Mental health disorder symptom changes among public safety personnel after emotional resilience skills training

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ABSTRACT

Objectives: Public safety personnel (PSP) are frequently exposed to psychologically traumatic events. The exposures potentiate posttraumatic stress injuries (PTSIs), including posttraumatic stress disorder (PTSD). The Royal Canadian Mounted Police (RCMP) Protocol was designed to mitigate PTSIs using ongoing monitoring and PSP-delivered Emotional Resilience Skills Training (ERST) based on the Unified Protocol for the Transdiagnostic Treatment of Emotional Disorders. The current study pilot-tested ERST effectiveness among diverse PSP.

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public safety personnel
first responders

Methods: A 16-month longitudinal design engaged serving PSP ($n = 119$; 34 % female; firefighters, municipal police, paramedics, public safety communicators) who completed PSP-delivered ERST. Participants were assessed for symptoms of PTSIs, including but not limited to PTSD, at pre- and post-training, and 1-year follow-up using self-report measures and clinical interviews.

Results: There were reductions in self-report and clinical diagnostic interview positive screens for PTSD and other PTSI from pre- to post-training ($ps < 0.05$), with mental health sustained or improved at 1-year follow-up. Improvements were observed among firefighters (Cohen's $d = 0.40$ to 0.71), police (Cohen's $d = 0.28$ to 0.38), paramedics (Cohen's $d = 0.20$ to 0.56), and communicators (Cohen's $d = 0.05$ to 0.14).

Conclusion: Ongoing monitoring and PSP-delivered ERST, can produce small to large mental health improvements among diverse PSP, or mitigate PSP mental health challenges, with variations influenced by pre-training factors and organizational supports. ERST replication and extension research appears warranted.

Trial registration: Hypotheses Registration: aspredicted.org, #90136. Registered 7 March 2022 - Prospectively registered. Trial registration: ClinicalTrials.gov, NCT05530642.

1. Introduction

Public safety personnel (PSP; e.g., border services personnel, correctional workers, firefighters, paramedics, police, public safety communicators) report frequent direct and indirect exposures to diverse potentially psychologically traumatic events (PPTEs) [1,2], involving actual or threatened death, serious injury, or sexual violence [2]. Frequent PPTE exposures potentiate posttraumatic stress injuries (PTSIs) [3]. PTSI is a non-clinical term (i.e., not a DSM-5-TR or ICD-11 diagnosis) used to collectively refer to mental health conditions associated with PPTE exposures [2] such as alcohol use disorder (AUD), generalized anxiety disorder (GAD), major depressive disorder (MDD), posttraumatic stress disorder (PTSD), panic disorder (PD), and social anxiety disorder (SAD) [3]. Many Canadian PSP (i.e., 44.5 %) screen positive for one or more mental health disorders associated with PTSI at any given time [4]. Given such high prevalence of PTSIs, programs aimed at mitigating mental health disorder symptoms are necessary to support the mental health of PSP.

Efforts to provide effective supports for PSP mental health [5,6] are limited by insufficient evidence [7–11]. Many PSP mental health support programs focus on increasing knowledge, reducing stigma, and increasing help-seeking behaviors, as well as mindfulness- and resilience-based skill development [7,9,11–18]. Most studies have used cross-sectional data, short follow-up periods, and assessed very small subsets of variables posited as important for mental health [7,12,18]. Some potentially promising results (e.g., reductions in symptoms of PTSD [15]; increases in self-reported resilience [19]; decreased difficulty with emotion regulation [13,19] have been seen with mindfulness- and resilience-based skill training, but few studies have included follow-up assessments beyond post-training [19], and some studies with follow-up assessments have not evidenced sustained improvements [13]. The available evidence suggests mindfulness- and resilience-based skill training is promising for effectively increasing mental health knowledge and reducing stigma but there is limited evidence regarding the effectiveness of training for long-term and consistent symptom management [8,9,11–13,16]. PTSI symptoms have been evidenced to negatively impact occupational performance quality, increase absenteeism, increase sleep difficulties, negatively impact interpersonal relationships, increase burnout, and increase early mortality [4,20,21]. Symptom management is likely a more effective target for mitigating PTSI than increasing knowledge and reducing stigma, which have been associated with service use intentions and willingness to access support [22–24]. Researchers have recommended future programs for mitigating PTSI target specific modifiable constructs (e.g., aversive reactions to emotions) associated with symptom management [8,11].

Avoidance and other aversive reactions to emotions appear to be poignant risk factors for developing PTSI [25,26], propagated by predominantly stoic PSP cultures [25,27]. Emotional awareness can reduce mental health disorder symptoms [28] and, when supported by self-monitoring, can help remediate maladaptive responses to mental

health disorder symptoms [29]. Understanding and accepting emotions can minimize the use of avoidant coping strategies (e.g., alcohol use, avoiding reminders of the event, behavioral avoidance) that exacerbate PTSI symptoms and paradoxically perpetuate negative emotions [30–32]. As such, emotional awareness may be considered an individual modifiable risk factor that can benefit from standardized treatment protocols.

The Unified Protocol (UP) for Transdiagnostic Treatment of Emotional Disorders [30,32] is an evidence-based cognitive behavioral standardized treatment protocol that increases emotional awareness and cultivates an approach-oriented stance towards emotions. The UP is supported by considerable evidence demonstrating transdiagnostic effectiveness for reducing symptoms of diverse anxiety- and mood-related disorders [30] across several delivery formats (e.g. individual, group, self) [33–38]. Preliminary evidence from a randomized trial indicates the UP can proactively mitigate elevated nonclinical depression and anxiety [39]. Participants described the proactive UP training as highly acceptable and satisfying, reporting skill use "some" to "most" of the time at 1-month follow-up, alongside statistically significant improvements in self-reported measures of neuroticism, quality of life, and experiential avoidance relative to baseline. Accordingly, the UP appears promising for proactively protecting PSP mental health [37,40–43] and enhancing PSP job satisfaction [44].

In response to a growing need for proactive mental health treatment programs, the Royal Canadian Mounted Police (RCMP) Study [45] was designed to 1) augment the RCMP Cadet Training Program [42,46,47] by adapting and integrating the UP to serve as Emotional Resilience Skills Training (ERST) [30,32], and 2) evaluate the impact of ERST (i.e., daily, monthly, annually) with evidence-based assessments (e.g., clinical interviews, self-reported symptoms, stressful experiences). The PSP PTSI Study [48] was designed to adapt the 13-week RCMP Study ERST training and assessment tools to accommodate a diverse sample of PSP (i.e., firefighters, municipal police, paramedics, public safety communicators) [48].

The current PSP PTSI Study paper focuses on assessing the joint impact of providing PSP with 1) a system for ongoing (i.e., pre-training, post-training, follow-up, daily, and monthly) evidence-based assessments of environmental factors and individual differences (i.e., mental health, social experiences) [49–53]; and, 2) the ERST adapted for diverse PSP [45,48]. The pre-registered hypotheses (NCT05530642) were: 1) participating PSP were expected to report statistically significant improvements in their mental health from pre- to post-training as measured by self-reported symptoms of diverse PTSI and structured clinical diagnostic interviews; 2) PSP sectors were expected to differ, such that paramedics and public safety communicators may report more intense PTSI symptoms and more positive screens for PTSI than firefighters and municipal police [4]; 3) women PSP were expected to report more PTSI symptoms than men [4,25]; 4) no statistically significant differences in PTSI symptoms were expected to be observed between completers and non-completers at any timepoint; 5) no statistically

significant differences in PTSI symptom scores were expected to be observed between the current sample at pre-training and previously published results from a large and diverse Canadian PSP sample from 2017 [4]; and 6) the current sample was expected to report statistically significantly fewer PTSI symptoms at post-training and 1-year follow-up than the comparative previous 2017 [4] sample. Accordingly, planned sector comparisons were included alongside sociodemographic comparisons within the current sample.

2. Methods

2.1. Procedure

Data were collected through a web-based self-report survey. The PSP PTSI Study was approved by the University of Regina Ethics Board (File #2020–226). Participants provided written informed consent prior to participation. The current paper focuses on full assessment data collected at pre-training post-training, and at 1-year follow-up, with reporting in accordance with CONSORT reporting guidelines [54]. The full assessment includes self-reported mental health disorder symptom measures completed during a survey and the results of a structured clinical diagnostic interview.

2.2. Data and sample

Participants were currently working PSP members from four occupational groups (i.e., firefighters, paramedics, police officers, public safety communicators). Participants were recruited from four PSP sectors: firefighters, municipal police officers, paramedics, and public safety communicators. Potential participants were invited via emails sent by the PSP partner organizations. The emails included study information and instructions on how to volunteer to participate. Full details on recruitment can be found in the detailed protocol paper [48]. Inclusion criteria were Canadian citizens or permanent residents, 18
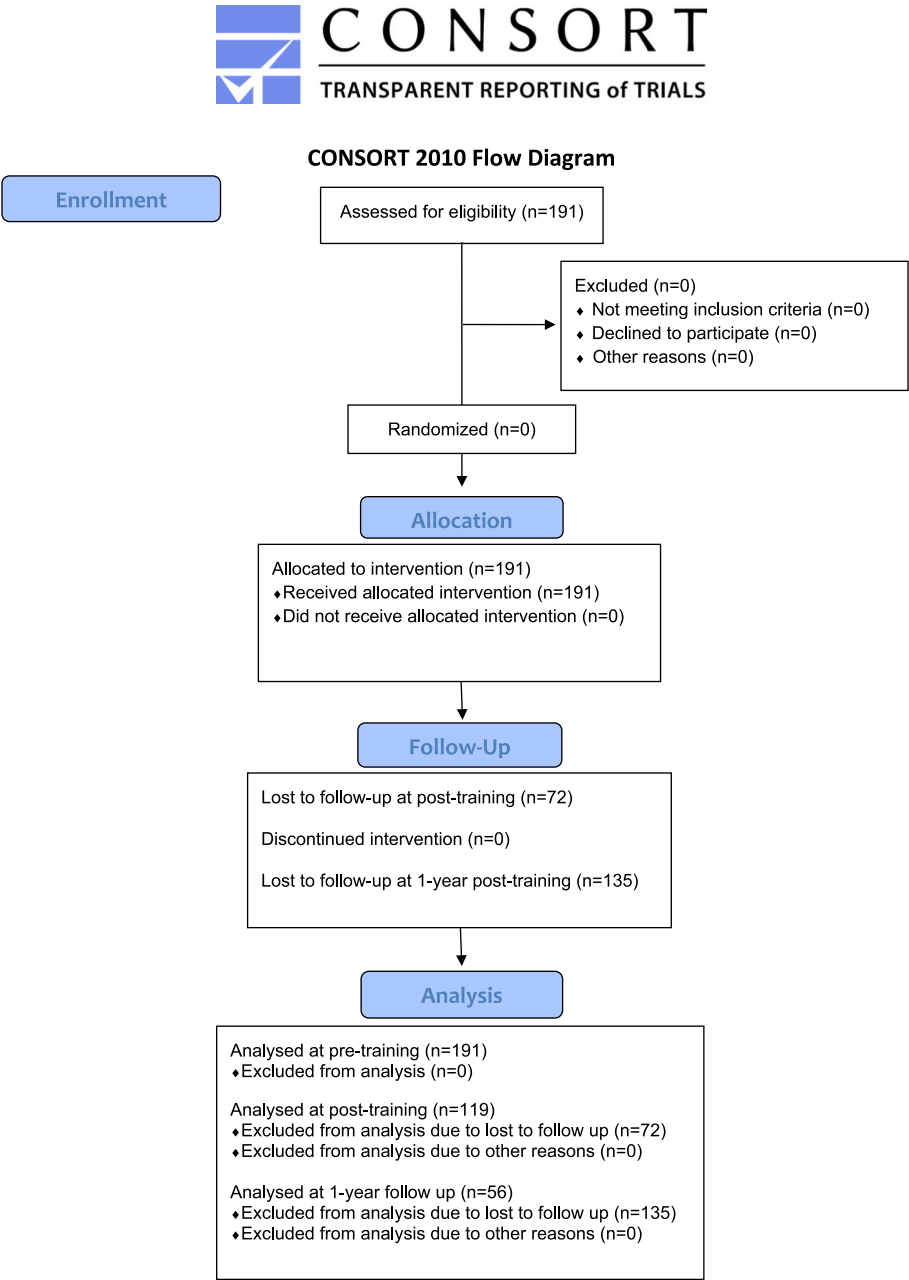

Fig. 1. CONSORT 2010 Flow Diagram.

3

years or older, fluency to read, write, and speak English, minimum 3 years of employment in their sector, and access to a computer with internet connection. Exclusion criteria included current psychosis, high risk of suicide or suicide attempt within the previous year, impairing drug or alcohol addictions, and history of advocating against mental health care. The current study included data from the 191 PSP who completed full assessments at pre-training, the 119 PSP who completed both pre- and post-training full assessments, and the 56 PSP who completed pre-, post-, and 1-year follow-up full assessments (Fig. 1). At pre-training, participants mainly identified as male (60.2 %), cisgender (99 %), 30 to 39 years old (42.4 %) or 40 to 49 years old (28.8 %), White (93.2 %), and married or common-law (80.1 %). Participants were mostly from Saskatchewan (90.1 %), with some post-secondary school education (59.7 %), and had served as a PSP for 4 to 9 years (26.2 %) or 10 to 15 years (26.7 %; see Table 1).

2.3. Self-report symptom measures

Mental health disorder symptoms were assessed using web-delivery of the full assessment at pre-training, post-training, and 1-year follow-up, which included the Alcohol Use Disorders Identification Test (AUDIT [55]), the 7-item Generalized Anxiety Disorder Scale (GAD-7 [56]), the 9-item Patient Health Questionnaire (PHQ-9 [57]), the Panic Disorders Symptoms Severity Scale – Self-Report (PDSS-SR [58]), the PTSD Checklist for DSM-5 (PCL-5 [59]), and the Social Interaction Phobia Scale (SIPS [60]). For the PCL-5, per the Diagnostic and Statistical Manual of Mental Disorders, 5th edition text revision (DSM-5-TR [61]), participants reported exposure to a specific list of PPTEs provided by the Life Events Checklist for the DSM-5 (LEC-5 [62]). An index PPTE (i.e., single worst PPTE, most distressing event, or event that was currently causing the most distress) is selected such that participants keep that index event in mind when rating their past month symptoms using the PCL-5 items. Positive screens on the PCL-5 require a minimum total score of >32 and a minimum endorsement of symptoms in each of the four PTSD symptom clusters [59].

For each of the other screening questionnaires, participants reported symptoms per the specific scale instructions: AUDIT, past 12 months, GAD-7 and PHQ-9, past 14 days; PDSS-SR, past 7 days; and SIPS, no specific time window. Published recommendations were used to determine positive screens: AUDIT total score > 15 [63]; GAD-7 total score > 9 [64]; PHQ-9 total score > 9 [65]; the PDSS-SR total score > 7 [66]; and SIPS total score > 20 [60].

The PCL-5 has demonstrated strong internal consistency ($\alpha = 0.94$) in populations exposed to PPTEs [59]. The PHQ-9 has demonstrated good internal consistency ($\alpha = 0.89$) in the general population [57]. The PDSS-SR has demonstrated a strong internal consistency in the general population ($\alpha = 0.92$) [67]. The GAD-7 has shown good internal consistency ($\alpha = 0.89$) in a community sample [68]. The SIPS has demonstrated overall excellent internal consistency ($\alpha = 0.92$) in a large and independent sample [69]. The AUDIT has demonstrated good internal consistency ($\alpha = 0.81$) in the general population, and ($\alpha = 0.81$) in a police-specific population [70–72]. All self-report measures implemented in the current study demonstrated adequate internal consistency at pre-training ($\alpha = 0.81$ to 0.96), post-training ($\alpha = 0.87$ to 0.96), and 1-year follow-up ($\alpha = 0.84$ to 0.96).

The full assessments were used to provide longitudinal assessments of changes in mental disorder symptoms from pre-training to 1 year follow-up. A 'positive screen' on any of the measures indicated that the individual self-reported symptoms consistent with expectations for a diagnosis of a particular mental health disorder. A positive screen on a self-report survey is not necessarily synonymous with meeting diagnostic criteria, which requires a clinical interview by a licensed professional. To ensure the safety of participants throughout the study, automatic reports were generated by Qualtrics and reviewed by a clinical psychologist to identify any participants requiring a follow-up.

2.4. Clinical Interviews (M.I.N.I.)

A registered clinical psychologist or experienced supervised clinical doctoral psychologist trainees conducted each of the clinical diagnostic interviews using the Mini-International Neuropsychiatric Interview (M.I.N.I [73].). The M.I.N.I. has good inter-rater reliability (75 % [73]). Inter-rater reliability for the current study was assessed with Cohen's *kappa* and a second interviewer observing 15 % of the clinical interviews. The M.I.N.I. included screens for AUD, GAD, MDD, major depressive episode (MDE), PD, PTSD, and SAD, as well as any anxiety disorder, any mood disorder, and any disorder.

2.5. ERST adaptation and delivery

Nuanced details regarding ERST adaptations and content, trainer training, and fidelity assessment are provided in the protocol paper [48]. Briefly, the UP includes robust, evidence-based content for understanding emotions, mindful emotion awareness, cognitive flexibility, countering emotional behaviors, understanding and confronting physical sensations, and emotion exposures [30,32]. The RCMP Study materials were built based on revising the UP language to shift from treating an existing mental health disorder to managing diverse emotional experiences, all using examples designed to be relatable for RCMP. The ERST for the current study was further adapted to use examples designed to be relatable diverse PSP, as opposed to RCMP-specific examples, based on feedback from an a priori PSP focus group and the PSP trainers participating in the study. Training fidelity was supported by having PSP training sessions audio recorded and rated by the leading international expert trainer (i.e., Sauer-Zavala) who also provided corrective feedback wherever needed. A recently published study using the same PSP participants assessed their perceptions of ERST using self-report surveys and sector-specific focus groups [74]. The feedback about ERST was overwhelmingly positive and supportive, with almost all participating PSP (i.e., 123/128) being willing to recommend the ERST to fellow PSP.

PSP trainers were provided with 40 h of train-the-trainer training with the leading international expert trainer (i.e., Sauer-Zavala), and then had access to the same trainer for the duration of the delivery of ERST to address any issues or questions that arose during training. Delivery of ERST spanned 1-h long group sessions, each delivered weekly for 13 weeks, per best practices for the UP [30,32]. PSP organizations were strongly encouraged to provide paid time for their employees to participate in ERST training; however, only the firefighter organizations pervasively provided such supports. The other sectors varied in providing supports. All participants were strongly encouraged to attend every session and to coordinate with their trainers to make up any missed sessions. None of the ERST trainers reported that any of participants missed meaningful numbers of sessions without making up the missed sessions; however, participation was voluntary and attendance was only recorded pervasively by the firefighter sector.

2.6. Analyses

SPSS v.29 Premium (IBM, 2021 New York, United States) was used to conduct the quantitative analyses. All a-priori power analysis estimates are detailed in the associated protocol paper [48]. Normality assumptions were assessed with Kolmogorov-Smirnov tests which indicated that no data distributions departed from normality; accordingly, parametric statistical tests were used.

Mental health disorder symptom scores were calculated based on self-report measures at pre-training (full sample; $n = 191$), pre-training and post-training for post-training completers ($n = 119$), pre-training, post-training, and 1-year follow-up for 1-year follow-up completers ($n = 56$). The prevalence of positive screens based on self-reported measures and clinical interviews were calculated as percentages at pre-training (full sample; n = 191), pre-training and post-training for post-

4

Table 1
Pre-training ($n = 191$) Mental Health Disorder Symptom Scores Across Sociodemographic Characteristics.

	Full Survey Sample[2]	Posttraumatic Stress Disorder (PCL-5)		Major Depressive Disorder (PHQ-9)		Generalized Anxiety Disorder (GAD-7)		Social Anxiety Disorder (SIPS)		Panic Disorder (PDSS-SR)[3]		Alcohol Use Disorder (AUDIT)	
	% (n)	*Mean (SD)*	*n*	*Mean (SD)*	*n*	*Mean (SD)*	*n*	*Mean (SD)*	*n*	*Mean (SD)*	*n*	*Mean (SD)*	*n*
Total Sample													
	100(191)	15.61 (13.77)	186	6.08(5.18)	189	5.86(4.84)	190	9.91(9.32)	190	6.64 (3.65)	36	6.27(4.06)	175
Sex													
Male	60.2(115)	13.43 (12.77)[a]	110	5.12(5.00)[a]	113	5.01 (4.47)[a]	114	8.38(8.83)[a]	114	6.25 (3.14)	12	7.11 (4.16)[a]	106
Female	39.8(76)	18.76 (14.60)[b]	76	7.51(5.15)[b]	76	7.13 (5.12)[b]	76	12.20 (9.62)[b]	76	6.83 (3.93)	24	4.99 (3.57)[b]	69
Test Statistic[1]	–	$t(184) = -2.64$**	–	$t(188) = -3.18$**	–	$t(188) = -3.02$**	–	$t(188) = -2.82$**	–	$t(34) = -0.45$	–	$t(184) = 3.49$***	–
Effect Size (Cohen's *d*)	–	0.394	–	0.472	–	0.448	–	0.417	–	0.158	–	0.540	–
Gender													
Man	60.2(115)	13.43 (12.77) [a,b]	110	5.12(5.00)[a]	113	5.01 (4.47)[a]	114	8.38(8.83)[a]	114	6.25 (3.14)	12	7.11 (4.16)[a]	106
Woman	38.7(74)	19.07 (14.66)[a]	74	7.35(5.07) [a,b]	74	7.07(5.09) [a,b]	74	11.81 (9.10) [a,b]	74	6.83 (3.93)	24	4.99 (3.57)[b]	69
Gender Diverse (i.e., Two-Spirit, Non-Binary, Other)	^	7.50 (6.36)[b]	^	13.50 (6.36)[b]	^	9.50 (7.78)[b]	^	26.50 (21.92)[b]	^	–	–	–	–
Test Statistic[1]	–	$F(2,183) = 4.21$*	–	$F(2,186) = 6.57$**	–	$F(2,187) = 4.82$**	–	$F(2,187) = 6.62$**	–	$t(34) = -0.45$	–	$t(184) = 3.49$***	–
Effect Size (η_p^2)	–	0.044	–	0.066	–	0.049	–	0.066	–	0.158	–	d = 0.540	–
Age													
19–29	7.9(15)	21.21 (15.55)	14	7.60(5.45)	15	8.53(5.94)	15	14.53 (13.06)	15	3.60 (1.34)	5	7.71(4.39)	14
30–39	42.4(81)	14.38 (12.69)	77	5.56(4.78)	79	5.67(4.41)	80	10.35 (9.73)	80	7.41 (3.50)	17	6.19(4.04)	75
40–49	28.8(55)	15.95 (14.70)	55	6.58(5.88)	55	6.16(5.15)	55	9.05(8.21)	55	7.25 (3.99)	8	6.50(4.09)	52
50–59	11.5(22)	17.64 (15.91)	22	6.00(5.89)	22	4.00(4.14)	22	7.45(7.78)	22	7.67 (4.93)	3	5.17(3.76)	18
60 and older	^	^	^	^	^	^	^	^	^	^	^	^	^
Test Statistic[1]	–	$F(4,165) = 0.81$	–	$F(4,168) = 0.66$	–	$F(4,169) = 2.12$	–	$F(4,169) = 1.47$	–	$F(3,29) = 1.63$	–	$F(4,156) = 1.68$	–
Effect Size (η_p^2)	–	0.019	–	0.015	–	0.048	–	0.034	–	0.145	–	0.041	–
Ethnicity													
Asian	^	^	^	^	^	^	^	^	^	^	^	^	^
Black	–	–	–	–	–	–	–	–	–	–	–	–	–
First Nations/ Inuit/ Metis	3.1(6)	21.50 (12.45)	6	7.33(5.20)	6	9.17(5.98)	6	18.33 (9.37)	6	^	^	9.80(5.81)	5
Hispanic	–	–	–	–	–	–	–	–	–	–	–	–	–
South Asian	–	–	–	–	–	–	–	–	–	–	–	–	–
White/Caucasian	93.2(178)	15.63 (13.90)	173	6.09(5.25)	176	5.79(4.84)	177	9.63(9.31)	177	6.67 (3.70)	33	6.28(4.00)	163
Other	^												
Test Statistic[1]	–	$F(3,179) = 0.73$	–	$F(3,182) = 0.40$	–	$F(3,183) = 1.28$	–	$F(3,183) = 1.74$	–	^	–	$F(3,168) = 2.08$	–
Effect Size (η_p^2)	–	0.012	–	0.007	–	0.020	–	0.028	–	^	–	0.036	–
Marital Status													
Single	8.4(16)	21.25 (15.46)	16	8.63(6.59) [a,b]	16	7.25(5.42) [a,b]	16	17.19 (12.95)[a]	16	7.00 (4.93)	7	5.67(5.00)	15
Separated/Divorced	9.4(18)	16.61 (16.75)	18	9.06(7.75)[a]	18	8.33 (6.31)[a]	18	11.83 (12.81)[a,b]	18	^	^	5.93(4.38)	14
Married/Common-Law	80.1(153)	14.76 (13.18)	148	5.42(4.48)[b]	151	5.31 (4.39)[b]	152	8.78(8.08)[b]	152	5.96 (3.25)	25	6.44(3.97)	142
Other	^	^	^	^	^	^	^	^	^	^	^	^	^
Test Statistic[1]	–	$F(3,182) = 1.24$	–	$F(3,185) = 4.40$**	–	$F(3,186) = 3.80$*	–	$F(3,186) = 4.89$**	–	$F(2,33) = 2.65$	–	$F(3,171) = 0.64$	–
Effect Size (η_p^2)	–	0.020	–	0.067	–	0.058	–	0.073	–	0.139	–	0.011	–
Province of Residence													
Saskatchewan	90.1(172)	15.82 (14.00)	167	6.04(5.20)	170	5.85(4.87)	171	10.08 (9.53)	171	6.88 (3.69)	32	6.40(4.16)	158
Manitoba	^	^	^	^	^	^	^	^	^	^	^	^	^
Ontario	7.3(14)	13.00 (10.63)	14	5.93(4.68)	14	4.86(3.11)	14	8.57(7.77)	14	^	^	4.25(2.34)	12
Other	^	^	^	^	^	^	^	^	^	^	–	–	^	^
Test Statistic[1]	–	$F(3,182) = 0.37$	–	$F(3,185) = 1.46$	–	$F(3,186) = 0.84$	–	$F(3,186) = 0.22$	–	^	–	$F(3,171) = 1.47$	–
Effect Size (η_p^2)	–	0.006	–	0.023	–	0.013	–	0.004	–	^	–	0.025	–
Education													

(continued on next page)

Table 1 (*continued*)

	Full Survey Sample[2] % (n)	Posttraumatic Stress Disorder (PCL-5) Mean (SD)	n	Major Depressive Disorder (PHQ-9) Mean (SD)	n	Generalized Anxiety Disorder (GAD-7) Mean (SD)	n	Social Anxiety Disorder (SIPS) Mean (SD)	n	Panic Disorder (PDSS-SR)[3] Mean (SD)	n	Alcohol Use Disorder (AUDIT) Mean (SD)	n
High school graduate or less	7.3(14)	13.14 (11.77)[a,b]	14	7.00 (5.84)[a,b]	14	5.79(5.35)	14	11.64 (13.50)	14	^	^	5.15(3.18)[a,b]	13
Some post-secondary school	59.7(114)	17.85 (14.17)[a]	111	6.77(5.49)[a]	112	6.35(5.07)	113	10.47 (9.66)	113	6.23 (3.72)	26	6.97(4.54)[a]	104
University degree/4-year college or higher	25.7(49)	9.94 (10.57)[b]	47	3.65(3.36)[b]	49	4.45(3.88)	49	8.06(7.09)	49	5.80 (3.35)	5	4.94(2.67)[b]	47
Test Statistic[1]	–	$F_{(2,169)}=6.22^{**}$	–	$F_{(2,172)}=6.90^{**}$	–	$F_{(2,173)}=2.70$	–	$F_{(2,173)}=1.39$	–	$F_{(2,30)}=0.60$	–	$F_{(2,161)}=4.71^{**}$	–
Effect Size (η_p^2)	–	0.069	–	0.074	–	0.030	–	0.016	–	0.038	–	0.055	–
Sectors													
Fire	24.6(47)	15.74 (14.91)	46	6.07 (5.96)[a,b]	46	6.15(5.47)	47	8.38 (8.46)[a,b]	47	^	^	8.20 (4.43)[a]	44
Police	26.2(50)	11.19 (11.01)	47	3.50(2.78)[b]	50	4.06(3.80)	50	6.34(6.96)[b]	50	^	^	6.35 (3.69)[a,b]	48
Paramedics	26.2(50)	17.29 (14.10)	49	7.22(5.30)[a]	49	6.47(4.41)	49	12.33 (10.78)[a]	49	5.71 (3.73)	14	5.68 (4.48)[b]	44
Communications	23.0(44)	18.32 (14.10)	44	7.77(5.29)[a]	44	6.91(5.24)	44	12.89 (9.35)[a]	44	7.64 (3.82)	14	4.67 (2.55)[b]	39
Test Statistic[1]	–	$F_{(3,182)}=2.48$	–	$F_{(3,185)}=7.13^{***}$	–	$F_{(3,186)}=3.44$	–	$F_{(3,186)}=5.88^{***}$	–	$F_{(3,32)}=1.12$	–	$F_{(3,171)}=6.17^{***}$	–
Effect Size (η_p^2)	–	0.039	–	0.104	–	0.053	–	0.087	–	0.095	–	0.098	–
Years of Service													
Less than 4 years	4.7(9)	11.88 (10.19)	8	5.67 (4.00)[a,b]	9	6.89(5.47)	9	8.89(5.67)	9	^	^	5.89(2.71)	9
4 to 9 years	26.2(50)	12.96 (13.37)	47	4.73(4.68)[a]	49	5.34(4.75)	50	10.50 (11.11)	50	6.67 (3.08)	9	6.02(4.63)	47
10 to 15 years	26.7(51)	13.68 (13.08)	50	5.20 (4.41)[a,b]	50	5.36(4.49)	50	9.90(9.53)	50	5.80 (3.11)	5	7.28(3.76)	47
More than 15 years	15.2(29)	20.21 (16.82)	28	8.39(6.54)[b]	28	6.25(5.97)	28	6.21(5.81)	28	^	^	6.38(4.10)	26
Test Statistic[1]	–	$F_{(3,129)}=1.91$	–	$F_{(3,132)}=3.50^{*}$	–	$F_{(3,133)}=0.44$	–	$F_{(3,133)}=1.36$	–	$F_{(3,15)}=0.82$	–	$F_{(3,125)}=0.84$	–
Effect Size (η_p^2)	–	0.043	–	0.074	–	0.010	–	0.030	–	0.140	–	0.020	–

Lettered superscripts within each column category indicate statistically significant differences between category groups with different letters on outcome at $p \leq .05$.
^Sample size between 1 and 5, so data not presented. "-" No data available.

$^{*}p < .05$, $^{**}p < .01$, $^{***}p < .001$ – Statistically significantly different; Holm-Bonferroni adjustment was applied to alpha level to control type I error in multiple comparisons.

AUDIT = Alcohol Use Disorders Identification Test; GAD-7 = Generalized Anxiety Disorder Scale; PCL-5 = Posttraumatic Stress Disorder Checklist for DSM-5; PDSS-SR = Panic Disorder Symptoms Severity Scale, Self-Report; PHQ-9 = Patient Health Questionnaire; SIPS = Social Interaction Phobia Scale.

[1] *Note.* The test results comparing scores on mental disorder screening measures across categorical participant demographics; t(degrees of freedom) = test statistic; F (numerator degrees of freedom, denominator degrees of freedom) = test statistic.

[2] Total percentages may not sum to 100 and ns may not sum to 191 due to non-response or responding "other."

[3] A limited number of participants reported values for PD (PDSS-SR) because selecting "No" for "ever having experience with panic attacks" or "having panic attack in the last 7 days", meant participants were not presented the rest of the PDSS-SR questions.

training completers (n = 119), pre-training, post-training, and 1-year follow-up for 1-year follow-up completers (n = 56). As per the standard PDSS-SR administration instructions [66] participants who did report experiencing a panic attack ("ever" or "in the past seven days") were not presented with the subsequent symptom-specific items and therefore only a small number of participants completed the PDSS-SR symptom items at pre-training (*n* = 36), post-training (*n* = 20), at 1-year follow-up (*n* = 0) resulting in a PD symptoms score and positive screen.

Participants were grouped into sociodemographic categories (i.e., sex, gender, age, marital status, ethnicity, province of residence, education, PSP sector, years of service) for descriptive statistics. At pre-training (n = 191), participants who reported as gender diverse (i.e., Two Spirit, non-binary, other) were collapsed into the gender diverse category due to samples of <5. At post-training (n = 119) and 1-year follow-up (n = 56), no participants reported being gender diverse, precluding the gender category from analyses.

Independent sample *t*-tests, paired sample t-test, and Analysis of Variance (ANOVA) *F*-tests were used appropriately to examine: 1) differences in mental health disorder symptoms across sociodemographic categories; 2) changes in mental health disorder symptoms between pre-training and post-training for post-training completers (n = 119) and between pre-training, post-training, and 1-year follow-up for 1-year follow up completers (n-56); 3) differences in mental health disorder symptom at pre-training (full sample), post-training for post-training completers, and 1-year follow-up for 1-year follow up completers compared to a previously published large and diverse Canadian PSP sample from 2017 [4]; and differences in pre-training mental health disorders symptoms between post-training completers and post-training non-completers (e.g., participants who did not complete the full assessment at post-training) and 1-year follow-up completers and 1-year follow-up non-completers (e.g., participants who did not complete the full assessment at 1-year follow-up).

Prevalence proportions of positive screens for mental disorders at pre- and post-training for post-training completers and at pre-training, post-training, and 1-year follow-up for 1-year follow up completers were compared using a series of McNemar tests. McNemar-Bowker tests were performed to compare proportions for the repeated measurements across all three assessment intervals. Logistic regressions were conducted to examine associations between sex and positive screens for

mental health disorders based on self-report questionnaires and clinical diagnostic interviews. Odds ratios and their 95 % confidence intervals (CIs) are reported.

Holm-Bonferroni adjustments were adopted, $\alpha < 0.05$ (two-sided tests) for all analyses to control the familywise error rate. Effect size estimates for comparisons used Cohen's d values (i.e., small, $d = 0.20$; medium, $d = 0.50$; large, $d = 0.80$) or partial eta squared (i.e., small, $\eta_p^2 = .01$; medium, $\eta_p^2 = 0.06$; large, $\eta_p^2 = 0.14$) [75], as appropriate. Missing data was addressed using listwise deletion for all analyses, although there were no cases deleted due to partially missing data at any assessment interval (i.e., all cases lost were due to attrition and therefore no data was obtained).

3. Results

Table 1 presents the pre-training mental health disorders symptoms for the full sample ($n = 191$) across sociodemographic categories. There were statistically significant differences in symptom scores for: all mental health disorders except PD based on sex ($d = 0.39$ to 0.54; all $ps < 0.01$) and gender ($d = 0.04$ to 0.54; all $ps < 0.05$); MDD ($\eta_p^2 = 0.07$; $p < .01$), GAD ($\eta_p^2 = 0.06$; $p < .05$), and SAD ($\eta_p^2 = 0.07$; $p < .01$) based on marital status; PTSD ($\eta_p^2 = 0.07$; $p < .01$), MDD ($\eta_p^2 = 0.07$; $p < .01$), and AUD ($\eta_p^2 = 0.06$; $p < .01$) based on education; MDD ($\eta_p^2 = 0.10$), SAD ($\eta_p^2 = 0.09$), and AUD ($\eta_p^2 = 0.10$) based on PSP sector (all $ps < 0.001$); and MDD ($\eta_p^2 = 0.07$) based on years of experience.

Table 2 also presents pre-training and post-training mental health disorder symptom scores across sociodemographic categories for post-training completers ($n = 119$). At pre-training, post-training completers reported statistically significant differences in symptom scores for AUD based on sex ($d = 0.61$; $p < .01$) and gender ($d = 0.61$; $p < .01$); SAD based on age ($\eta_p^2 = 0.10$; $p < .05$) and marital status ($\eta_p^2 = 0.11$; $p < .01$), MDD based on education ($\eta_p^2 = 0.08$; $p < .05$) and years of service ($\eta_p^2 = 0.10$; $p < .05$), MDD ($\eta_p^2 = 0.07$; $p < .05$), SAD ($\eta_p^2 = 0.12$; $p < .01$), AUD ($\eta_p^2 = 0.15$; $p < .001$) based on PSP sector, There were no statistically significant differences in mental health disorder symptoms at pre-training for post-training completers based on ethnicity and province of residence. At post-training, post-training completers reported statistically significant differences in MDD ($\eta_p^2 = 0.08$; $p < .05$) symptoms based on marital status. There were no statistically significant differences in mental health disorder symptoms at post-training for post-training completers based on sex, gender, ethnicity, province of residence, education, sector, and years of service.

Table 3 presents mental health disorder symptom scores across sociodemographic categories for 1-year follow-up completers ($n = 56$). At pre-training, 1-year follow-up completers reported statistically significant differences in symptom scores for AUD based on sex ($d = 0.35$; $p < .01$) and gender ($d = 0.35$; $p < .01$), SAD ($\eta_p^2 = 0.22$; $p < .01$) based on marital status, PTSD, MDD, GAD, and SAD based on education ($\eta_p^2 = 0.17$ to 0.26; all $ps < 0.05$), SAD ($\eta_p^2 = 0.15$; $p < .05$) and AUD ($\eta_p^2 = 0.24$; $p < .01$) based on PSP sector. At post-training, 1-year follow-up completers reported statistically significant differences in symptom scores for AUD based on sex ($d = 0.12$; $p < .05$), gender ($d = 0.12$; $p < .05$), SAD based on marital status ($\eta_p^2 = 0.23$; $p < .001$) and education ($\eta_p^2 = 0.14$; $p < .05$), MDD ($\eta_p^2 = 0.15$; $p < .05$) based on PSP sector ($p < .05$). At 1-year follow-up, 1-year follow-up completers reported statistically significant differences in symptoms scores for AUD based on sex ($d = 0.78$; $p < .05$), gender ($d = 0.78$ $p < .05$), and SAD based on marital status ($\eta_p^2 = 0.26$; $p < .001$), and education ($\eta_p^2 = 0.13$; $p < .05$).

Table 4 presents mean mental health disorder symptoms for pre-training (full sample), pre- and post-training for post-training completers ($n = 119$), and pre-, post-training, and 1-year follow-up for 1 year follow up completers ($n = 56$) and provides changes in mean mental

health disorder symptom scores from pre- and post-training for post-training completers, and pre-, post-training, and 1-year follow-up for 1 year follow up completers. At post-training, post-training completers reported statistically significantly lower PTSD ($d = 0.29$, $p < .01$), MDD ($d = 0.37$, $p < .001$), GAD ($d = 0.36$, $p < .001$), and SAD ($d = 0.35$, $p < .001$) symptoms for post-training completers. Among 1-year follow-up completers, GAD ($\eta_p^2 = 0.06$, $p < .05$) and SAD symptoms statistically significantly decreased from pre-training to 1-year follow-up ($\eta_p^2 = 0.15$, $p < .001$), and AUD symptom scores statistically significantly decreased from pre-training to 1-year follow-up ($\eta_p^2 = 0.08$, $p < .05$).

Differences in changes in mean mental health disorder symptom scores from pre- and post-training for post-training completers were also examined within PSP sectors. Firefighters reported statistically significant reductions in symptom scores for PTSD (t[35] = 2.13, $d = 0.40$, $p < .05$), MDD (t[35] = 3.35, $d = 0.56$, $p < .01$), GAD (t[36] = 4.30, $d = 0.71$, p < .001), SAD (t[36] = 2.43, $d = 0.40$, $p < .05$), and AUD (t[34] = 3.12, $d = 0.54$, $p < .01$). Police reported statistically significant reductions in symptoms scores for PTSD (t[31] = 2.04, $d = 0.30$, $p < .05$), MDD (t[34] = 2.04, $d = 0.28$, $p < .05$), GAD (t[34] = 2.06, $d = 0.33$, $p < .05$), SAD (t[34] = 2.30, $d = 0.38$, $p < .05$), and AUD (t[32] = 2.09, $d = 0.34$, $p < .05$). Paramedics reported the statistically significant reductions in symptoms scores for MDD (t[30] = 3.05, $d = 0.56$, $p < .01$) and GAD (t[30] = 3.02, $d = 0.20$, $p < .05$). Communicators reported the statistically significant reductions in symptom scores for PTSD (t[15] = 2.14, $d = 0.14$, $p < .05$) and GAD (t[15] = 2.13, $d = 0.05$, $p < .05$). The largest effect sizes were observed for firefighters, while the smallest effects were observed for communications. Due to small sample size at 1-year follow-up, meaningful statistical comparisons between sectors could not be conducted.

Compared to a previously published large and diverse Canadian PSP sample from 2017 [4], participants in the current study at pre-training ($n = 191$) reported statistically significantly lower symptom scores for PTSD ($d = 0.34$, $p < .05$) and PD ($d = 1.01$, $p < .01$), but not MDD, GAD, SAD, or AUD (all $ps > 0.05$). At post-training, post-training completers ($n = 119$) reported statistically significantly lower symptoms scores for PTSD ($d = 0.39$, $p < .05$) and PD ($d = 1.26$, $p < .01$), but not MDD, GAD, SAD, or AUD (all $ps > 0.05$). At 1-year follow-up, 1-year follow-up completers ($n = 56$) reported statistically significantly lower symptom scores for PTSD ($d = 0.72$, $p < .05$), MDD ($d = 0.50$, $p < .05$), GAD ($d = 0.41$, $p < .05$), and SAD ($d = 0.32$, $p < .05$) symptoms, but not AUD ($p > .05$).

There were no statistically significant differences in pre-training mental health disorder symptom scores between post-training completers and post-training non-completers or 1-year follow-up completers and 1-year follow-up non-completers.

Table 5 presents the prevalence of positive screens for current mental disorders at pre-training for the full sample ($n = 191$) based on self-reported symptoms and clinical diagnostic interviews. Table 5 also presents the prevalence of positive screens for current mental disorders at pre- and post-training and examine changes in prevalence from pre- and post-training among post-training completers ($n = 119$) based on self-reported symptoms, and clinical diagnostic interviews. Among post-training completers, from pre- to post-training there were statistically significant reductions in the prevalence of self-reported positive screens for MDD and any mood disorder (all $ps < 0.05$). There were also decreases (non-statistically significant) in the prevalence of self-reported positive screens for PTSD (11.8 % [$n = 13$] to 4.5 % [$n = 5$]), MDD (25.4 % [$n = 30$] to 16.9 % [$n = 20$]), GAD (19.3 % [$n = 23$] to 11.8 % [$n = 14$]), SAD (14.3 % [$n = 17$] to 10.1 % [$n = 12$]), and PD (9.2 % [$n = 11$] to 4.2 % [$n = 5$]); while, AUD increased from pre- to post-training ($n < 5$ to 4.4 % [$n = 5$]).

Among post-training completers, from pre- to post-training, the prevalence of clinical diagnostic interview positive screens statistically significantly decreased for AUD and Any disorder (all ps < 0.01). Positive screens for PTSD (5.8 % [$n = 7$] to 0 % [$n = 0$]), MDD (5.8 % [$n = 7$]

Table 2
Pre- and Post-training Mental Health Disorder Symptom Scores Across Sociodemographic Characteristics for Post-Training Completers ($n = 119$).

	Full Survey Sample[3]	Posttraumatic Stress Disorder (PCL-5)			Major Depressive Disorder (PHQ-9)			Generalized Anxiety Disorder (GAD-7)			Social Anxiety Disorder (SIPS)			Panic Disorder (PDSS-SR)[4]			Alcohol Use Disorder (AUDIT)		
		Pre-Training	Post-Training		Pre-Training	Post-Training		Pre-Training	Post-Training		Pre-Training	Post-Training		Pre-Training	Post-Training		Pre-Training	Post-Training	
	% (n)	Mean (SD)	Mean (SD)	n	Mean (SD)	Mean (SD)	n	Mean (SD)	Mean (SD)	n	Mean (SD)	Mean (SD)	n	Mean (SD)	Mean (SD)	n	Mean (SD)	Mean (SD)	n
Total Sample	100(119)	14.91 (13.61)	11.25 (11.13)	115	5.95 (5.29)	4.53 (4.49)	118	5.71 (4.80)	4.40 (4.12)	119	9.76 (10.12)	7.75 (9.81)	119	7.80 (3.93)	5.92 (3.45)	20	6.15 (4.38)	5.52 (4.36)	109
Sex																			
Male	66.4(79)	13.83 (13.22)	10.61 (11.84)	75	5.55 (5.35)	4.08 (4.36)	78	5.41 (4.87)	4.00 (3.72)	79	8.92 (9.81)	6.72 (8.88)	79	7.43 (2.70)	^	^	7.00 (4.40)[a]	5.90 (4.54)	73
Female	33.6(40)	16.95 (14.26)	12.53 (9.59)	40	6.73 (5.15)	5.44 (4.66)	40	6.33 (4.65)	5.20 (4.76)	40	11.43 (10.64)	9.78 (11.27)	40	8.00 (4.55)	5.33 (3.12)	13	4.42 (3.83)[b]	4.66 (3.85)	36
Test Statistic[2]	–	t(113) = −1.17	t(108) = 0.39	–	t(116) = −1.14	t(115) = −0.31	–	t(117) = −0.99	t(117) = −0.40	–	t(117) = −1.28	t(117) = −0.49	–	t(18) = −0.30	^	–	t(107) = 3.01**	t(100) = −1.42	–
Effect Size (Cohen's d)	–	0.230	0.077	–	0.222	0.060	–	0.192	0.077	–	0.248	0.094	–	0.142	^	–	0.612	0.305	–
Gender																			
Man	66.4(79)	13.83 (13.22)	10.61 (11.84)	75	5.55 (5.35)	4.08 (4.36)	78	5.41 (4.87)	4.00 (3.72)	79	8.92 (9.81)	6.72 (8.88)	79	7.43 (2.70)	^	^	7.00 (4.40)[a]	5.90 (4.54)	73
Woman	33.6(40)	16.95 (14.26)	12.53 (9.59)	40	6.73 (5.15)	5.44 (4.66)	40	6.33 (4.65)	5.20 (4.76)	40	11.43 (10.64)	9.78 (11.27)	40	8.00 (4.55)	5.33 (3.12)	13	4.42 (3.83)[b]	4.66 (3.85)	36
Gender Diverse (i.e., Two-Spirit, Non-Binary, Other)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Test Statistic[2]	–	t(113) = −1.17	t(108) = 0.39	–	t(116) = −1.14	t(115) = −0.31	–	t(117) = −0.99	t(117) = −0.40	–	t(117) = −1.28	t(117) = −0.49	–	t(18) = −0.30	^	–	t(107) = 3.01**	t(100) = −1.42	–
Effect Size (Cohen's d)	–	0.230	0.077	–	0.222	0.060	–	0.192	0.077	–	0.248	0.094	–	0.142	^	–	0.612	0.305	–
Age																			
19–29	4.2(5)	^	^	^	7.20 (6.61)	5.83 (6.55)	5	6.60 (5.37)	4.83 (5.98)	5	21.20 (18.46)[a]	10.83 (17.58)	5	^	–	^	6.00 (6.25)	7.00 (8.97)	5
30–39	39.5(47)	15.52 (13.53)	9.45 (10.78)	44	5.80 (5.30)	4.19 (4.61)	46	6.30 (4.78)	3.92 (3.41)	47	11.68 (10.66)[a,b]	9.75 (11.42)	47	9.20 (2.86)	6.60 (4.51)	10	6.09 (4.39)	5.80 (4.25)	43
40–49	32.8(39)	15.00 (14.64)	11.73 (10.57)	39	6.64 (5.90)	4.55 (4.06)	39	6.33 (5.33)	5.07 (4.21)	39	8.03 (8.16)[b]	5.39 (5.83)	39	7.67 (4.46)	^	^	6.94 (4.60)	5.69 (4.25)	36
50–59	14.3(17)	15.71 (14.20)	13.12 (11.89)	17	5.24 (4.42)	4.47 (4.56)	17	3.24 (2.59)	3.35 (3.95)	17	6.88 (8.18)[b]	5.41 (6.51)	17	^	–	^	4.40 (3.40)	3.73 (2.58)	15
60 and older	^	^	^	^	^	^	^	^	^	^	^	^	^	–	–	–	^	–	^
Test Statistic[2]	–	F(4,101) = 0.01	F(4,104) = 1.181	–	F(4,104) = 0.32	F(4,111) = 0.65	–	F(4,105) = 1.54	F(4,113) = 1.25	–	F(4,105) = 2.78*	F(4,113) = 1.62	–	F(3,15) = 1.04	^	–	F(4,96) = 1.55	F(3,98) = 2.29	–
Effect Size (η_p^2)	–	0.001	0.043	–	0.012	0.023	–	0.055	0.042	–	0.096	0.054	–	0.172	^	–	0.061	0.065	–
Ethnicity																			
Asian	^	^	^	^	^	^	^	^	^	^	^	^	^	^	^	^	^	^	^
Black	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
First Nations/ Inuit/ Metis	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Hispanic	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
South Asian	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
White/Caucasian	89.9 (107)	15.24 (13.64)	11.34 (11.21)	107	6.03 (5.34)	4.57 (4.53)	107	5.81 (4.82)	4.44 (4.14)	107	9.88 (10.20)	7.89 (9.89)	107	7.80 (3.93)	5.92 (3.45)	20	6.22 (4.40)	5.58 (4.40)	107
Other	^	^	^	^	^	^	^	^	^	^	^	^	–	–	–	^	^	^	^

Table 2 (*continued*)

	Full Survey Sample[3]	Posttraumatic Stress Disorder (PCL-5)			Major Depressive Disorder (PHQ-9)			Generalized Anxiety Disorder (GAD-7)			Social Anxiety Disorder (SIPS)			Panic Disorder (PDSS-SR)[4]			Alcohol Use Disorder (AUDIT)		
		Pre-Training	Post-Training		Pre-Training	Post-Training		Pre-Training	Post-Training		Pre-Training	Post-Training		Pre-Training	Post-Training		Pre-Training	Post-Training	
	% (n)	Mean (SD)	Mean (SD)	n	Mean (SD)	Mean (SD)	n	Mean (SD)	Mean (SD)	n	Mean (SD)	Mean (SD)	n	Mean (SD)	Mean (SD)	n	Mean (SD)	Mean (SD)	n
Test Statistic[2]	–	–	^	–	–	^	–	–	^	–	–	^	–	–	^	–	–	^	–
Effect Size (η_p^2)	–	–	^	–	–	^	–	–	^	–	–	^	–	–	^	–	–	^	–
Marital Status																			
Single	5.9(7)	21.00 (13.14)	21.43 (16.24)	7	9.43 (9.14)	10.14 (7.58)a	7	6.29 (5.41)	6.29 (6.21)	7	21.71 (13.71)a	21.71 (14.22)	7	^	^	^	6.67 (5.50)	7.50 (8.09)	6
Separated/Divorced	10.1(12)	9.67 (10.18)	11.36 (10.49)	12	7.25 (7.21)	5.83 (5.59)b	12	7.17 (6.13)	6.00 (4.97)	12	11.83 (15.01)a,b	6.92 (12.44)	12	^	^	^	4.60 (3.98)	4.40 (3.10)	10
Married/Common-Law	82.4(98)	15.01 (14.00)	10.09 (10.23)	94	5.55 (4.64)	3.84 (3.69)b	97	5.51 (4.64)	4.04 (3.83)	98	8.52 (8.61)b	6.84 (8.48)	98	6.79 (3.60)	4.38 (2.92)	14	6.37 (4.36)	5.57 (4.19)	91
Other	^	^	^	^	^	^	^	^	^	^	^	^	–	–	–	^	^	^	
Test Statistic[2]	–	F(3,111) = 1.18	F(3,106) = 1.87	–	F(3,114) = 1.46	F(3,113) = 3.17*	–	F(3,115) = 0.47	F(3,115) = 0.64	–	F(3,115) = 4.59**	F(3,115) = 2.14	–	^	^	–	F(3,105) = 1.13	F(3,98) = 2.17	–
Effect Size (η_p^2)	–	0.031	0.050	–	0.037	0.078	–	0.012	0.016	–	0.107	0.053	–	^	^	–	0.031	0.062	–
Province of Residence																			
Saskatchewan	92.4 (110)	15.38 (13.73)	11.44 (11.14)	106	6.06 (5.29)	4.58 (4.51)	109	5.85 (4.90)	4.45 (4.13)	110	9.78 (10.23)	7.85 (9.86)	110	8.06 (3.89)	5.92 (3.45)	18	6.22 (4.43)	5.48 (4.40)	101
Manitoba	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Ontario	5.9(7)	11.71 (12.09)	0.50 (0.71)	7	5.43 (5.88)	1.50 (2.12)	7	4.00 (2.89)	1.50 (0.71)	7	11.00 (9.98)	1.50 (2.12)	7	^	^	^	3.83 (2.79)	7.50 (0.71)	6
Other	^	^	^	^	^	^	^	^	^	^	^	^	^	^	^	^	^	^	
Test Statistic[2]	–	F(2,112) = 1.23	F(2,107) = 0.45	–	F(2,115) = 0.76	F(2,114) = 1.22	–	F(2,116) = 0.62	F(2,116) = 1.42	–	F(2,112) = 0.77	F(2,116) = 0.06	–	^	^	–	F(2,106) = 1.45	F(2,66) =0.28	–
Effect Size (η_p^2)	–	0.022	0.008	–	0.013	0.021	–	0.011	0.024	–	0.011	0.001	–	^	^	–	0.027	0.006	–
Education																			
High school graduate or less	5.9(7)	12.86 (14.98)	10.71 (11.31)	7	7.00 (6.00)a,b	4.71 (5.85)	7	7.00 (5.54)	4.43 (4.65)	7	14.00 (15.62)	11.71 (15.02)	7	^	^	^	5.43 (3.46)	5.14 (5.46)	7
Some post-secondary school	58.0(69)	16.85 (13.63)	12.88 (12.18)	67	6.68 (5.69)a	5.07 (4.62)	68	5.97 (4.96)	4.49 (3.82)	69	10.28 (10.71)	8.13 (10.16)	69	7.92 (4.05)	6.00 (3.83)	13	6.90 (5.03)	5.90 (4.84)	62
University degree/ 4-year college or higher	26.9(32)	9.83 (11.14)	7.60 (8.38)	30	3.50 (3.57)b	3.13 (3.46)	32	4.59 (4.13)	3.66 (4.08)	32	7.63 (7.68)	5.19 (6.98)	32	^	^	^	4.68 (2.65)	4.59 (2.92)	31
Test Statistic[2]	–	F(2,101) = 3.06	F(2,97) = 0.51	–	F(2,102) = 4.33*	F(2,103) = 1.35	–	F(2,105) = 1.22	F(2,105) = 0.71	–	F(2,105) = 1.37	F(2,105) = 0.03	–	^	^	–	F(2,97) = 2.82	F(2,91) = 0.06	–
Effect Size (η_p^2)	–	0.057	0.010	–	0.077	0.026	–	0.023	0.013	–	0.025	0.001	–	^	^	–	0.055	0.062	–
Sectors																			
Fire	31.1(37)	14.97 (14.21)	10.50 (13.30)	36	6.61 (5.94)a,b	4.27 (4.25)	36	6.35 (5.77)	3.86 (3.93)	37	8.41 (9.04)a,b	6.27 (6.89)	37	^	^	^	8.51 (4.71)a	7.30 (4.58)	35
Police	29.4(35)	12.47 (12.58)	8.16 (6.96)	32	3.80 (2.91)a	2.97 (3.08)	35	4.51 (3.58)	3.63 (3.92)	35	5.80 (6.77)a	4.23 (6.85)	35	^	–	^	5.48 (3.13)a,b	4.61 (3.24)	33
Paramedics	26.1(31)	14.39 (12.81)	12.30 (11.72)	31	6.77 (5.78)a,b	5.03 (5.11)	31	5.52 (4.22)	4.55 (3.59)	31	13.35 (11.99)a,b	10.42 (12.65)	31	7.86 (2.08)	5.43 (4.20)	7	5.08 (4.86)b	5.50 (5.49)	26
Communications	13.4(16)	20.69 (15.28)	17.13 (9.73)	16	7.56 (5.83)b	7.56 (5.07)	16	7.25 (5.43)	7.06 (5.09)	16	14.63 (11.18)b	13.69 (11.39)	16	9.71 (3.68)	7.33 (1.53)	7	3.93 (2.63)b	3.50 (2.35)	15

Table 2 (*continued*)

	Full Survey Sample[3]	Posttraumatic Stress Disorder (PCL-5)			Major Depressive Disorder (PHQ-9)			Generalized Anxiety Disorder (GAD-7)			Social Anxiety Disorder (SIPS)			Panic Disorder (PDSS-SR)[4]			Alcohol Use Disorder (AUDIT)		
		Pre-Training	Post-Training		Pre-Training	Post-Training		Pre-Training	Post-Training		Pre-Training	Post-Training		Pre-Training	Post-Training		Pre-Training	Post-Training	
	% (n)	Mean (SD)	Mean (SD)	n	Mean (SD)	Mean (SD)	n	Mean (SD)	Mean (SD)	n	Mean (SD)	Mean (SD)	n	Mean (SD)	Mean (SD)	n	Mean (SD)	Mean (SD)	n
Test Statistic[2]	–	$F(3,111)$ = 1.33	$F(3,106)$ = 0.11	–	$F(3,114)$ = 3.01*	$F(3,113)$ = 1.78	–	$F(3,115)$ = 1.53	$F(3,115)$ = 2.12	–	$F(3,115)$ = 5.01**	$F(3,115)$ = 0.51	–	$F(3,16)$ = 1.92	^	–	$F(3,105)$ = 6.26***	$F(3,98)$ = 1.02	–
Effect Size (η_p^2)	–	0.035	0.003	–	0.073	0.045	–	0.038	0.052	–	0.116	0.013	–	0.265	^	–	0.152	0.030	–
Years of Service																			
Less than 4 years	4.2(5)	^	5.57 (9.96)	^	2.60 (2.07)a	1.00 (1.53)	5	4.80 (2.17)	2.14 (2.73)	5	6.80 (6.42)	5.14 (6.04)	5	–	–		6.60 (2.70)	4.83 (2.23)	5
4 to 9 years	26.1(31)	11.43 (10.97)	10.36 (11.80)	28	4.50 (5.04)a,b	4.54 (5.14)	30	5.39 (4.77)	4.69 (4.58)	31	9.39 (12.23)	9.33 (12.65)	31	6.33 (3.56)	5.00 (3.24)	6	5.93 (5.17)	5.15 (5.03)	30
10 to 15 years	26.1(31)	14.45 (14.62)	10.08 (8.75)	31	5.58 (4.60)a,b	4.05 (3.44)	31	5.55 (4.40)	3.80 (3.41)	31	9.68 (9.92)	7.05 (8.37)	31	^	–		7.29 (3.78)	6.44 (4.74)	28
More than 15 years	18.5(22)	18.45 (17.02)	15.69 (12.80)	22	8.36 (6.23)b	5.94 (5.14)	22	6.36 (6.22)	5.26 (4.64)	22	6.64 (6.12)	7.16 (8.27)	22	^	^		6.29 (4.26)	5.19 (3.56)	21
Test Statistic[2]	–	$F(3,81)$ = 1.14	$F(3,101)$ = 1.16	–	$F(3,84)$ = 3.15*	$F(3,108)$ = 1.91	–	$F(3,85)$ = 0.23	$F(3,110)$ = 1.55	–	$F(3,85)$ = 0.53	$F(3,110)$ = 0.83	–	^	^	–	$F(3,80)$ = 0.48	$F(3,93)$ = 0.34	–
Effect Size (η_p^2)	–	0.040	0.034	–	0.101	0.050	–	0.008	0.040	–	0.018	0.022	–	^	^	–	0.018	0.020	–

Note. [1]Post-training completers = participants who completed the full assessment at pre-training and post-training.

Lettered superscripts within each column category indicate statistically significant differences between category groups with different letters on outcome at $p \leq .05$.

^Sample size between 1 and 5, so data not presented. "-" No data available.*$p < .05$, **$p < .01$, ***$p < .001$ – Statistically significantly different; Holm-Bonferroni adjustment was applied to alpha level to control type I error in multiple comparisons.

AUDIT = Alcohol Use Disorders Identification Test; GAD-7 = Generalized Anxiety Disorder Scale; PCL-5 = Posttraumatic Stress Disorder Checklist for DSM-5; PDSS-SR = Panic Disorder Symptoms Severity Scale, Self-Report; PHQ-9 = Patient Health Questionnaire; SIPS = Social Interaction Phobia Scale.

[2] The test results comparing scores on mental disorder screening measures across categorical participant demographics; t(degrees of freedom) = test statistic; F(numerator degrees of freedom, denominator degrees of freedom) = test statistic.

[3] Total percentages may not sum to 100 and *n*s may not sum to 119 due to non-response or responding "other."

[4] A limited number of participants reported values for PD (PDSS-SR) because selecting "No" for "ever having experience with panic attacks" or "having panic attack in the last 7 days", meant participants were not presented the rest of the PDSS-SR questions.

Table 3
Pre- and Post-Training, and 1-year Follow-up Mental Health Disorder Symptom Scores across Sociodemographic Characteristics Across for 1-Year Follow-Up Completers [1] ($n = 56$).

	Full Survey Sample[2]	Posttraumatic Stress Disorder (PCL-5)				Major Depressive Disorder (PHQ-9)				Generalized Anxiety Disorder (GAD-7)				Social Anxiety Disorder (SIPS)				Panic Disorder (PDSS-SR)[3][4]				Alcohol Use Disorder (AUDIT)			
		Pre-Training	Post-Training	1-Year Follow-Up		Pre-Training	Post-Training	1-Year Follow-Up		Pre-Training	Post-Training	1-Year Follow-Up		Pre-Training	Post-Training	1-Year Follow-Up		Pre-Training	Post-Training	1-Year Follow-Up		Pre-Training	Post-Training	1-Year Follow-Up	
	% (n)	Mean (SD)			n	Mean (SD)			n	Mean (SD)			n	Mean (SD)			n	Mean (SD)			n	Mean (SD)			n
Total Sample	100(56)	11.67 (10.51)	11.18 (11.25)	9.82 (12.25)	49	5.06 (5.01)	4.45 (4.90)	3.91 (4.51)	53	4.57 (4.18)	3.78 (3.81)	3.35 (4.29)	54	9.80 (10.35)	8.09 (10.74)	6.95 (9.57)	55	–	–	–	–	6.30 (4.91)	5.52 (4.86)	5.30 (5.66)	46
Sex																									
Male	73.2 (41)	11.74 (10.45)	10.88 (11.96)	10.29 (13.73)	34	5.18 (5.13)	4.26 (5.01)	4.11 (5.03)	38	4.77 (4.13)	3.72 (3.72)	3.79 (4.87)	39	9.65 (9.96)	8.03 (10.48)	7.00 (9.24)	40	–	–	–	–	7.61 (5.18)[a]	6.55 (5.29)[a]	6.48 (6.25)[a]	33
Female	26.8 (15)	11.53 (11.12)	11.87 (9.80)	8.73 (8.29)	15	4.73 (4.85)	4.93 (4.74)	3.40 (2.85)	15	4.07 (4.42)	3.93 (4.17)	2.20 (1.86)	15	10.20 (11.68)	8.27 (11.77)	6.80 (10.72)	15	–	–	–	–	3.00 (1.53)[b]	2.92 (1.98)[b]	2.31 (1.60)[b]	13
Test Statistic [1]		t(47) = 0.06	t(47) = −0.28	t(47) = 0.41		t(51) = 0.29	t(51) = −0.45	t(51) = 0.51		t(52) = 0.55	t(52) = −0.18	t(52) = 1.23		t(53) = −0.17	t(53) = −0.07	t(53) = 0.07		–	–	–		t(44) = 3.14**	t(44) = 2.39*	t(44) = 2.37*	
Effect Size (Cohen's d)		0.019	0.087	0.126		0.089	−0.136	0.155		0.167	−0.056	0.373		−0.053	−0.022	0.021						0.345	0.117	0.775	
Gender																									
Man	73.2 (41)	11.74 (10.45)	10.88 (11.96)	10.29 (13.73)	34	5.18 (5.13)	4.26 (5.01)	4.11 (5.03)	38	4.77 (4.13)	3.72 (3.72)	3.79 (4.87)	39	9.65 (9.96)	8.03 (10.48)	7.00 (9.24)	40	–	–	–	–	7.61 (5.18)[a]	6.55 (5.29)[a]	6.48 (6.25)[a]	33
Woman	26.8 (15)	11.53 (11.12)	11.87 (9.80)	8.73 (8.29)	15	4.73 (4.85)	4.93 (4.74)	3.40 (2.85)	15	4.07 (4.42)	3.93 (4.17)	2.20 (1.86)	15	10.20 (11.68)	8.27 (11.77)	6.80 (10.72)	15	–	–	–	–	3.00 (1.53)[b]	2.92 (1.98)[b]	2.31 (1.60)[b]	13
Gender Diverse (i.e., Two-Spirit, Non-Binary, Other)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Test Statistic [1]		t(47) = 0.06	t(47) = −0.28	t(47) = 0.41		t(51) = 0.29	t(51) = −0.45	t(51) = 0.51		t(52) = 0.55	t(52) = −0.18	t(52) = 1.23		t(53) = −0.17	t(53) = −0.07	t(53) = 0.07		–	–	–		t(44) = 3.14**	t(44) = 2.39*	t(44) = 2.37*	
Effect Size (Cohen's d)		0.019	0.087	0.126		0.089	−0.136	0.155		0.167	−0.056	0.373		−0.053	−0.022	0.021		–	–	–		0.345	0.117	0.775	
Age																									
19–29	^	11.00 (11.00)	14.25 (20.56)	19.75 (32.22)	^	6.75 (8.30)	5.00 (8.04)	5.25 (8.62)	^	6.00 (6.93)	4.75 (7.54)	5.75 (8.18)	^	19.75 (23.41)	13.00 (22.18)	12.75 (21.61)	^	–	–	–	–	7.25 (6.55)	9.33 (11.85)	11.67 (16.74)	^
30–39	42.9 (24)	10.91 (8.42)	9.63 (10.26)	7.70 (8.92)	24	4.54 (4.95)	4.42 (5.43)	3.77 (4.29)	24	4.33 (4.05)	3.13 (3.49)	2.65 (3.08)	24	11.04 (10.45)	9.92 (12.15)	8.88 (10.65)	24	–	–	–	–	6.50 (5.47)	5.39 (4.67)	5.41 (5.27)	24
40–49	35.7 (20)	10.20 (10.35)	8.67 (7.61)	9.25 (12.90)	20	4.85 (4.83)	3.25 (3.21)	3.55 (4.48)	20	5.15 (4.21)	4.05 (3.24)	4.15 (5.03)	20	7.80 (6.62)	5.15 (5.18)	4.45 (4.56)	20	–	–	–	–	6.11 (4.06)	4.83 (3.62)	4.47 (2.81)	20
50–59	12.5(7)	18.71 (15.52)	17.86 (13.43)	15.00 (10.65)	7	5.86 (3.76)	7.00 (4.58)	4.57 (2.99)	7	2.71 (2.29)	4.29 (4.27)	2.00 (2.16)	7	5.57 (5.00)	7.43 (9.02)	4.14 (4.67)	7	–	–	–	–	5.33 (4.18)	4.50 (3.21)	3.40 (2.51)	7
60 and older	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Test Statistic [1]		F(3,48) = 1.24	F(3,48) = 1.45	F(3,48) = 1.32		F(3,48) = 0.30	F(3,48) = 1.07	F(3,48) = 0.21		F(3,48) = 0.77	F(3,48) = 0.38	F(3,48) = 1.09		F(3,48) = 2.11	F(3,48) = 1.02	F(3,48) = 1.51		–	–	–		F(3,48) = 0.15	F(3,48) = 0.84	F(3,48) = 1.68	
Effect Size (η_p^2)		0.072	0.082	0.073		0.017	0.059	0.013		0.043	0.022	0.061		0.110	0.057	0.082		–	–	–		0.009	0.052	0.105	
Ethnicity																									
Asian	^	^	^	^	^	^	^	^	^	^	^	^	^	^	^	^	^	–	–	–	^	^	^	^	^
Black	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
First Nations/ Inuit/ Metis	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Hispanic	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
South Asian	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
White/Caucasian	96.4 (54)	11.90 (10.49)	10.94 (10.98)	10.30 (13.37)	54	5.04 (4.98)	4.43 (4.87)	3.98 (4.52)	54	4.61 (4.16)	3.80 (3.79)	3.42 (4.31)	54	9.78 (10.44)	8.15 (10.83)	7.04 (9.63)	54	–	–	–	–	6.27 (4.86)	5.31 (4.77)	5.24 (5.67)	54

Table 3 (*continued*)

	Full Survey Sample[2]	Posttraumatic Stress Disorder (PCL-5)				Major Depressive Disorder (PHQ-9)				Generalized Anxiety Disorder (GAD-7)				Social Anxiety Disorder (SIPS)				Panic Disorder (PDSS-SR)[3][4]				Alcohol Use Disorder (AUDIT)			
		Pre-Training	Post-Training	1-Year Follow-Up		Pre-Training	Post-Training	1-Year Follow-Up		Pre-Training	Post-Training	1-Year Follow-Up		Pre-Training	Post-Training	1-Year Follow-Up		Pre-Training	Post-Training	1-Year Follow-Up		Pre-Training	Post-Training	1-Year Follow-Up	
	% (n)	Mean (SD)			n	Mean (SD)			n	Mean (SD)			n	Mean (SD)			n		Mean (SD)		n	Mean (SD)			n
Other	^	^	^	^	^	^	^	^	^	^	^	^	^	^	^	^	^	–	–	–	–	^	^	^	^
Test Statistic [1]	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Effect Size (η_p^2)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Marital Status																									
Single	8.9(5)	17.20 (13.99)	20.40 (19.31)	25.40 (25.05)ᵃ	5	6.00 (8.34)	8.80 (8.84)	7.00 (6.67)	5	4.60 (4.16)	5.40 (6.95)	5.20 (7.56)	5	22.00 (16.78)ᵃ	23.60 (16.95)ᵃ	21.40 (14.79)ᵃ	5	–	–	–	–	7.75 (6.65)	9.75 (9.43)	12.75 (13.52)ᵃ	5
Separated/Divorced	10.7(6)	7.17 (5.49)	9.80 (9.83)	5.50 (5.47)ᵇ	6	6.50 (6.53)	5.00 (6.39)	4.17 (2.64)	6	7.67 (5.50)	5.33 (4.63)	3.00 (1.41)	6	16.33 (16.07)ᵃ,ᵇ	10.50 (16.63)ᵃ,ᵇ	10.00 (16.27)ᵃ,ᵇ	6	–	–	–	–	4.83 (4.62)	4.50 (3.83)	4.00 (4.05)ᵇ	6
Married/Common-Law	76.8 (43)	11.33 (10.37)	9.10 (8.79)	8.90 (11.45)ᵃ,ᵇ	43	4.58 (4.35)	3.60 (3.72)	3.41 (4.40)	43	4.12 (3.66)	3.28 (3.22)	3.17 (4.19)	43	7.35 (7.03)ᵇ	5.95 (7.33)ᵇ	4.79 (5.85)ᵇ	43	–	–	–	–	6.46 (4.74)	5.08 (4.15)	4.75 (3.98)ᵃ,ᵇ	43
Other	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Test Statistic [1]		$F_{(2,46)}=1.29$	$F_{(2,46)}=2.78$	$F_{(2,46)}=4.23*$		$F_{(2,46)}=0.51$	$F_{(2,46)}=2.90$	$F_{(2,46)}=1.44$		$F_{(2,46)}=1.96$	$F_{(2,46)}=1.32$	$F_{(2,46)}=0.50$		$F_{(2,46)}=7.14**$	$F_{(2,46)}=7.63***$	$F_{(2,46)}=9.12***$		–	–	–		$F_{(2,46)}=0.47$	$F_{(2,46)}=1.96$	$F_{(2,46)}=4.41*$	
Effect Size (η_p^2)		0.051	0.102	0.145		0.020	0.102	0.055		0.071	0.049	0.020		0.219	0.230	0.263		–	–	–		0.020	0.078	0.170	
Province of Residence																									
Saskatchewan	96.4 (54)	11.86 (10.52)	10.92 (11.00)	10.30 (13.37)	54	5.06 (4.96)	4.44 (4.86)	3.98 (4.52)	54	4.61 (4.16)	3.78 (3.81)	3.34 (4.34)	54	9.96 (10.37)	8.24 (10.78)	7.06 (9.62)	54	–	–	–	–	6.27 (4.86)	5.29 (4.76)	5.22 (5.66)	54
Manitoba	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Ontario	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Other	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Test Statistic [1]	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Effect Size (η_p^2)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Education																									
High school graduate or less	^	11.50 (0.71)ᵃ,ᵇ	10.00 (12.73)	4.00 (1.41)	^	14.00 (5.66)ᵃ	8.00 (11.31)	4.50 (2.12)	^	13.50 (2.12)ᵃ	6.50 (7.78)	3.00 (1.41)	^	36.00 (8.49)ᵃ	25.00 (26.87)ᵃ	24.00 (26.87)ᵃ	^	–	–	–	–	2.00 (1.41)	2.50 (0.71)	1.50 (0.71)	^
Some post-secondary school	46.4 (26)	16.67 (11.74)ᵃ	13.80 (12.63)	14.35 (17.02)	26	5.54 (5.26)ᵇ	5.62 (5.37)	4.68 (4.99)	26	4.04 (3.88)ᵇ	4.00 (4.08)	3.56 (5.02)	26	10.12 (10.75)ᵇ	9.96 (12.07)ᵇ	7.65 (10.38)ᵇ	26	–	–	–	–	7.91 (5.81)	6.23 (5.94)	6.33 (7.43)	26
University degree/4-year college or higher	39.3 (22)	7.19 (7.72)ᵇ	7.71 (8.53)	6.62 (6.76)	22	3.50 (3.88)ᵃ,ᵇ	3.18 (3.54)	3.48 (4.42)	22	4.73 (3.97)ᵇ	3.27 (3.28)	3.41 (3.81)	22	8.18 (7.45)ᵇ	5.36 (6.04)ᵇ	5.64 (5.86)ᵇ	22	–	–	–	–	4.82 (2.97)	4.50 (3.31)	4.70 (3.77)	22
Test Statistic [1]		$F_{(2,47)}=5.08**$	$F_{(2,47)}=1.76$	$F_{(2,47)}=2.21$		$F_{(2,47)}=4.96*$	$F_{(2,47)}=1.99$	$F_{(2,47)}=0.38$		$F_{(2,47)}=5.49**$	$F_{(2,47)}=0.73$	$F_{(2,47)}=0.02$		$F_{(2,47)}=8.10***$	$F_{(2,47)}=3.74*$	$F_{(2,47)}=3.53*$		–	–	–		$F_{(2,47)}=3.40$	$F_{(2,47)}=1.07$	$F_{(2,47)}=0.85$	
Effect Size (η_p^2)		0.187	0.072	0.088		0.174	0.078	0.017		0.189	0.030	0.001		0.256	0.137	0.131		–	–	–		0.137	0.048	0.041	
Sectors																									
Fire	33.9 (19)	12.33 (12.10)	9.22 (11.32)	10.89 (14.21)	19	5.11 (4.79)	3.68 (4.06)ᵃ,ᵇ	3.05 (4.27)	19	4.37 (4.00)	2.95 (3.21)	2.42 (4.43)	19	6.11 (5.87)ᵃ	5.21 (5.94)	4.11 (5.11)	19	–	–	–	–	9.06 (5.56)ᵃ	7.53 (5.19)	7.13 (5.29)	19
Police	26.8 (15)	6.31 (5.23)	6.64 (5.00)	4.07 (5.15)	15	2.73 (1.98)	2.20 (2.01)ᵃ	2.46 (2.79)	15	4.20 (3.53)	2.60 (2.29)	3.21 (3.96)	15	7.53 (7.04)ᵃ,ᵇ	4.87 (6.45)	4.80 (6.29)	15	–	–	–	–	5.64 (3.39)ᵃ,ᵇ	4.40 (2.92)	4.50 (3.28)	15
Paramedics	23.2 (13)	12.31 (10.44)	13.92 (13.70)	14.15 (18.30)	13	6.46 (6.33)	6.00 (6.61)ᵃ,ᵇ	6.08 (6.18)	13	4.46 (4.56)	4.92 (4.77)	5.15 (5.24)	13	14.54 (13.79)ᵃ,ᵇ	13.08 (15.23)	11.69 (12.87)	13	–	–	–	–	5.00 (4.27)ᵃ,ᵇ	5.09 (6.16)	5.80 (9.00)	13

13

Table 3 (*continued*)

	Full Survey Sample[2]	Posttraumatic Stress Disorder (PCL-5)				Major Depressive Disorder (PHQ-9)				Generalized Anxiety Disorder (GAD-7)				Social Anxiety Disorder (SIPS)				Panic Disorder (PDSS-SR)[3][4]				Alcohol Use Disorder (AUDIT)			
		Pre-Training	Post-Training	1-Year Follow-Up		Pre-Training	Post-Training	1-Year Follow-Up		Pre-Training	Post-Training	1-Year Follow-Up		Pre-Training	Post-Training	1-Year Follow-Up		Pre-Training	Post-Training	1-Year Follow-Up		Pre-Training	Post-Training	1-Year Follow-Up	
	% (n)	Mean (SD)			n	Mean (SD)			n	Mean (SD)			n	Mean (SD)			n		Mean (SD)		n	Mean (SD)			n
Communications	14.3(8)	18.00 (10.57)	16.13 (11.17)	12.25 (9.44)	8	6.50 (5.95)	7.38 (5.42)b	4.75 (3.11)	8	5.75 (5.39)	5.75 (4.83)	2.88 (2.10)	8	15.13 (13.77)b	12.88 (14.16)	10.00 (13.84)	8	–	–	–	–	2.43 (1.40)b	2.29 (0.49)	1.71 (0.76)	8
Test Statistic [1]		F(3,48) = 2.31	F(3,48) = 1.86	F(3,48) = 1.49		F(3,48) = 1.75	F(3,48) = 2.93*	F(3,48) = 1.86		F(3,48) = 0.26	F(3,48) = 2.00	F(3,48) = 1.10		F(3,48) = 2.95*	F(3,48) = 2.58	F(3,48) = 2.31		–	–	–	–	F(3,48) = 4.70**	F(3,48) = 2.65	F(3,48) = 1.72	
Effect Size (η_p^2)		0.126	0.102	0.082		0.093	0.147	0.102		0.015	0.105	0.062		0.148	0.132	0.119		–	–	–	–	0.235	0.147	0.107	
Years of Service																									
Less than 4 years	^	7.33 (5.51)	2.50 (1.00)	3.25 (3.95)	^	2.50 (2.38)	0.75 (0.96)	1.33 (2.31)	^	3.75 (2.87)	2.25 (2.63)	0.33 (0.58)	^	2.75 (1.26)	1.00 (1.41)	0.75 (1.50)	^	–	–	–	–	7.25 (2.63)	5.00 (2.83)	4.50 (1.73)	^
4 to 9 years	30.4 (17)	10.73 (8.34)	12.00 (12.76)	10.94 (17.06)	17	5.41 (6.38)	5.41 (5.81)	5.12 (5.69)	17	5.82 (5.15)	4.06 (4.59)	4.59 (5.40)	17	14.53 (14.50)	11.76 (14.24)	11.35 (14.29)	17	–	–	–	–	6.19 (6.52)	5.94 (6.87)	6.73 (9.09)	17
10 to 15 years	30.4 (17)	10.18 (10.67)	8.87 (7.58)	6.44 (7.81)	17	4.18 (3.78)	3.12 (2.80)	2.50 (3.60)	17	3.47 (3.04)	3.18 (3.59)	2.18 (2.67)	17	7.18 (6.28)	4.12 (4.92)	3.71 (3.50)	17	–	–	–	–	6.60 (3.94)	4.93 (3.61)	4.73 (2.55)	17
More than 15 years	25.0 (14)	15.64 (13.42)	13.77 (13.36)	14.93 (15.03)	14	6.43 (5.15)	5.50 (5.89)	4.43 (4.29)	14	4.93 (4.55)	4.07 (3.50)	3.79 (4.82)	14	8.79 (8.58)	9.14 (10.33)	6.64 (7.39)	14	–	–	–	–	6.25 (4.61)	5.67 (3.68)	5.00 (3.71)	14
Test Statistic [1]		F(3,43) = 0.95	F(3,43) = 1.29	F(3,43) = 1.36		F(3,43) = 0.87	F(3,43) = 1.65	F(3,43) = 1.28		F(3,43) = 0.95	F(3,43) = 0.98	F(3,43) = 1.41		F(3,43) = 2.29	F(3,43) = 2.25	F(3,43) = 2.54		–	–	–	–	F(3,43) = 0.06	F(3,43) = 0.12	F(3,43) = 0.37	
Effect Size (η_p^2)		0.059	0.078	0.080		0.052	0.093	0.077		0.056	0.023	0.082		0.125	0.123	0.137		–	–	–	–	0.004	0.009	0.027	

Notes. [1] 1-year follow up completers = participants who completed the full assessment at pre-training, post-training, and 1-year follow up.

Post-hoc comparisons were performed using Holm-Bonferroni correction to control for familywise error rate.

Lettered superscripts within each column category indicate statistically significant differences between category groups with different letters on outcome at $p \leq .05$.

^Sample size between 1 and 5, so data not presented. "-" No data available. *$p < .05$, **$p < .01$, ***$p < .001$ – Statistically significantly different; Holm-Bonferroni adjustment was applied to alpha level to control type I error in multiple comparisons.

AUDIT = Alcohol Use Disorders Identification Test; GAD-7 = Generalized Anxiety Disorder Scale; PCL-5 = Posttraumatic Stress Disorder Checklist for DSM-5; PDSS-SR = Panic Disorder Symptoms Severity Scale, Self-Report; PHQ-9 = Patient Health Questionnaire; SIPS = Social Interaction Phobia Scale.

[2] The test results comparing scores on mental disorder screening measures across categorical participant demographics; *t*(degrees of freedom) = test statistic; *F*(numerator degrees of freedom, denominator degrees of freedom) = test statistic.

[3] Total percentages may not sum to 100 and *n*s may not sum to 56 due to non-response or responding "other."

[4] A limited number of participants reported values for PD (PDSS-SR) because selecting "No" for "ever having experience with panic attacks" or "having panic attack in the last 7 days", meant participants were not presented the rest of the PDSS-SR questions.

Table 4
Changes in mental health disorder symptoms from pre- to post-training for post-training completers (n = 119), and pre-, post-training, and 1-year follow-up for 1 year follow up completers (n = 56).

	Full Sample (n = 191)		Post-training Completers (n = 119)					1-year Follow-Up Completers (n = 56)					
	Pre-Training		Pre-Training	Post-Training		Test Statistic [1]	Effect Size	Pre-Training	Post-Training	1-Year Follow Up		Test Statistic [1]	Effect Size
	Mean (SD)	*n*	*Mean (SD)*	*Mean (SD)*	*n*		(Cohen's *d*)	*Mean (SD)*	*Mean (SD)*	*Mean (SD)*	*n*		(η_p^2)
Posttraumatic Stress disorder (PCL-5)	15.61 (13.77)	186	14.91 (13.61)	11.25 (11.13)	115	$t(109) = -3.05^{**}$	0.291	11.67 (10.51)	11.18 (11.25)	9.82 (12.25)	49	$F(2,46) = 0.91$	0.019
Major Depressive Disorder (PHQ-9)	6.08 (5.18)	189	5.95 (5.29)	4.53 (4.49)	118	$t(116) = -4.04^{***}$	0.373	5.06 (5.01)	4.45 (4.90)	3.91 (4.51)	53	$F(2,50) = 2.62$	0.048
Generalized Anxiety Disorder (GAD-7)	5.86 (4.84)	190	5.71 (4.80)	4.40 (4.12)	119	$t(118) = -3.94^{***}$	0.361	4.57 (4.18)[a]	3.78 (3.81)	3.35 (4.29)[b]	54	$F(2,51) = 3.18^{*}$	0.055
Social Anxiety Disorder (SIPS)	9.91 (9.32)	190	9.76 (10.12)	7.75 (9.81)	119	$t(118) = -3.77^{***}$	0.346	9.80 (10.35)[a]	8.09 (10.74)	6.95 (9.57)[b]	55	$F(2,52) = 9.43^{***}$	0.149
Panic Disorder (PDSS-SR)	6.64 (3.65)	36	7.80 (3.93)	5.92 (3.45)	20	$t(6) = -0.80$	0.304	–	–	–	–	–	–
Alcohol Use Disorder (AUDIT)	6.27 (4.06)	175	6.15 (4.38)	5.52 (4.36)	109	$t(101) = -3.80$	0.377	6.30 (4.91)[a]	5.52 (4.86)[b]	5.30 (5.66)	46	$F(2,43) = 3.74^{*}$	0.077

Notes. [1]The test results comparing scores on mental disorder screening measures across time; *t*(degrees of freedom) = test statistic; *F*(numerator degrees of freedom, denominator degrees of freedom) = test statistic.

Table 5
Mental Disorder Prevalence (%) Based on Self-Report Measures and Clinical Interviews for the Full Sample (n = 191) and Post-Training Completers (n = 119).

		PSP Participant Results						Prevalence Comparisons	
		Self-Report Survey			Clinical Interview			Self-Report Survey	Clinical Interview
		Full Sample	Pre-Training	Post-Training	Full Sample	Pre-Training	Post-Training	Pre- vs Post-Training	Pre- vs Post-Training
Disorder	Survey Measure	% (*n*)	% (*n*)	% (*n*)	% (*n*)	% (*n*)	% (*n*)	Test Statistic	Test Statistic
Alcohol Use Disorder – Past 12 Months	AUDIT	3.1(6)	ˆ	4.4(5)	27.6(53)	28.1 (34)	18.2 (22)	–	9.03**
Generalized Anxiety Disorder – Current	GAD-7	20.3(39)	19.3(23)	11.8(14)	2.6(5)	ˆ	ˆ	3.37	–
Major Depressive Disorder – Current	PHQ-9	23.4(45)	25.4(30)	16.9(20)	6.3(12)	5.8 (7)	ˆ	4.27*	–
Major Depressive Episode – Current	–	–	–	–	7.3(14)	6.6 (8)	ˆ	–	–
Panic Disorder – Current	PDSS-SR	7.8(15)	9.2(11)	4.2(5)	3.1(6)	ˆ	ˆ	2.50	–
Posttraumatic Stress Disorder – Current	PCL-5	9.9(19)	11.8(13)	4.5(5)	4.7(9)	5.8 (7)	0.0 (0)	2.77	–
Social Anxiety Disorder – Current	SIPS	12.5(24)	14.3(17)	10.1(12)	ˆ	ˆ	ˆ	1.46	–
Any Anxiety Disorder – Current		26.0(50)	25.2(30)	21.0(25)	7.3(14)	11.5 (14)	4.1 (5)	0.84	3.63
Any Mood Disorder – Current		23.4(45)	25.4(30)	16.9(20)	7.3(14)	6.6 (8)	ˆ	4.27*	–
Any Disorder – Current		33.9(65)	32.8(39)	27.7(33)	35.4(68)	38.5 (47)	22.1 (27)	1.04	13.15***
Total Number of Positive Screens - Current									
0		66.1(127)	67.2(80)	72.3(86)	61.5(118)	61.5 (75)	77.9 (95)	–	–
1		10.9(21)	7.6(9)	13.4(16)	22.9(44)	24.6 (30)	17.2 (21)	–	–
2		9.4(18)	9.2(11)	7.6(9)	7.8(15)	9.8 (12)	ˆ	–	–
3 or More		13.5(26)	16.0(19)	6.7(8)	4.7(9)	4.1 (5)	ˆ	–	–
Total Sample		100(191)	100 (119)	100 (119)	100(191)	100 (119)	100 (119)		

Notes. [1]Post-training completers = participants who completed the full assessment at pre-training and post-training.
-No data available.
Total percentages may not sum to 100 due to non-response or responding "other."
ˆSample size between 1 and 5, so data not presented.
AUDIT = Alcohol Use Disorders Identification Test; GAD = Generalized Anxiety Disorder; PCL-5 = Posttraumatic Stress Disorder Checklist for DSM-5; PHQ-9 = Patient Health Questionnaire; SIPS = Social Interaction Phobia Scale.

to [n < 5]), MDE (6.6 % [n = 8] to [n < 5]), SAD (ns < 5 for both), PD (ns < 5 for both), past 12-month AUD (28.1 % [n = 34] to 18.2 % [n = 22]), and any mental disorder (38.5 % [n = 47] to 22.1 % [n = 27]) also decreased, but the changes were not statistically significant. No changes were observed among clinical diagnostic interview positive screens for GAD.

Table 6 presents the prevalence of positive screens for current mental disorders at pre-, post-training, and 1-year follow up and provides changes in prevalence between pre-, post-training, and 1-year follow-up among 1-year follow-up completers based on self-reported symptoms, and clinical diagnostic interviews. There were no statistically significant changes in prevalence of mental health disorders based on self-reported

Table 6

Mental Disorder Prevalence (%) Based on Self-Report Measures and Clinical Interviews for 1-Year Follow Up Completers (n = 56).

		Current PSP Participant Results						Prevalence Comparisons	
		Self-Report Survey			Clinical Interview			Self-Report Survey Test Statistic	Clinical Interview Test Statistic
		Pre-Training	Post-Training	1-Year Post-Training	Pre-Training	Post-Training	1-Year Post-Training	Pre vs Post vs 1-Year Post-Training	Pre vs Post vs 1-Year Post-Training
Disorder	Survey Measure	% (n)	% (n)	% (n)	% (n)	% (n)	% (n)		
Alcohol Use Disorder – Past 12 Months	AUDIT	^	^	^	26.8 (15)	17.9 (10)	19.6 (11)	–	1.49
Generalized Anxiety Disorder – Current	GAD-7	12.7 (7)	^	^	^	^	^	–	–
Major Depressive Disorder – Current	PHQ-9	18.2 (10)	16.4 (9)	11.8 (6)	^	^	^	1.22	–
Major Depressive Episode – Current		–	–	–	^	^	^	–	–
Panic Disorder – Current	PDSS-SR	^	^	0.0 (0)	0.0 (0)	0.0 (0)	0.0 (0)	–	–
Posttraumatic Stress Disorder – Current	PCL-5	^	^	^	^	0.0 (0)	^	–	–
Social Anxiety Disorder – Current	SIPS	9.1 (5)	10.9 (6)	^	^	^	0.0 (0)	–	–
Any Anxiety Disorder – Current		16.4 (9)	16.4 (9)	11.8 (6)	^	^	^	0.88	–
Any Mood Disorder – Current		18.2 (10)	16.4 (9)	11.3 (6)	^	^	^	1.22	–
Any Disorder – Current		25.5 (14)	23.6 (13)	18.2 (10)	33.9 (19)	21.4 (12)	21.4 (12)	0.90	3.06
Total Number of Positive Screens - Current									
0		74.5 (41)	76.4 (42)	81.8 (45)	66.1 (37)	78.6 (44)	78.6 (44)	–	–
1		10.9 (6)	10.9 (6)	12.7 (7)	25.0 (14)	17.9 (10)	19.6 (11)	–	–
2		^	^	0.0 (0)	^	^	^	–	–
3 or More		9.1 (5)	^	^	^	^	^	–	–
Total Sample		100 (56)	100 (56)	100 (56)	100 (56)	100 (56)	100 (56)		

Notes. [1]1-year follow up completers = participants who completed the full assessment at pre-training, post-training, and 1-year follow up.

-No data available.

Total percentages may not sum to 100 due to non-response or responding "other."

^Sample size between 1 and 5, so data not presented.

AUDIT = Alcohol Use Disorders Identification Test; GAD = Generalized Anxiety Disorder; PCL-5 = Posttraumatic Stress Disorder Checklist for DSM-5; PHQ-9 = Patient Health Questionnaire; SIPS = Social Interaction Phobia Scale.

symptoms and clinical interviews across pre-, post-training, and 1-year follow-up. From pre-, post-training, to 1-year follow-up There were decreases (non-statistically significant) in the prevalence of self-reported positive screens for MDD (18.2 % [$n = 10$] to 16.4 % [$n = 5$] to 11.8 % [$n = 6$]), any anxiety disorder (16.4 % [$n = 9$] to 16.4 % [$n = 9$] to 11.8 % [$n = 6$]), any mood disorder (18.2 % [$n = 10$] to 16.4 % [$n = 5$] to 11.3 % [$n = 6$]), and any disorder (25.5 % [$n = 14$] to 23.6 % [$n = 13$] to 18.2 % [$n = 10$]).

Logistic regressions examined associations between sex and positive screens for mental health disorders. Based on self-reported measures, females were statistically significantly more likely than males to screen positive for panic disorder at pre-training ($n = 191$), (OR = 3.98; 95 % CI, 1.09 to 14.52). No other statistically significant sex differences were observed at pre-training ($n = 191$), post-training ($n = 119$), or 1-year follow-up ($n = 56$). There were no statistically significant associations between sex and positive screens for mental health disorders at pre-training ($n = 191$), post-training ($n = 119$), or 1-year follow-up ($n = 56$) based on clinical interviews.

4. Discussion

The current results suggest that the RCMP Protocol [45] can be effectively adapted to accommodate a diverse sample of PSP (i.e., fire-fighters, municipal police, paramedics, public safety communicators), with the ERST delivered by PSP to PSP [48]. Consistent with the pre-registered hypotheses [48], fewer participants screened positive for current mental health disorders from pre- to post-ERST. Participants evidenced statistically significant reductions in PTSD, MDD, GAD, and SAD symptoms after ERST training, each associated with moderate

effect sizes. The current results and effect sizes were comparable to or better than results observed with other proactive mental health programs [18] and randomized controlled trials that implemented variations of the UP as a treatment [76,77]. The results are particularly impressive because the current program was delivered by frontline PSP to other frontline PSP, during circumstances of extraordinary stress (i.e., COVID-19 [78]). The current study also specifically assessed for mental health disorder symptoms, extending previous work focused on mindfulness and more general assessments of perceived resilience, stress, or well-being [13,19]; in addition, the current study included a follow-up period twice the length of other UP trials [77]. Evidence that participating PSP maintained non-clinical status or improved their mental health from pre-training to post-training during COVID-19 may also support ERST as successful, given extant evidence of increased mental health challenges among PSP in general during the same time period [79].

Previous research supports the idea that females report more PTSI symptoms than males [4,25]; in contrast, the current study did not demonstrate evidence of any statistically significant differences between males and females on self-reported symptom severity for PTSD, GAD, SAD, MDD, or PD. Consistent with previous research on police officers [25], male participants in the current study reported significantly more AUD symptoms at all three assessment intervals. Female participants in the current study were statistically significantly more likely to screen positively for panic disorder at pre-training.

Differences across symptom reporting and positive screens were expected across PSP sectors [48]; however, very few statistically significant differences were observed due to low statistical power. Fire-fighters demonstrated the largest improvements in symptoms, whereas

PSP communicators evidenced the smallest improvements. The variations in effects may be explained by differences in participant mental health across PSP sectors at pre-training. The variations in effects may also be explained by substantial organizational and structural differences relating to institutional and individualized support Firefighters were permitted to participate as part of paid employer time and elected to train and practice in teams; in contrast, paramedics were required to participate on their own time and often required to practice alone. Paramedics were also experiencing pervasive systemic challenges related to COVID-19 [78], which can reasonably be expected to have limited their capacity to fully benefit from the ERST program. Peer-led and clinician supported training, paid participation time with pervasive organizational supports, and interactive in group practice likely all bolstered effect sizes for participants, as has been reported in recent research with firefighters [80].

Participating PSP reported less severe PTSD and PD symptoms and fewer positive screens at pre-training and post-training than would be expected based on previous results with broader PSP sample data collected in 2017 prior to the onset of COVID-19 [4]. At the 1-year follow-up, participating PSP reported statistically significantly fewer symptoms of PTSD, MDD, GAD, and SAD, but not AUD, as compared to the same broad PSP sample [4]. Lower prevalence of overall symptoms among participants at pre-training may have attenuated effect sizes associated with symptom improvements and differences between sectors due to statistical floor effects. The possibility that the participating PSP who experienced the worst symptoms at pre-training left the program or declined follow-up assessments was also assessed; however, the results indicated that the participating PSP who completed the study and continued to follow-up were not statistically different from those who were lost to follow-up at pre-training, evidencing against baseline mental health of the participating PSP as a reason for attrition.

4.1. Implications for clinical practice, policy, and research

The current results provide preliminary evidence that implementing the RCMP Protocol for diverse serving PSP benefited participants by 1) providing evidence-based assessments that can facilitate standardized self-monitoring and earlier access to care [52,53], 2) tangibly evidencing organizational commitment to empirically-based mental health supports [4,20,81], 3) creating electronic mental health records independent of PSP agencies, and 4) providing PSP with tailored ERST directly derived from the UP [30,32] – a cognitive behaviour intervention broadly supported by research evidence as a mental health treatment [33–38] and initially supported for proactively protecting PSP mental health [37,40–43] and enhancing PSP job satisfaction [44].

The ERST and associated implementation methods used in the current study are congruent with recent research recommendations regarding mental health training for PSP; specifically, programs should be evidence-informed, evidence-based, transparent, peer-led with clinician support, deployed in groups with interactive learning elements, and facilitated with substantial organizational supports including participating on paid time [80]. Relatedly, feedback about the ERST from PSP [74] further supports the ERST and subsequent broad implementations and iterative evaluations. Demonstrative evidence of success using a clinician-supported train-the-trainer model also speaks to capacity for pervasive deployment of the ERST in PSP training programs (e.g., like the RCMP Cadet Training Program [45]), as well as distributed training for serving PSP. Using a robustly supported, internally-congruent treatment (i.e., the UP [30,32]) as the foundation for PSP mental health training increases confidence the skills being taught will be effective and offers a publicly defensible training option. The same UP foundations within ERST can reasonably be expected to facilitate subsequent provision of evidence-based treatments for PSP (e.g., reducing barriers to accessing care by increasing knowledge about what evidence-based treatments may include; treatment providers being able to build on pre-existing skills), potentially providing an important

adjuvant to mitigate the growing PTSI challenges experienced by all those who serve.

4.2. Strengths and limitations

The PSP PTSI Study has several strengths including 1) a longitudinal repeated measures design; 2) a detailed published protocol paper with pre-registered hypotheses [48]; 3) multimodal assessments with robust self-report and structured clinical diagnostic interview tools with high inter-rater reliability; 4) being an ecologically valid test of the RCMP Protocol tools and the ERST [48] across diverse serving PSP; and, 5) participants overwhelmingly describing the ERST as positive [74].

The PSP PTSI Study also has several limitations that warrant consideration and can inform future research directions. The case series study design had no concurrent control group which meant that we cannot confidently singularly ascribe changes to the intervention since other factors may have contributed to changes in prevalence of mental health disorders, such as other (co)-interventions, policy changes or changes in the work force. The larger RCMP Study includes a control group, which will help address these limitations [48]. A randomized trial would have been preferable, but was not feasible.

Direct research evaluating expectancy effects remains nascent [82], but has evidenced little or no difference between open and closed label designs for participants provided with sufficient rationale (e.g. [82],). The pre-registration of hypotheses, as well as the a priori provision of expected results in the protocol paper [48], should mitigate risks from Type I errors [83]. The voluntary nature of participation creates the potential for self-selection biases; relatedly, the variability in attendance recording leaves ambiguities about training participation that should be addressed in future studies. The ambiguity related to training attendance is mitigated by the feedback from participants and the expectation that persons who minimally engaged with the training likely attritioned before completing the post-training and follow-up assessments.

The relative health of participating PSP may have created a constraining floor effect, implicitly downplaying the benefits of ERST. Unprecedented challenges with PSP staffing due to COVID-19 [78] and contemporary social challenges limited participation from some sectors, and produced substantial attrition, caveating results from within- and between-sector analyses. The attrition was comparable to attrition in similar pilot interventions with police [19] and the final sample comparable to other interventions with police [13]. Consistent with related research [13,19], attrition appeared associated with differences in institutional support and ongoing-sector specific issues, rather than the lack of feasibility and acceptability of ERST [73]. The absence of differences between participants who completed the study and those who attritioned, and the extant support for the UP, both help to mitigate the impact of attrition. Additionally, despite substantial rates of attrition from the current study, the results and corresponding effect sizes are comparable to, or better than, other randomized controlled trials that implemented variations of the UP as a treatment with fewer reported structural limitations [76,77]. Future studies should consider sector-specific differences and challenges and work with stakeholders to facilitate full participation in training and mitigate attrition. Indeed, the substantial variability in organizational supports (i.e., from fully paid support with team engagement for training to fully extracurricular training) likely had substantial impacts and should be considered when designing subsequent trials [80].

5. Conclusion

The current study provides evidence for the benefits of the adapted ERST for diverse PSP [45,48]. The current results will be further informed by replication with additional PSP samples. In the interim, the current results support using the RCMP Protocol to help broadly improve PSP mental health or at least maintained non-clinical status despite compounding challenges associated with COVID-19 [78,79].

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CRediT authorship contribution statement

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Declaration of competing interest

The authors have no conflicts of interest to declare.

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Data availability

The datasets presented in this article are not readily available because the datasets will be made available only for independent confirmation purposes and only to persons with the necessary ethical and security clearances as defined by the research ethics board at the University of Regina. Requests regarding the datasets can be made to Nick.Carleton@uregina.ca.

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