Final Report

Project Details

Project Name:	Online and Classroom Delivered Cognitive Behaviour Therapy with Mindfulness Course for Building Workplace Resilience
Organization:	Health Sciences Centre / University of Manitoba
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Submitted by:	Dr. Jitender Sareen (Grant Recipient) Dr. Shay-Lee Bolton On behalf of the UM Research Team We thank the following team members for assistance in preparing this document: Dov Millstone (Research Associate) Kelsey Papineau (Research Assistant)
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University of Manitoba

WCB Workers Compensation Board of Manitoba

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1. Project Overview

Public safety personnel (PSP) are a particularly vulnerable group who face uniquely high levels of daily stress due to the demands of their jobs. PSP include firefighters, police officers, paramedics, correctional workers, and emergency dispatchers, among others. In recent years, there has been increasing awareness of the high level of stress and traumatic exposure repeatedly experienced by individuals in these professions.[1,2] These types of exposures have been linked with increased risk of mental health problems, including posttraumatic stress disorder (PTSD), major depression, anxiety disorders, and substance use disorders.[3–6] Recent work confirmed that a substantial proportion (over 44%) of PSP screen positive for a current mental disorder, and that this rate is greatly elevated over that seen in the Canadian general population (around 10%).[7] Taken together, these findings highlight the need for policymakers and practitioners to invest in improving the mental health of PSP.

A recent body of literature suggests that mental health be conceptualized to include two continua: that of mental illness and the positive phenomenon of mental health - defined as a state of well-being.[8,9] Canada's Ministers of Health and Health Promotion/Healthy Living released a declaration stating the importance of promoting good mental health, preventing mental illness, and building resiliency (mental health), rather than focusing solely on diagnosis, treatment and care once a disorder is present (mental illness). With a wide variety of definitions, most of which reflect an individual's ability to adapt or remain functionally well despite adverse or stressful experiences, resiliency appears to play a critical role in reducing the impact of stress, trauma and adversity, and has a mitigating effect on poor mental health outcomes.[10] In terms of PSP, their mental health is clearly vulnerable. There is a need to both build resiliency against the many psychological harms that these groups inherently face, and to reduce and prevent development of mental illness.

Group-based cognitive behaviour therapy (CBT) is an evidence-based treatment that allows service providers to interact with high volumes of individuals who need mental health support. CBT is the most well-researched and well-recognized of all psychotherapies, and is often considered the gold-standard in psychotherapy treatment.[11] While CBT has shown efficacy in the treatment of a range of mental and substance use disorders,[12–14] it has also been shown to be useful in building resiliency, being used as a tool to better cope during stressful life situations even among individuals who do not have an existing mental illness.[15–17] Furthermore, research suggests that gains achieved in mental health during CBT are maintained long after treatment completion.[18] Taken together, CBT has the potential to improve both continua of mental wellness among PSP, with its ability to not only treat a range of mental illnesses, but to build resiliency against the stress and traumatic exposures frequently experienced by PSP.

Two recent reviews of the literature on prevention of PTSD have been conducted, both concluding that there are a limited number of studies in the area. Both reviews indicated strong support for CBT in preventing PTSD after an acute traumatic event. However,

evidence for prevention of PTSD ***prior to the traumatic event*** is sparse. Most studies have utilized small sample sizes with limited generalizability, others have not included a control group, randomization has not been employed, and most have utilized individual or small group-based interventions which can be costly and difficult to access. Large group-based provision of CBT has not been utilized in adults for prevention of PTSD.

Our team developed a mindfulness-based CBT program called CBTm. Mindfulness was incorporated due to an increasing body of evidence demonstrating its ability to reduce stress, anger, fatigue, sleep problems, and negative health outcomes in PSP, while increasing resiliency and improving emotion regulation, which in turn, decrease work-related burnout.[19–23] CBTm is delivered in a facilitator-led, class-based format, held in-person with the aim of promoting resiliency through teaching CBT concepts and skills. Compared with standard CBT groups, the CBTm classes are larger (up to 30 participants versus 10-12), are of shorter duration (4 sessions versus 8-12) and are more self-directed. A retrospective chart review of 523 general population adults who attended our CBTm program showed significant reductions in anxiety and depressive symptoms.[24] Since its inception in 2015, more than 5200 general population adults have participated in CBTm. We have developed a program that has successfully trained over 140 facilitators from a variety of disciplines in 22 sites across Canada; continually expanding the reach of the program.

This work was completed with the aim to fill a major gap in the field, providing a cost-effective mental health promotion strategy that could be accessible to a wide range of PSP. To the best of our knowledge, there are to date no standard mental health promotion or resilience training programs for workers in high-risk professions in Manitoba. Due to the recent presumptive PTSD diagnosis legislation in Manitoba, and the current COVID-19 pandemic, there has been an increase in need for mental health services for these high-risk professions. Evidence-based psychological treatments for prevention of PTSD and related conditions are urgently required. As such, the aim of this study was to examine the feasibility of large group-based CBTm in promoting resiliency in a cohort of PSP who did not meet criteria for a current diagnosis of major depression, anxiety disorder, or PTSD. The study did not focus on people who had already developed PTSD and other conditions.

This project was split into two phases. In Phase I, the CBTm classes were adapted for prevention of PTSD and related conditions among PSPs. Due to an increasing body of literature suggesting the utility of internet-based delivery of CBT for preventing and treating depression and anxiety, an online version of the course with minimal therapist intervention was explored. Phase II of the project consisted of a 2-arm randomized controlled trial examining outcomes for those who were randomized to receive the CBTm course compared to a waitlist control group.

2. Completed Work

2.1. Research Ethics Board (REB) Approval

The University of Manitoba REB provided final approval for this project on June 19, 2019. This was a required step prior to recruitment of participants into the project. Additionally, the project required approval from the Shared Health (Health Sciences Centre) Research Impact Committee before it could proceed since the research was being conducted in a Shared Health facility. That approval was received on July 4, 2019. Clinical trial registration was also required prior to proceeding with recruitment into Phase II of the study. This approval was received on June 21, 2019 and has been maintained since that date.

- UM Research Ethics #: HS22801 (H2019:165)
- HSC Research Impact Committee #: RI2019:048
- ClinicalTrials.gov Identifier: NCT04002050

2.2. Collaboration with Project Advisory Committee

We have engaged representation from a number of key organizations who are directly involved in the health and well-being of PSP in this province. Our current PAC includes 14 individuals with representation from Winnipeg Fire Paramedic Service (WFPS), Winnipeg Police Service (WPS), Manitoba Corrections, and The Workers Compensation Board (WCB)/SAFE Work. Many of these individuals and their leadership have demonstrated ongoing interest and support for the virtual-based CBTm classes for their members, The research team have worked in collaboration with the PAC throughout all phases of the project. PAC members were sent weekly e-mail updates throughout the recruitment process. E-mail contact and virtual meetings with the PAC have continued throughout the pandemic. The most recent meeting occurred on April 26, 2021 to review the findings and provide updates on the online CBTm course. The PAC was instrumental in completing the projects objectives with feedback on the course material and helping with study recruitment.

2.3. Develop New Course Module

Our team initially developed a 4-session (90 min each) facilitator-led CBTm program. A key objective of this project was to adapt existing CBTm materials to better serve the study population. Based on our discussions with the PAC, it was recommended that a fifth class be added that focused on responding to traumatic events and stress using a CBT approach along with safety planning for managing crisis situations. As such, the program was adapted to a 5-session model for use in PSP. Session topics are as follows:

Session 1. Mindfulness, Basics of Cognitive Therapy, Thought Records
Session 2. Mindfulness, Basics of Behaviour Therapy, Exposure Therapy
Session 3. Mindfulness, Healthy Activity, Sleep Hygiene
Session 4. Mindfulness, Goal Setting, Assertiveness

Session 5. Mindfulness, Dealing with Stress and Stressful Experiences, Wellness Planning

This new module was completed on August 23, 2019 and was implemented as part of the intervention for Phase II of the project.

2.4. Study Recruitment

The research team worked in collaboration with the PAC and their organizations to recruit participants for the study. Recruitment materials were circulated to the occupational organizations involved and distributed by the appropriate personnel as determined by each organization (e.g., human resources departments, behavioural health departments, etc.). Recruitment materials included posters and brochures that outlined the study details, specified the voluntary nature of participation, and provided assurance of both privacy and confidentiality. Recruitment had to be halted early due to the COVID-19 pandemic and the restrictions put in place on in-person classes.

2.5. Study Intervention

The 5-course CBTm course was delivered in two blocks. The first block of classes took place from September 16, 2019 to October 18, 2019 (Block 1). The last follow-up measures for Block 1 participants was completed on January 6, 2020. The second block of classes took place from October 21, 2019 to November 22, 2019 (Block 2). The last follow-up measures for Block 2 participants was completed on February 10, 2020.

A virtual 5-session CBTm course was delivered through Zoom in September 2020 in order to meet the needs of participants that were put on the waitlist who were not able to attend the in-person classes due to COVID-19 restrictions.

2.6. Online CBTm Course

The research team has worked with Safe & Certified over the course of our funding to develop the online environment. Classes 1 to 5 have been completed for civilian populations and are in pilot testing for PSP specifically. The site has undergone pilot testing by our research team and has been examined for quality improvement opportunities. The aim of the site testing has been to make the online course as user friendly for participants as possible. Access has been provided to our PAC members to trial the online course materials for PSP. The course was launched for PSP in January 2022.

The research team has met with the U of M's FIPPA office to review the guidelines for storing participants personal information in an online course in order to ensure privacy and security of confidential information. The Safe and Certified team has made adjustments to the website database to meet U of M's FIPPA guidelines. Approvals have been received from the University of Manitoba REB to utilize the online course in PSP.

3. Results and Evaluation

Eligible participants were those: 1) aged 18 years and older, 2) employed and on active duty in a public safety occupation (police, firefighter, paramedic, correctional officer, or an emergency dispatcher), 3) below clinically significant cut scores on the Posttraumatic Stress Disorder Checklist DSM-5 (PCL-5; cut-off=<37), Patient Health Questionnaire 9-Item (PHQ-9; cut-off=<10), and Generalized Anxiety Disorder 7-Item (GAD-7; cut-off=<37), 4) who had not endorsed suicidal ideation in the past 6 months, 5) who had not been diagnosed with a mental disorder within the past 6 months, and 6) who did not have a history of mental health treatment within the past 6 months.

A total of 60 people were recruited and randomized. Twenty-eight individuals were randomized to receive the CBTm classes, while 32 individuals were placed on the waitlist. Figure 1 illustrates the recruitment and randomization process. Sample size calculations prior to the start of the project indicated a total sample size of 120 individuals was required for optimal power to detect differences between the groups. However, due to the COVID-19 pandemic, our study could not continue to recruit as originally planned into in-person classes. Therefore, the study was terminated with less than the optimal number of participants.

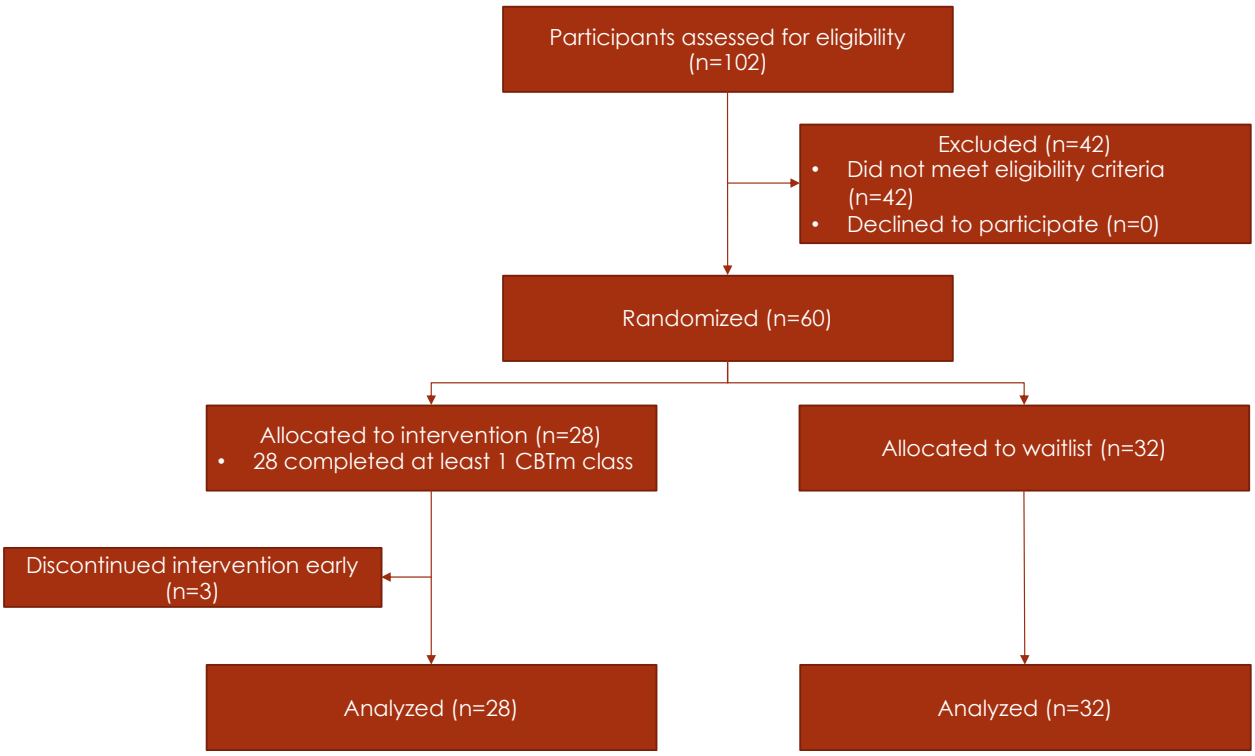

Figure 1. Flow diagram of participants.

Table 1 displays the sociodemographic characteristics of the sample. In the intervention arm, 28.6% were female, while 46.9% of the waitlisted individuals were female. Three-quarters of the sample was married or living common-law, and mean age was ~40 years. Police officers accounted for the largest number of participants in both the intervention and waitlist arms (39.3% and 37.5%, respectively). Sociodemographic characteristics did not differ significantly across the two arms, indicating that our randomization was successful.

Data completion rates are also shown in Table 1. Nearly 90% of participants in the intervention completed 5 or more of the 7 data collection timepoints, compared with 65% among those in the waitlist.

Table 1. Demographic characteristics of the sample.

	INTERVENTION %	WAITLIST %
SEX		
MALE	71.4	53.1
FEMALE	28.6	46.9
MARITAL STATUS		
MARRIED/COMMON-LAW	75.0	75.0
UNPARTNERED	25.0	25.0
OCCUPATION		
POLICE OFFICERS	39.3	37.5
FIREFIGHTERS	32.1	31.3
PARAMEDICS	21.4	18.8
DISPATCHERS	7.1	9.4
CORRECTIONS OFFICERS	0.0	3.1
DATA COMPLETION		
ALL 7 TIMEPOINTS	60.7	43.8
6 TIMEPOINTS	25.0	12.5
5 TIMEPOINTS	3.6	9.4
4 OR LESS TIMEPOINTS	10.7	34.4
	MEAN	**MEAN**
AGE (YEARS)	39.8	39.7

Figure 2 illustrates mean scores on the Post-Traumatic Stress Disorder Checklist (PCL-5) across time by study arm**.** At baseline, mean PCL scores in both the intervention and waitlist did not differ significantly. From baseline to end of week 5 of the intervention, mean PCL scores lowered significantly among individuals in the intervention arm

(baseline mean = 8.41; 5 week mean = 2.55), while mean PCL scores among those in the waitlist did not change significantly over this period (baseline mean = 7.55; 5 week mean = 5.78). A Group-by-Time interaction indicated that the change in scores in the intervention arm was significantly different from mean change over time among those in the waitlist (*p*=.02). These differences were maintained across the 3 month follow-up period.

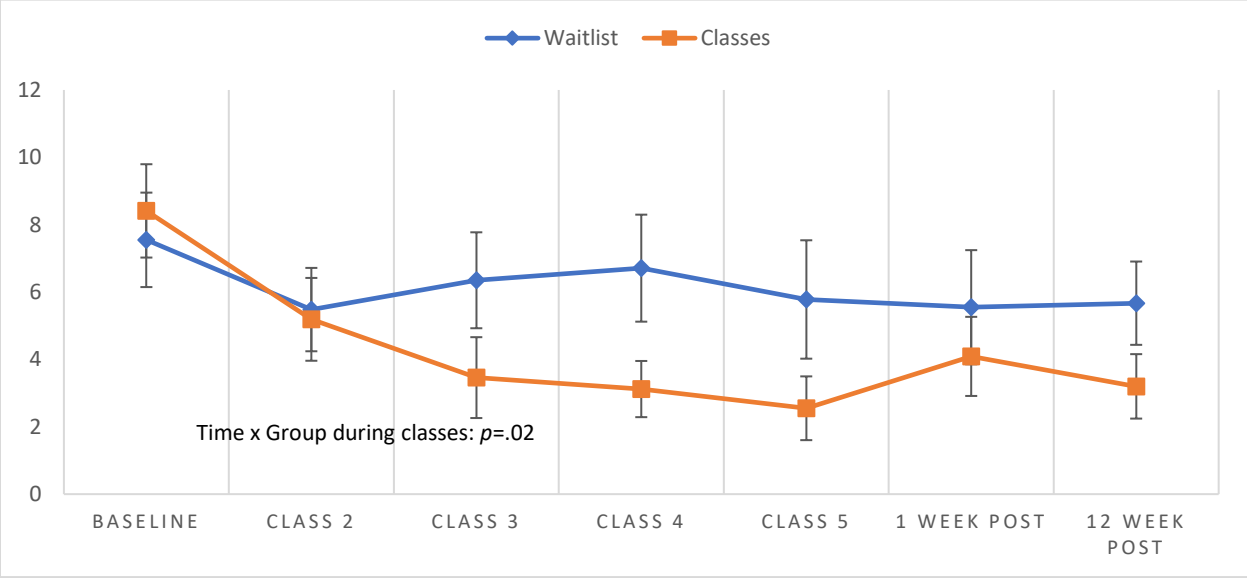

Figure 2. Mean scores on the Post-Traumatic Stress Disorder Checklist (PCL-5) across time by study arm (intervention vs. waitlist).

Figure 3 shows mean scores on the Patient Health Questionnaire (PHQ-9) across time by study arm**.** Similar to PCL scores, baseline mean PHQ-9 scores in both the intervention and waitlist did not differ significantly. From baseline to end of week 5 of the intervention, mean PHQ-9 scores dropped significantly among individuals in the intervention arm (baseline mean = 3.04; 5 week mean = 1.73), while mean PHQ-9 scores among those in the waitlist did not change significantly over this period (baseline mean = 2.90; 5 week mean = 2.78). A Group-by-Time interaction indicated that the change in scores in the intervention arm was significantly different from mean change over time among those in the waitlist (*p*=.003). These differences were maintained across the 3 month follow-up period.

Figure 4 illustrates mean scores on the Generalized Anxiety Disorder 7 item scale (GAD-7) across time by study arm**.** Similar to PCL and PHQ scores, baseline mean GAD-7 scores in both the intervention and waitlist did not differ significantly. From baseline to end of week 5 of the intervention, mean GAD-7 scores dropped significantly among individuals in the intervention arm (baseline mean = 3.07; 5 week mean = 1.55), while mean GAD-7 scores among those in the waitlist did not change significantly over

this period (baseline mean = 3.52; 5 week mean = 3.09). A Group-by-Time interaction indicated that the change in scores in the intervention arm was significant at a trend level from mean change over time among those in the waitlist (*p*=.07). These differences were also maintained across the 3 month follow-up period.

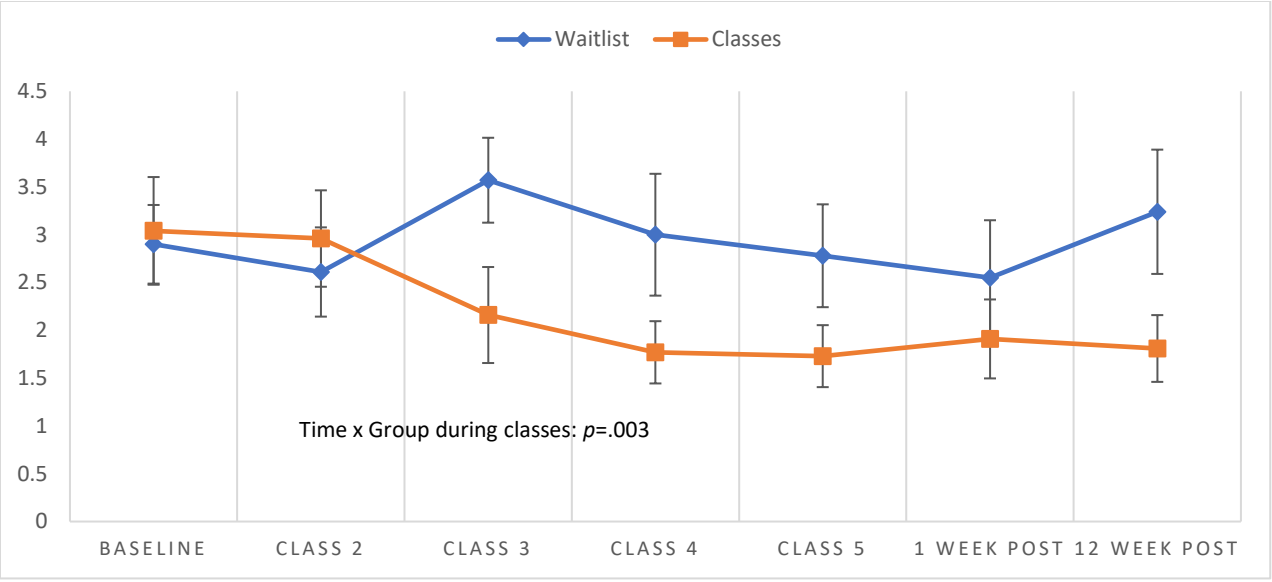

Figure 3. Mean scores on the Patient Health Questionnaire – 9-item scale (PHQ-9) across time by study arm (intervention vs. waitlist).

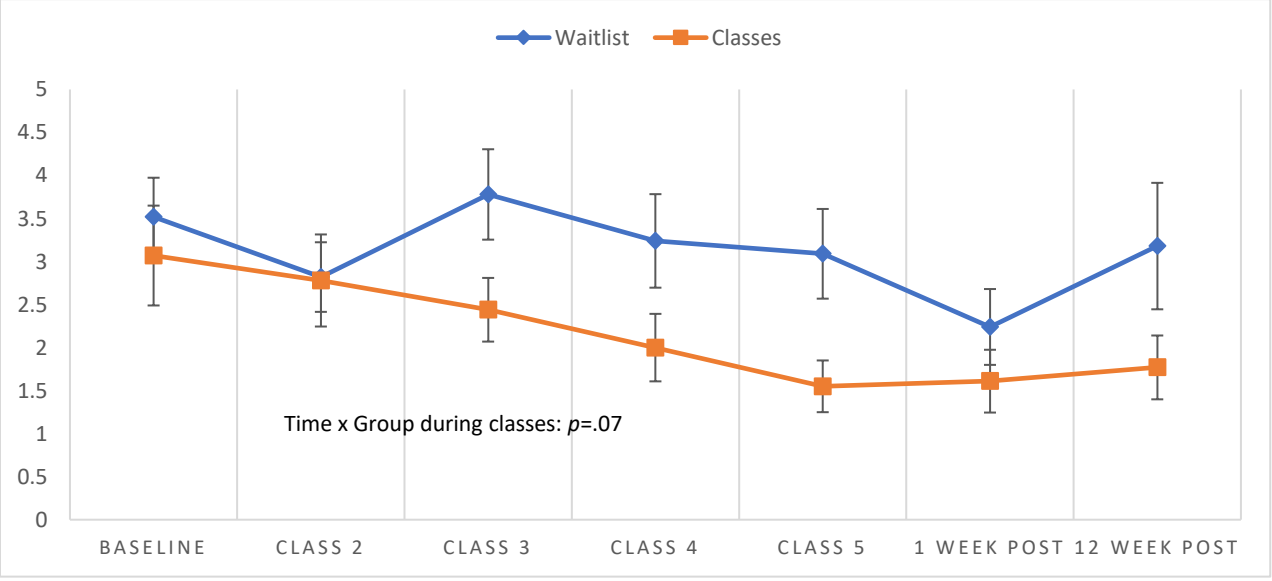

Figure 4. Mean scores on the Generalized Anxiety Disorder – 7-item scale (GAD-7) across time by study arm (intervention vs. waitlist).

Figure 5 demonstrates mean scores on the Connor Davidson Resiliency Scale (CD-RISC) across time by study arm**.** Baseline mean CD-RISC scores in both the intervention and waitlist did not differ significantly. From baseline to 12-week follow-up among those in the intervention, mean CD-RISC scores showed a trend level increase from 31.73 to 32.74. Mean CD-RISC scores among those in the waitlist did not show this same increase. A Group-by-Time interaction did not indicate significant differences in CD-RISC scores over time between the two arms.

Figure 5. Mean scores on the Connor-Davidson Resilience Scale (CD-RISC) across time by study arm (intervention vs. waitlist).

In terms of safety of the intervention, we evaluated the number of individuals that met caseness at some point during the study. Among those in the intervention, one individual met criteria for depression (according to PHQ-9 cutoffs) and 2 individuals met criteria for an anxiety disorder (according to GAD-7 cutoffs) during the 17 weeks of the study. Similar rates of caseness were found in the waitlist group (2 above PHQ-9; 1 above GAD-7). Caseness in both groups did not persist among any individual beyond 3 weeks and was not present at the end of follow-up. Importantly, none of the study participants endorsed suicidal ideation during the study.

4. Proposed Recommendations

Preliminary findings of this work note improvements in subthreshold clinical symptoms across the 5 sessions (i.e., significant reductions in scores on anxiety, depression and PTSD) among PSP who were assigned to the CBTm training, compared with a waitlist control group, and these differences were maintained through a 3-month follow-up.

We have several proposed recommendations based on the results of this study, which have been guided by our discussions with PAC members, study participants, and stakeholders (government, PSP organizations, health care providers, etc).

First, the need for an evidence-based program like CBTm in PSP organizations is high. There is much interest from the organizations themselves to integrate this type of programming for all current employees. Members of our PAC have also suggested that the CBTm program should be integrated into training programs for new recruits as part of an overall prevention strategy for PTSD and other mental health problems. The organizations that were involved in this study have offered their support for this program to be continued, particularly given the positive findings from this pilot work and the positive feedback they have received from those who participated.

Second, during the recruitment process, we had to screen out a number of potential participants due to mental health symptoms above threshold (~40%) to adhere to the idea of a 'healthy cohort'. Many of those individuals provided our team with feedback that they felt that they could substantially benefit from this kind of training. As such, we believe that these classes should not be limited to use as a prevention strategy for healthy participants, but should also be accessible to PSP currently struggling with mental health issues. Both those with and without clinically significant mental health symptoms and treatment seeking should be included in future work.

Third, given the current COVID-19 pandemic, there is a need to invest in virtual care for PSP. Evidence suggests that the mental health of PSP is particularly vulnerable at this time. The need to continue to provide resources and programming is critical. However, our study had to be stopped due to an inability to hold in-person classes because of public health restrictions. Recent studies have shown widespread adoption of virtual care over the past 18 months, and many highlight that increased use of virtual care may continue well beyond the pandemic. With ongoing public health restrictions, a shift to virtual programming can fill this gap. In addition to meeting needs during the pandemic, use of virtual technology has the potential provide more flexible access to care for PSP, the majority of whom are shift workers. In this study, we found it challenging to provide in-person classes that could be accessed consistently by all participants due to changing schedules. We did implement multiple class times each week, however it was impossible to meet all needs and rotations. Moving to a virtual format, which eliminates driving time, parking costs, and potential stigma associated with attendance at a care facility, could reduce barriers to care for PSP. Similarly, a self-directed web-based course that allows individuals to access the material whenever their schedule allows would increase accessibility and flexibility for shift workers, as well as for PSP working in rural and remote communities who have more limited access to care programming. Our team has adapted the in-person classes to a format that utilizes Zoom for facilitator-led virtual CBTm. This format was implemented and worked well for individuals on the waitlist when they were given access to CBTm. A randomized controlled evaluation of virtual CBTm classes would be an important next step in ensuring that virtual methodologies provide the same effect as in-person classes.

Results of this study have been presented in both local and national settings. These include at the Canadian Institute of Military and Veteran Health Research Forum, the Manitoba Operational Stress Injury Clinic, the Winnipeg Fire and Paramedic Service Peer Support Education Seminar, Department of Psychiatry Grand Rounds at both the University of British Columbia and the University of Manitoba. As well, we have presented findings to key stakeholders including the All Party Parliamentary Mental Health Caucus of Senate, the Chief of WFPS, the Deputy Minister of Health for the Province of Manitoba, the Minister of Mental Health and Community Wellness for the Province of Manitoba, our PAC representatives, and to leadership at Shared Health Manitoba. These presentations have helped elucidate the positive impact and potential of CBTm for PSP.

5. Executive Summary

Public safety personnel (PSP) are a particularly vulnerable group who face high levels of daily stress. A need has been identified to both build resiliency against the many psychological harms that these groups inherently face, and to reduce and prevent development of mental illness. Group-based cognitive behaviour therapy (CBT) is an evidence-based treatment that allows service providers to interact with high volumes of individuals who need mental health support. While CBT has shown efficacy in the treatment of a range of mental and substance use disorders, it has also been shown to be useful in building resiliency. This study was completed in an effort to provide a cost-effective mental health promotion strategy that could be accessible to a wide range of PSP. Our team developed a mindfulness-based CBT program called CBTm. CBTm is delivered in a facilitator-led, class-based format, held in-person with the aim of promoting resiliency through teaching CBT concepts and skills. The aim of this study was to examine the feasibility of CBTm in promoting resiliency in a cohort of PSP who did not meet criteria for a current diagnosis of major depression, anxiety disorder, or PTSD.

This project was split into two phases. In Phase I, the CBTm classes were adapted for prevention of PTSD and related conditions among PSPs. An online version of the course with minimal therapist intervention was also explored. Phase II of the project consisted of a 2-arm randomized controlled trial examining outcomes for those who were randomized to receive the CBTm course compared to a waitlist control group.

Findings of this study revealed improvements in subthreshold clinical symptoms across the 5 sessions (i.e., significant reductions in scores on anxiety, depression and PTSD) among PSP who were assigned to the CBTm training, compared with a waitlist control group, and these differences were maintained through a 3-month follow-up. The majority of participants in the intervention enjoyed the content and were satisfied with the classes. Although resiliency scores did increase over follow-up among those who took the CBTm classes, the finding was not statistically different from those on the

waitlist. Findings may have been limited by lack of recruitment due to the COVID-19 pandemic and the need to prematurely close the study.

We have several proposed recommendations based on the results of this study, which have been guided by our discussions with PAC members, study participants, and stakeholders (government, PSP organizations, health care providers, etc). These include the need to incorporate currently serving PSP in addition to new recruits, PSP with and without clinically significant mental health symptoms, and evaluation of virtual adaptations of CBTm (web-based and by videoconference).