suggests limited adherence to ADI standards and considerable potential for improvements. Caution is advised since some school delegates and dog trainers may have been unable to precisely describe the services they offer during the interviews for different reasons. One of the main limitations is the fact that delegates could feel that they were possibly being 'assessed' against other schools. This would undoubtedly result in discomfort. This bias of desirability might have had an effect on their responses. However, scores would have certainly been higher for each school one year following the open-ended question questionnaire, as the research coordinator announced improvements being done in the delivery of services via phone interviews with trainers over time.

One advantage of the TDF model is its broad coverage of all aspects that need to be considered following the implementation of services. One of its main limitations is that it is difficult to assess the veteran's experience or feelings (Domains 6 – Motivation and objectives, memory; Domain 7 – Attention and decision processes; Domain 10 – Emotions). A particular service may indeed be well established but a customer may not be ready for the service. In our case study, the "record of contact reports" data was insufficient to fully document aspects under domains 6, 7 and 10 since veterans had only contacted the research coordinator when there was an issue with the school, the VAC or the research itself (i.e., a 'problematic' score). No school had implemented a satisfaction survey either. The score was 'optimum' if the school received no complaints. Assessment of domains 6, 7 and 10 greatly decreased the implementation of services score for school #1 and #7, primarily for reasons that had more to do with the veteran than the dog training school. However, even though we do not have all the data we intended to obtain, a reasonable assessment of the services implemented at each school can still be done based on the data in the other domains.

Strengths and Limits

This exploratory case study has numerous strengths, especially those related to credibility and reliability. As for the internal validity of the study, based on the qualitative research criteria proposed by Krefting [16], adequate representation of the phenomenon examined in this study was nearly complete at least for seven dog training schools; various perspectives and environments were considered as is expected in public health. The multidisciplinary nature of research team (five disciplines) ensured the rich content of the open-ended questions in the questionnaire and phone interview guide. The different environment such as ranches, community centers, veterinary hospitals as well as no specific building ensured that ecological perspectives were taken into account. With regard to the external reliability of the study, we think we achieved optimal consistency Krefting [16] since we used a list of

clear, well-defined themes that were based on dictionary entries. The use of two tools (the TDF and ADI criteria) to conceptualize the assessment of the implementation of service dog schools also strengthens the consistency of the results. To ensure procedural stability [16], the same person performed the 23 phone interviews with trainers and one person analyzed data for the first four research questions. To ensure internal reliability, the schools were graded by three judges. Two of the judges were not involved in the collection of the previous data collections, which therefore ensured better confirmed potential of the study. There is always possibility of some subjectivity in ranking or ordinal indicators.

There are some limitations with respect to this explanatory case study, especially those relating external validity. The transferability [16] of the data to a similar context is not optimal because the way the services were delivered varied significantly across all seven dog training schools. Theoretical saturation was not attained, and internal diversification of the sample was not possible. In this case study, the research team had no control over the way psychiatric dog services were delivered or the convenience sample. Give that the results are essentially ecological; they cannot be transferred to other service dog schools. Data collection started 2 years before the study and ended nearly a year after the study and aspects about the schools might have changed or improved since then. Lastly, not all the information needed to be able to use the TDF adequately for domains 6, 7 and 10 (domains relating to the veterans' opinion) has been collected. As for feasibility, the items in each TDF domain were opportunistic since they were selected based on the availability of the corresponding field data on hand at the time.

Future Research

More attention can be paid to the effectiveness of the service dogs and their link with perceived quality of the different dog training modalities to how successful they were for the veterans. This can be a potential area of future research. Further applied tertiary prevention research is needed in the field of psychiatric service dogs to better understand the continuum of training within breeding organizations, foster families, ranches, community centers, veterinary hospital, and non-specific buildings as well as in community dwellings and commercial buildings. The theoretical construct of some domains for which specific information was unavailable, should be examined in depth in future research. Future research should also include the public as an important determinant in the domain of environmental context and resources (public awareness, possible impact of the service dog on the people around the dog owner, etc.).

Clinical Implications and Recommendations

Further to the evaluation of the services implemented in dog schools, recommendations focus on the domains judged to be weaker:

- Dog trainers should receive continuing education (workshops, webinars or presentations) by mental health professionals on PTSD and its triggers (symptoms and behaviors associated with the diagnosis, resources available to the veteran, etc.) to reinforce the dog trainer's knowledge of the condition (PTSD) (Domain 1).
- Dog training schools should follow ADI criteria when selecting dogs and veterans to reinforce the beliefs about capabilities (Domain 4).
- Dog training programs should consider the veteran's lifestyle and the locations the veteran visits the most when selecting outdoor areas to use for the dog's training. This will better address the environmental environment and resources (Domain 8).
- Dog training programs should conduct a follow-up (video-conference, phone contact or face-to-face visit) with the veteran every three months before the dog is assigned to the veteran until paired training has been completed. Follow-ups should then take

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place every month for the first 6 months and then once every year to reinforce behavioral regulation (Domain 11).

- Dog trainers should familiarize themselves with and adhere to all ADI Minimum Standards and Ethics and the Standards for the Training and Placement of Service dogs for Veterans with Military-Related PTSD (2018), to better address beliefs about the consequences for veterans and the nature of behaviors for dogs (Domains 5 and 12).

Conclusion

This original study demonstrated high variability between seven dog training schools for selection criteria, training continuum, physical environments and frequency of follow-ups. Some schools reflect the proposed standards more than others; however, there will always be aspects that are beyond the control of the dog training schools (e.g., the veterans' personal considerations). The present study highlights that out of the 31 veterans with PTSD who enrolled into a service dog assignment, process, 7 dropped out before starting the training and 22 of 24 dogs were still paired with veterans six months after initiating the training. Some veterans left the research project, but 19 were confirmed as being successfully paired with a psychiatric service dog 12 months after initiating training (research success rate = 61%). By developing a better training continuum (specific skills to teach a dog for the 'no training', 'basic' and 'advanced training phases) and by proposing specific follow-ups for each step even before the beginning of the dog delivery process, it is plausible that the success rate could progress significantly. Tertiary prevention recommendations were proposed for dog trainers to better address the domains that needed improving at the time of the study (knowledge about PTSD, beliefs about capabilities, behavioral regulation, environmental context and resources, beliefs about consequences, nature of behaviors). The present study can guide the development of future research needed to strengthen the existing evidence.

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