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Cognitive Behavioral Therapy Intervention for Prevention of Anxiety and Mood Disorders in Public Safety Personnel

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This is to certify that the doctoral dissertation by

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Walden University
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Abstract

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Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Philosophy

Psychology

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Abstract

Due to repeated exposure to highly stressful work environments, public safety personnel (PSP) are at risk for developing symptoms of anxiety and mood disorders. The present study employed a quantitative, randomized-controlled trial (RCT) design to examine the impact of a novel cognitive-behavioral therapy (CBT) psychoeducational intervention on symptom levels of anxiety and depression. Participants were recruited from police, firefighters, paramedics, and emergency communications personnel. A total of 60 participants were randomly assigned to either the intervention arm or the waitlist comparison arm. General linear mixed models were used to examine the difference in symptom outcomes for those who participated in the intervention compared to those on the waitlist arm at two trend levels: (a) during the Cognitive Behavior Therapy with Mindfulness (CBTm) implementation period and (b) during the post-CBTm period. The results showed statistically significant improvement in symptoms of depression for those who participated in the intervention compared to those in the waitlist control arm during the CBTm implementation period, which was maintained during the follow-up period. There was also improvement in symptoms of anxiety for those who participated in the intervention during the CBTm implementation period, but the improvement in symptoms was not significantly different from the waitlist comparison arm. These preliminary findings serve to inform PSP occupational communities, clinical practice, and mental health policy about the use of a CBT psychoeducational intervention for PSP which may lead to positive social change.

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Dedication

To my caring and courageous immigrant parents, thank you for teaching me the value of hard work, unconditional love, and respect for all of creation. Thank you for the many sacrifices you made so that I could pursue my dream. It is my joy to share this accomplishment with you!

Acknowledgments

I would like to express gratitude and appreciation to my committee members Dr. Jennifer Rounds-Bryant, Dr. Rodney Ford, Dr. Jitender Sareen, and URR Dr. Georita Frierson for guiding and supporting my vision for this thesis. Thank you to Dr. Shay-Lee Bolton and Dr. Depeng Jiang for providing statistical consultation and mentorship. Thank you to the CBTm clinicians for sharing your expertise. Thank you to the hard-working research assistants from the University of Manitoba, Department of Psychiatry.

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I extend my deepest gratitude to all my wonderful family and friends who have supported me on this journey. To my parents, Yan Ming and Luningning, thank you for loving me unconditionally and for ensuring that I am always well fed! To my partner Josh, thanks for reading this thesis from top to bottom… and only falling asleep once.

I acknowledge this work was done on Treaty 1 territory, the traditional gathering place of the Anishinaabe, Cree, Oji-Cree, Dakota and Dene people and the traditional homeland of the Métis people of Canada.

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Chapter 1: Introduction to the Study

The need for access to high-quality mental health services for individuals working in stressful environments is a social issue affecting workers and their occupational communities. In particular, public safety personnel (PSP; e.g., police, firefighters, paramedics, and emergency communications personnel) work in highly stressful environments, which may result in the development of mental health symptoms and conditions such as anxiety and mood disorders. Those living with these types of conditions may experience symptoms that affect various aspects of life and well-being. Therefore, interventions targeting prevention of mental health conditions, such as anxiety and depression, are essential for informing workers about the impact of workplace stress while equipping workers with strategies for overcoming stressful experiences. Preventative interventions should be delivered in a way that empowers and supports individuals to manage stressful experiences as they occur thus improving resiliency in the workplace.

To provide high-quality preventative services, it is essential to examine the impact of novel mental health interventions that are accessible and provide effective support for those working in highly stressful environments. A brief cognitive behavioral therapy (CBT) psychoeducational intervention may be one way of addressing these issues by offering a mental health service targeting the prevention of anxiety and mood disorders. I conducted a randomized controlled trial (RCT) to systematically examine the impact of this intervention, which may contribute to a better understanding of this intervention's impact on PSP outcomes. This study is necessary to facilitate change by informing

workers, occupational communities, mental health practitioners, and policy makers about the impact of this preventative intervention for those working in highly stressful environments.

Background

In Canada, PSP is broadly defined as "front-line personnel who ensure the safety and security of Canadians across all jurisdictions," which encompasses firefighters, police, paramedics, and emergency communications personnel (Public Safety Canada, 2019). Repeated exposure to highly stressful and potentially traumatic situations is a unique aspect of the PSP role. The term operational stress injury (OSI) refers to mental health symptoms or "injuries" directly resulting from a PSP's work, which may include symptoms or mental health diagnoses such as anxiety and depression (Public Safety Canada, 2019). Further, due to repeated exposure to potentially traumatic events, mental health conditions related to post-traumatic stress are prevalent among Canadian PSP (Carleton et al., 2018; Sareen, 2014). A number of additional factors may contribute to a PSP's increased risk of mental health problems including long shift-work hours and high levels of work strain (Jones et al., 2018). These issues may emerge as early as initial training and can carry through into a PSP's retirement.

An individual with an anxiety or mood disorder may experience an extreme sense of distress in the presence of a specific situation or object that does not pose actual danger to the individual (Olatunji et al., 2010), but CBT is a treatment option that addresses cognitive issues (such as maladaptive thought patterns) and behavioral issues (such as avoidant behavior) associated with anxiety and mood disorders. CBT is a highly

structured and time-limited type of intervention that focuses on setting goals and developing skills within an individual (Hollon & Beck, 2004). CBT is associated with higher-rates of patient preference when compared to other forms of treatment, such as pharmacotherapy, which may yield negative side effects associated with medication use (McHugh & Whitton, 2013). CBT is a collaborative process between the therapist and patient.

There is also support within the literature for inclusion of low-intensity mental health interventions within mental health service delivery (Richards & Suckling, 2009). Low-intensity interventions preceding the usual and more in-depth interventions are associated with favorable outcomes following the administration of treatment (Cuijpers et al., 2009; Delgadillo, Moreea, & Lutz, 2016). For example, brief psychoeducational classes and workshops are low-intensity interventions that are inexpensive, require fewer sessions, and are effective for reducing symptoms of mental illness (Donker et al., 2009; Horrell et al., 2014). These brief interventions have shown clinical effectiveness from a single session conducted in the format of a 1-day workshop (Horrell et al., 2014). Psychoeducational classes, which include components of behavioral coping strategies and assigned homework activities, have been shown to reduce both depression levels (Horrell et al., 2014) and anxiety levels within a shorter period of time (Delgadillo, Kellett, et al., 2016). However, less is known about whether low-intensity preventative interventions are successful for supporting long-term maintenance of treatment outcomes.

In comparison, group CBT has been shown to be effective for reducing symptoms of anxiety in adult populations (Chambless & Ollendick, 2001; Stewart & Chambless,

2009), with outcomes are maintained over longer periods of time (Salzer et al., 2011). However, information about the use of a low-intensity interventions for prevention of anxiety and depression is lacking from the literature especially in PSP. This lack of knowledge within the mental health field reinforces the need for further research about the efficacy of a low-intensity CBT intervention for prevention of mental health conditions in PSP.

Statement of the Problem

In general, those who do not receive treatment for mental health conditions may experience distressing symptoms, low levels of quality of life, and comorbidity of disability and physical illness (Sareen et al., 2006). For instance, research has indicated that 37.5% of Canadians with major depressive disorder feel stigmatized by others (Patten et al., 2015), and only 20.7% of individuals with anxiety disorders use services that meet the criteria for treatment adequacy (Roberge et al., 2011). Minimal standards for treatment adequacy includes providing outpatient services that combine evidence-based practices with an adequate amount of sessions (Katzman et al., 2014; Roberge et al., 2014). Evidence-based practice posits that the integration of evidence-supported treatments, clinical expertise, and the client population's unique values and needs is necessary for identifying and conducting appropriate mental health services (Kazdin, 2008). Thus, it is essential to develop effective and accessible interventions for the prevention of anxiety and mood disorders.

In addition to the need to address anxiety and depression in the general population, PSP work in highly stressful environments, and those who have been exposed

to potentially traumatic events such as severe human suffering and violent deaths are at increased odds for experiencing symptoms of a mental health disorder (Carleton et al., 2019). For example, a study of over 5,000 Canadian PSP found that 44.5% of participants reported symptoms of a mental health disorder (Carleton et al., 2018). PSP who experience traumatic events in their occupational roles report experiencing mental health issues such as difficulties with managing feelings of worthlessness, anger, irritability, and low self-esteem, which are accompanied by poor coping behaviors such as isolation and avoidance (Ricciardelli et al., 2018). These mental health issues not only affect the individual PSP's personal well-being but also affect interpersonal relationships with family members and loved ones (Ricciardelli et al., 2018). Thus, there is a need for the development and implementation of evidence-based interventions that support PSP as they face highly stressful situations in their occupational roles.

A low-intensity intervention aimed at preventing mental health conditions, including anxiety and depression, may provide PSP with the opportunity to receive psychoeducational information and practical strategies within a single session and within a short-term time frame. For some individuals, the psychoeducational classes may be sufficient for managing symptoms of mental illness, whereas others may require additional services through individual or group therapy. But the use of CBT psychoeducational classes for prevention of mental health conditions among those working in highly stressful environments is a relatively limited area within the literature. CBT psychoeducational classes have been shown to be effective forms of treatment for anxiety and mood disorders (Cuijpers et al., 2009; Donker et al., 2009), and there is

growing support for using this type of intervention for preventing mental health conditions (Seligman et al., 2007). However, previous studies have mainly focused on other populations such as children/adolescents (Sánchez-Hernández et al., 2019) and college students (Bentley et al., 2018), and less is known about the PSP population. Since less is known about the effectiveness of using low-intensity psychoeducational classes to prevent mental health conditions in PSP, rigorous study designs such as RCTs are required to better understand the efficacy of using low-intensity interventions for prevention of anxiety and mood disorders for those working in highly stressful environments. An understanding of this preventative intervention is necessary to better inform both clinical practice and mental health policy.

Purpose of the Study

This quantitative RCT was conducted to evaluate the relationship between the CBT psychoeducational intervention and symptom levels for PSP working in highly stressful environments. Examining this relationship aids in understanding the efficacy of the CBT intervention, particularly the use of low-intensity brief psychoeducational classes, and its impact on PSP outcomes. These findings are useful for informing the development and selection of mental health services targeting prevention of mental health symptoms and conditions for those working in highly stressful environments.

Research Questions and Hypotheses

Research Question 1: Is there a significantly greater reduction in anxiety symptoms among PSP who received the CBT intervention in comparison with those who

did not participate in the intervention during the Cognitive Behaviour Therapy with Mindfulness (CBTm) implementation period?

Null Hypothesis 1: There is no significant difference in anxiety symptom scores among those who participated in the CBT intervention compared to those who did not participate in the intervention during the CBTm implementation period.

Alternative Hypothesis 1: There is a significantly greater reduction in anxiety symptoms among those who participated in the CBT intervention compared to those who did not participate in the intervention during the CBTm implementation period.

Research Question 2: Is there a significantly greater reduction in depression symptoms among PSP who received the CBT intervention in comparison with those who did not participate in the intervention during the CBTm implementation period?

Null Hypothesis 2: There is no significant difference in depression symptom scores among those who participated in the CBT intervention compared to those who did not receive the intervention during the CBTm implementation period.

Alternative Hypothesis 2: There is a significantly greater reduction in depression symptoms among those who participated in the CBT intervention compared to those who did not participate in the intervention during the CBTm implementation period.

Research Question 3: Is there a significantly greater reduction in anxiety symptoms among PSP who received the CBT intervention in comparison with those who did not participate in the intervention during the post-CBTm period?

Null Hypothesis 3: There is no significant difference in anxiety symptom scores among those who participated in the CBT intervention compared to those who did not participant the intervention during the post-CBTm period.

Alternative Hypothesis 3: There is a significantly greater reduction in anxiety symptoms among those who participated in the CBT intervention compared to those who did not participate in the intervention during the post-CBTm period.

Research Question 4: Is there a significantly greater reduction in depression symptoms among PSP who received the CBT intervention in comparison with those who did not participate in the intervention during the post-CBTm period?

Null Hypothesis 4: There is no significant difference in depression symptom scores among those who participated in the CBT intervention compared to those who did not participate the intervention during the post-CBTm period.

Alternative Hypothesis 4: There is a significantly greater reduction in depression symptoms among those who participated in the CBT intervention compared to those who did not participate in the intervention during the post-CBTm period.

Nature of the Study

A RCT design was used for this quantitative study, which is necessary to examine the efficacy of the intervention in a controlled clinical setting (Gartlehner et al., 2006; Wieland et al., 2017). To reduce selection bias, participants enrolled in the study were randomly assigned to either the CBT intervention or the comparison group. Patients assigned to the comparison group were placed on a 3-month waiting list and were invited to attend the CBT intervention after completion of the study. The study partnered with

agencies such as the Winnipeg Fire Paramedic Services (WFPS) and the Winnipeg Police Services (WPS) for recruitment.

Due to the Diagnostic and Statistical Manual (DSM)-5 framework of categorizing conditions, symptoms of both anxiety and depression were examined in this study to align with the current diagnostic system for mental health conditions. The DSM-5 uses a dimensional diagnostic system, which classifies an individual on a continuum depending on the severity of the symptoms (American Psychiatric Association, 2013). The fluidity of the dimensional approach shows that there is a degree of similarity in symptoms found among mental health conditions, and these conditions are not solely to be viewed as entirely separate categories. Thus, both anxiety and depressive disorders were addressed in this study.

Data collection was conducted using the survey method by administering standardized self-report questionnaires at three time-points: screening interview, completion of class sessions, and at long-term follow-up. Symptoms of anxiety and depression were the main outcome variables examined in this study. Linear regression analysis was used to examine whether participating in the intervention predicted patient outcomes during the CBTm implementation period (baseline to final class) and during the post-CBTm period (1 week post-intervention to 12 weeks post-intervention). From this design, the results of the study contribute to understanding the efficacy of the CBT intervention for prevention of anxiety and mood disorders.

Definitions

Independent Variables

Cognitive behavioral therapy with mindfulness (CBTm classes: CBTm is a low-intensity, brief, large group intervention that provided patients with an overview and introduction to mindfulness meditation, fundamental CBT principles and skills, cognitive restructuring, exposure skills, behavioral activation, goal-setting skills, problem solving strategies, sleep hygiene, anger management and assertiveness skills. The classes were held in-person at 90 minutes per class and consisted of five classes held on a weekly basis.

Public safety personnel (PSP): For this study, PSP refers to police officers, firefighters, paramedics, and emergency communications personnel (Public Safety Canada, 2019).

Dependent Variables

Anxiety: The domain of anxiety pertains to the DSM-5 symptom criteria for anxiety disorders as defined by excessive fear of an imminent threat and anxiety of a future threat with physiological, cognitive, and behavioral disturbances (American Psychiatric Association, 2013). This variable was measured by the Generalized Anxiety Disorder 7-item scale (GAD-7; Spitzer et al., 2006).

Depression: The domain of depression pertains to the DSM-5 symptom criteria for depressive disorders and defined as having a low or irritable mood with physiological, cognitive, and behavioral disturbances (American Psychiatric Association, 2013). These

symptoms were measured by the Patient Health Questionnaire 9-item (PHQ-9; Kroenke et al., 2001a).

Assumptions

There were topical, methodological, and theoretical assumptions made in this study. In regard to topical assumptions, I assumed that the current support services available for PSP working in highly stressful environments are not sufficient, and there would be a need for improvement of these services. It was assumed that PSP work in highly stressful environments, which may have caused the development of distressing symptoms with repeated exposure to stressful events if left untreated. It was also assumed that development of anxiety and depressive symptoms were harmful to an individual's well-being and required the support of an intervention delivered by mental health professionals rather than peers. In this way, it was assumed that changes in symptom levels were necessary for those working in highly stressful environments in order to achieve a healthier way of living, and offering this type of intervention would be beneficial for these occupational communities.

Methodologically, it was assumed that all PSP in the region had an equal opportunity to participate, and a representative sample of PSP would be enrolled in the study. Additionally, it was assumed that the sample of PSP consenting to participate in the study accurately represented the type of individuals at risk for developing symptoms of mental health conditions due to exposure to stressful events in the workplace. Since the data from the study were mainly collected through self-report questionnaires, it was also assumed that participants in this study would disclose truthful and accurate

information when completing the questionnaires. Therefore, it was assumed that participants were invested in assisting with the improvement of mental health services offered to PSP by providing complete and accurate information on the measurement tools.

In regard to theoretical assumptions, it was assumed that the etiology and prognosis of anxious and depressive symptoms affect thoughts, feelings and behavioral responses, thus requiring an intervention that specifically addressed these issues. In this way, it was assumed that CBT skills and mindfulness skills could be combined into a structured intervention for the prevention of anxiety and depressive symptoms. Therefore, an individual's symptom levels may change as a result of participating in the intervention, and it was assumed that changes in symptom levels would remain consistent for those who did not participate in the intervention.

Scope and Delimitations

The scope of this study focused on the impact of the CBT intervention for preventing mental health conditions in an adult population of PSP. The participants were recruited from Manitoba, primarily from the WPS and WFPS, which employ police, firefighters, paramedics, and emergency communications personnel serving the Winnipeg area. PSP from various socioeconomic, educational, and cultural backgrounds could participate in the study. Study participants had to be a minimum of 18 years-old, on active duty, and currently employed in their respective occupations in Manitoba. Participants in the study may have experienced symptoms consistent with other types of

mental health conditions, but the scope of the study focused on symptoms of mood or anxiety disorders.

Those who met the exclusion criteria were not captured in the sample. Exclusion criterion included a current mental health diagnosis by a psychologist or psychiatrist. Current suicidal ideation was also an exclusion criterion as this type of intervention did not provide adequate support in crisis situations. Since the questionnaires were based on participant self-report, the questionnaires may not have accurately captured information from individuals who were less self-aware of their mental health symptoms and issues. Patients currently receiving alternate forms of treatment for a mental health diagnosis were not eligible to participate in order to reduce confounding error.

In this way, the generalizability of this study's findings may have been limited to populations similar to the PSP in this geographical location. Since this may have affected the study's external validity, this limitation must be considered when interpreting and applying the study's results. The findings of the study may not reflect the impact of the intervention in other types of PSP or first responders in Canada, such as PSP working in rural settings, Canadian Armed Forces personnel, and veterans. These types of populations have unique sociodemographic characteristics and mental health needs that may not have been addressed in the design of this study. Therefore, understanding the impact of this intervention in these other specific types of populations was beyond the scope of this study.

Limitations

There were several limitations to the findings of this study. In regard to internal validity, confounding variables may have affected the outcomes of the study. Participants both in the intervention and comparison groups may have received other forms of mental health therapy and medical services during participation in this study. These other forms of treatment may have contributed to a participant's process of recovery and therefore also might have affected the participant's outcomes. If this occurred, the study's results may show favorable findings due to the presence of this confounding variable, which may lead to a Type II error. Positive changes in participant outcome scores may have been misattributed to the CBT intervention rather than the additional treatments and services the participant received from other clinics.

Additionally, the measurement tools in the study were based on participant self-report, and issues such as participant recall error may have led to inaccurate or incomplete responses on the study questionnaires. Some participants may have felt embarrassed to disclose information about their mental health use and underreport their symptoms. Others may have perceived their mental health issues in an unrealistic way and overestimate their symptom levels. Inaccurate or incomplete responses on the measurement tools may have potentially led to biased results. Similarly, the participants' willingness or availability to complete the questionnaire may have affected the amount of missing data in this sample. Significant differences between participants who responded and those who do not respond may have also led to biased results. Therefore, these

limitations may have affected the study's results and must be considered when interpreting the study's findings.

Efforts were taken to address these limitations. Regarding confounding variables such as participants who received other forms of mental health therapy, the exclusion criteria specified that participants may not actively engage in other forms of psychotherapy while participating in the study's intervention. To address the issue of inaccurate or incomplete responses, a research assistant was available to clarify any questions or concerns the participants had about the questionnaires. To alleviate the burden on the participants, brief measurement tools were selected for use in the study. These steps were taken to address the limitations to capture data that most accurately reflected the participant outcomes and to lessen the bias of conclusions drawn from the results.

Significance

This study was unique, because it addressed the lack of information regarding the efficacy of a psychoeducational intervention to prevent mental health conditions among PSP. I examined the implementation and use of a short-term low-intensity intervention, which is a new and growing aspect of the CBT literature. The implications of this study include a better understanding of whether the CBT preventative interventions are efficacious for preventing mental health conditions and improving a worker's ability to manage stressful situations.

The findings of this study are also beneficial for knowledge users in the following ways. First, the findings can inform mental health professionals about the impact of using

a preventative CBT intervention model when selecting effective interventions for PSP. Second, researchers may use the findings of this study to further examine the use of a low-intensity preventative intervention (such as psychoeducation) for addressing other types of mental disorders such as post-traumatic stress disorder in PSP. Third, researchers may use the findings of this study to further examine the use of a low-intensity preventative intervention (such as psychoeducation) for PSP in other Canadian provinces or countries. Fourth, the findings may inform policy makers about the impact of using this type of preventative intervention, which is necessary when making decisions regarding funding, development, and sustainability of mental health services for PSP.

Summary

The brief, psychoeducational CBT intervention is a novel intervention for prevention of mental health conditions. Since individuals experiencing symptoms of anxiety and depression face difficulties managing symptoms, it is necessary to examine the efficacy of the CBT intervention especially for those who work in highly stressful work environments such as PSP. The current study used a RCT, which is a rigorous study design used to improve understanding of the quality and to systematically examine the impact of this type of CBT intervention. The study focused on adults working as PSP and standardized questionnaires were used to collect data from the sample. The findings of this study will inform workers, occupational communities, mental health practitioners and policy makers about the impact of this intervention for preventing anxiety and depression in PSP.

Chapter 2: Literature Review

This literature review serves to provide an examination of the CBT intervention and its role in the prevention of anxiety and mood disorders within the PSP population. The theoretical framework of this study's intervention was based on the cognitive-behavioral theory, which also formed the framework for this study. In addition, the mindfulness theory was added into the therapeutic model and played an important role in establishing the theoretical foundation. An overview of the existing body of literature will be provided, including (a) a description of OSIs among PSP, (b) a description of the preventative framework for mental health conditions, (c) a review of the efficacy of cognitive behavior theory and therapy, and (d) a review of the efficacy of mindfulness-based theory. Since the use of CBT interventions for preventing the development of mental health conditions is a unique area of the literature, particularly for the PSP population, limitations to the current findings and future directions for research will also be discussed.

Literature Search Strategy

A review of the current research and literature examining CBT psychoeducation for prevention of anxiety and mood disorders in PSP populations was conducted for this dissertation. A thorough search of the literature was conducted through the electronic library databases at Walden University and the University of Manitoba to ensure the development of a well-established framework for this dissertation. The databases used for this literature search included Scopus, Thoreau, and Pubmed. Due to the varied nature of the mental health field, this variety of databases was necessary to ensure the inclusion of

information from psychological, psychiatric, and medical journals. The list of key search terms used to conduct the literature search included *Cognitive Behavioral Therapy*, *CBT*, *mindfulness*, *prevention*, *preventative interventions*, *psychoeducation*, *adult*, *public safety personnel*, *firefighters*, *police*, *paramedics*, *emergency call takers*, *emergency dispatchers*, *mental health*, *diagnosis*, *symptoms*, *anxiety*, *mood disorders*, *depression*.

Theoretical Foundation

OSIs

Due to the demands of the PSP occupations, those who work in this field may experience an OSI. An OSI may refer to a broad range of mental health issues such as the development of an anxiety or depressive disorder, the development of post-traumatic stress disorder, and poor functioning in the social, familial, and work environments (Public Safety Canada, 2019). Occupational stressors experienced by PSP may include exposure to potentially traumatic events, long shift-work schedules, and a duty to uphold a particular image to the public (Public Safety Canada, 2019). An OSI may negatively impact the mental health and well-being of PSP. Those who have experienced an OSI report difficulty coping with issues such as feelings of anger, irritability, worthlessness, low self-esteem, and isolation. Those who require mental health services and employee assistance supports may feel stigmatized and scrutinized by colleagues and employers, making it difficult for those who experience an OSI to seek mental health support (Ricciardelli et al., 2018). Due to the damaging effects of an OSI to PSPs' mental health and well-being, it is necessary to develop mental health services that support PSP in recognizing and effectively dealing with an OSI.

Prevention of Mental Health Disorders

The Institute of Medicine suggests using a framework for preventing diseases consisting of three levels of prevention strategies, which are based on level of risk. Universal prevention strategies target the whole population at risk. Selective prevention strategies target a subgroup that has shown to be at moderate risk for developing the disorder. Indicated interventions target the subgroup that is at the highest risk for developing a particular condition. (Institute of Medicine, 1994; Sareen et al., 2014). Since there are multiple trajectories for potential types of responses following a traumatic event, one individual may experience severe symptoms requiring long-term intensive treatment while another individual may experience mild symptoms requiring brief low-intensity support. Thus, interventions targeting prevention of mental health conditions should focus on two main goals: (a) diminish the development of symptoms and (b) increase the possibility of symptom remission and recovery (Qi et al., 2016).

Cognitive-Behavioral Theory

The theoretical framework for this study's mental health intervention was based on a combination of two theoretical models for addressing anxiety and mood disorders. First, the cognitive-behavioral theory is the foundational theory upon which the CBT intervention in the study was based, which stemmed from a combination of both the cognitive model and the behaviorist model of therapy. The cognitive-behavioral theory has a history rooted in both the behaviorist approach and cognitivist approach to understanding and treating mental health conditions.

In the 1950s, behaviorism was widely popularized in the psychological field as a model for the treatment of mental illness. Behaviorism focused on the behavioral observation of humans and animals (Beck, 2016; Rachman, 2009; Scott & Beck, 2008). The behavioral model is based on learning theory (Beck, 2016), which posits that psychopathological behavior may develop from one's experience in distressing situations (Rachman, 2009). Symptoms are conceptualized as patterns of maladaptive behaviors, which a person learns to display in response to a specific stimulus in their environment (Pavlov, 1955; Watson, 1924). Since symptoms are displayed as overt behavior, examining the patient's behavior is necessary for understanding of the development of treatment of mental health conditions. Treatment of symptoms consisted of learning new behavioral responses while in the presence of the distressing stimulus or situation (Eysenck, 1960; Wolpe, 1958). Thus, the process of learning new patterns of behavior led to healthier functioning.

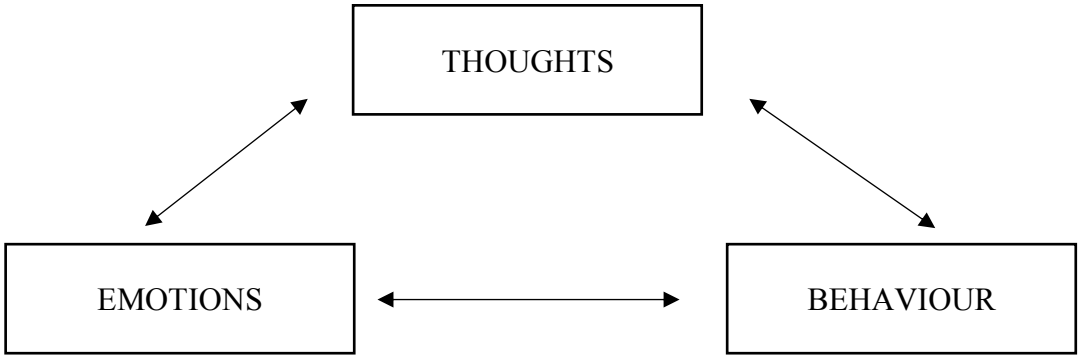
In the 1960s, the cognitive model became popularized in the psychological field and heavily influenced the behaviorist model of therapy (Rachman, 2009). The cognitive model focused on the impact of a person's cognitions, also referred to as thinking patterns, on one's emotions and behaviors (Rachman, 2009; Scott & Beck, 2008). Symptoms of mental health conditions were regarded as maladaptive or faulty patterns of thoughts that guide an individual's assumptions, beliefs, and attitudes about their self and environment (Beck, 2016; Ellis, 1962). Since symptoms are based on faulty cognitions, treatment of symptoms is based on changing the patient's thinking pattern. The cognitive model posits that treatment must provide the patient with the opportunity to develop new

thinking patterns (Beck, 2016). Thus, the development of new cognitive patterns allowed the patient to manage symptoms by counteracting irrational assumptions, beliefs, and attitudes.

By the 1980s, the influence of the cognitive model on the existing behavioral model resulted in a combined model that emphasized the relationship between an individual's cognitions, emotions, and behaviors (Rachman, 2009). As shown in Figure 1, the cognitive-behavioral model theorizes that a person's thoughts, emotions, and behavioral responses are influenced by one another. An individual constructs experience and meaning through the thoughts, emotions and behaviors elicited during a specific situation (Scott & Beck, 2008). In a specific situation, the thoughts a person experiences may elicit specific emotions and influence the type of behavioral response displayed by the person. Similarly, the type of emotions an individual experiences may elicit specific thoughts and behavioral responses.

Figure 1

Cognitive Behavioral Therapy Triangle



Note. The cognitive-behavioral theory displayed as a triangle to show the relationship between a person's thoughts, emotions, and behavioral responses.

The CBT component of this study's intervention is rooted in the cognitive-behavioral theory because it suggests that symptoms of anxiety and mood disorders develop from situations that trigger maladaptive thoughts and behavior (Scott & Beck, 2008). These types of situations elicit feelings of anxiety, depression and distress thus leading to impaired functioning and pathological behavior (Park et al., 2014). When an individual experiences a specific event or situation, the individual may assign a specific meaning or belief about oneself, others, and the world (Rush et al., 1975). If the situation or event is particularly stressful or traumatic, the individual may experience negative thoughts and distressing emotions. As a result, these negative thoughts and emotions may then affect behavior by influencing the type of response a person displays during the stressful situation.

In this way, the cognitive-behavioral theory posits that an individual's thoughts, emotions, and behaviors are necessary components to address in mental health treatment. According to the cognitive-behavioral theory, behavioral and cognitive changes may be employed to manage anxious or depressive emotions and thoughts as well as unhealthy behaviors (Dobson et al., 2008). The patient must learn to view themselves and situations from a realistic perspective, which aids the patient in learning to respond to situations in an appropriate manner (Beck, 2016; Rush et al., 1975). The cognitive-behavioral theory not only focuses on the patient's current symptoms, but it also focuses on how the patient's current cognitions and behavioral responses may affect the patient's future experiences (Blagys & Hilsenroth, 2002). Therapeutic interventions for anxiety and mood

disorders must effectively address the client's thoughts, emotions, and behavioral responses to support the client's successful recovery from the mental health conditions.

Since this theory focuses on addressing the cognitive and behavioral symptoms experienced by the patient, the therapist has a unique role by taking a direct approach to therapy. Compared to other theoretical models of therapy, the cognitive-behavioral theory emphasizes the directive nature of the therapeutic process (Beck, 2016; Blagys & Hilsenroth, 2002). This theoretical model posits that the therapist must direct the session by developing and following a planned agenda to effectively guide the client through the therapeutic process. The cognitive-behavioral theory places importance on the therapist's ability to manage and exert control over the session. In this way, the therapist takes an active role in guiding patients towards topics of discussion and teaching the client skills for symptom management. This theory proposes that it is important to focus on the patient's future experiences (Blagys & Hilsenroth, 2002). This theory suggests that therapists must support the patient to engage in activities during the session. It is theorized that skills developed during therapy aid the patient in managing symptoms of anxiety and depression in future stressful situations.

Based on the cognitive-behavioral theory, CBT involves features that differentiate this type of therapy from other types of mental health therapies. CBT sessions may involve components such as psychoeducation, skills training to help patients cope with symptoms, and assigned homework activities (Blagys & Hilsenroth, 2002). With expertise in mental health conditions, CBT therapists provide patients with information about symptom etiology and the course of treatment (Blagys & Hilsenroth, 2002). The

opportunity to learn and develop new coping skills and strategies for managing symptoms is an essential aspect of CBT. Providing patients with the opportunity to learn new coping skills has been found to be significantly associated with improved symptoms and reduced impairment (Rubel et al., 2017). Although other factors such as a strong therapeutic alliance and emotional involvement from the patient are important aspects of therapy, providing patients with coping skills during sessions is required for improved patient outcomes. Therefore, it is theorized that participation in the intervention will lead to a reduction in measurable symptoms affecting cognitions, behaviors, and functioning.

Validation of Cognitive-Behavioral Theory

Researchers have studied the validity of the cognitive-behavioral theory and its conceptualization of anxiety and mood disorders. The relationship between cognitions and emotions is one main component of the cognitive-behavioral theory and is of particular interest in the literature. Problematic cognitions such as rumination and worry symptoms experienced by those with anxiety and mood disorders have been examined. Negative affect has been found to be associated with concern and thoughts about future events, and the occurrence of more frequent concerns is associated with prolonged negative affect (Stawarczyk et al., 2013). Additionally, participants with anxiety have been found to be more vigilant in perceiving threatening events in the environment (Schofield et al., 2012). Those who experienced anxiety were more focused on distressing emotional stimuli and found it difficult to disengage from attending to the emotional stimuli. Another study examining the relationship between cognition and emotional symptoms found that the presence of worry thoughts mediated the relationship

between having a negative view of the world and experiencing anxiety and depression (Merino et al., 2013). Thus, cognitive mechanisms influence the presence of anxiety and depression.

The relationship between behavior and emotions in anxiety and depression has also been empirically studied in the literature. For example, a survey study found that the behavioral response of social isolation predicted the persistence of depression in post-partum mothers (Abdollahi et al., 2017). More recently, there has been a focus on the relationship between anxiety, depression, and patterns of health behavior. A survey study examining the relationship between depression and health behaviors found that depression was significantly associated with poor eating, sleeping, and exercising patterns (Allgöwer et al., 2001). Another study examining the relationship between anxiety and behavior found that among individuals with diabetes, health anxiety was associated with poor behavioral patterns for eating and sleeping (Janzen Claude et al., 2014). Further, a study examining health behaviors among individuals with multiple sclerosis, found that poor coping behaviors including alcohol dependence and smoking were associated with anxiety and depression (McKay et al., 2016). Thus, a clear relationship exists between experiencing depression or anxiety and displaying problematic patterns of behavior.

The third aspect of the cognitive-behavioral model is the relationship between cognitions and behavior. Research has shown that cognitive mechanisms such as worry thoughts are associated with a decrease in perceived ability to cope with problems and decreased engagement in coping behavior (Hong, 2007). Those who have experienced a

continual stream of thoughts and images related to negative outcomes have reported a decrease in employing coping strategies such as problem-solving skills and seeking social support. It was also found that rumination, or focusing one's thoughts on symptoms of depression, predicted an individual's disengagement from employing coping behavior (Hong, 2007). Thus, the relationship between cognitive mechanisms and behavioral responses is an important third component of the cognitive-behavioral theory.

Validation of Cognitive-Behavioral Therapy

CBT has been widely studied in the research field, and numerous trials and meta-analyses have empirically tested the use of CBT for anxiety and mood disorders (Butler et al., 2006; Hofmann & Smits, 2008; Parikh et al., 2016). A RCT comparing CBT to a wait-list control condition for participants with anxiety found clinically significant improvements in symptoms of anxiety following treatment with CBT (Craske et al., 2014). Another study comparing manualized CBT for anxiety to treatment as usual found that patients in the CBT group displayed higher levels of change compared to patients in the treatment as usual group. For patients in the CBT group, 70% displayed clinically significant change in symptoms, while only 42% in the treatment as usual group showed clinically significant change in symptoms (Addis et al., 2004). Meta-analytical studies have also shown that CBT is efficacious for treating symptoms of anxiety and depression when compared with a control group such as a placebo, wait-list, or treatment as usual (Cuijpers et al., 2013).

Further, a multicenter RCT of 469 patients showed that CBT is an effective intervention for treatment resistant depression and enhancement of treatment when used

in conjunction with pharmacological treatment. In this study, patients were randomized to either receive care as usual (which involved use of antidepressants) or CBT in addition to care as usual. At 6 months follow-up, 46% of participants in the CBT group displayed at least 50% reduction in depressive symptoms, while only 22% of participants in the CBT group displayed at least 50% reduction in depressive symptoms (Wiles et al., 2013). For patients in the CBT group, the odds of experiencing improved quality of life and decreased symptoms of depression were three times higher than the care as usual group at 46 month follow-up (Wiles et al., 2016). These longitudinal findings showed that treatment with CBT is effective for treatment resistant depression and is also efficacious when used in conjunction with medication.

Mindfulness Theory

The second theoretical model for the psychoeducational classes intervention was the mindfulness theory, which was used in combination with the cognitive-behavioral model. The mindfulness theory underlies the mindfulness meditation component of the intervention (Brown, Bravo, Roos, & Pearson, 2015; Shapiro, Carlson, Astin, & Freedman, 2006). Since the intervention was developed for individuals experiencing significant feelings of anxiety and depression, it was necessary to include a component of the intervention that equipped patients with the ability to tolerate the emotional stress rather than avoid it. Thus, the cognitive-behavioral model and mindfulness model were purposefully combined in order to help patients develop the ability to address symptoms that may cause emotional distress.

The mindfulness theory traditionally stems from the Buddhist teaching of simply noticing a situation or experience in its current state (Kabat-Zinn, 2003). In Western society, this concept of mindfulness has evolved into insightfulness of one's experience (Kabat-Zinn, 2003). According to Bishop et al. (2004), the mindfulness model suggests that wellness arises from a non-judgmental observation of one's internal and external stimuli. This model is composed of two parts: 1) attention and awareness, and 2) acceptance. Awareness refers to both one's internal and external experiences (including one's thoughts, emotions, and behavior). Attention is the ability to attend or remain aware of one's present experience. Acceptance refers to embracing a non-judgmental attitude towards this experience (Bishop et al., 2004; Brown & Ryan, 2004). By being aware of one's experience and adopting a nonjudgmental attitude towards oneself, an individual is then able to experience symptoms without becoming overwhelmed or significantly distressed.

Mindfulness can be achieved through the practice of meditation (Kabat-Zinn, 2003). Based on this theory, the practice of mindfulness meditation leads to increased ability to adopt acceptance and tolerance of one's distressing cognitions and emotions. This acceptance and tolerance of one's experience also enables the individual to engage in behavioral change when faced with distressing situations (Kabat-Zinn, 2003). Rather than avoiding or feeling overwhelmed by one's symptoms, the practice of mindful meditation provides the patient with support for accepting and tolerating the symptoms. In this way, the mindfulness meditation helps the individual to be better prepared for

learning and developing CBT skills and employing the use of these skills for improvement of symptoms.

Validation of Mindfulness Theory

Studies examining the validity of the mindfulness theory have focused on the roles of attention and self-compassion. A survey study found that day-dreaming and rumination, or a wandering of one's thoughts towards negative aspects of one's experience, had an impact on negative affect. The wandering of one's thoughts from the task at hand motivated an individual to narrowly focus on one's own personal issues, thus influencing the experience of depression (Marchetti, Van de Putte, & Koster, 2014). In addition, a second survey study found that self-compassion was a mediator between mindfulness and symptoms of depression (Svendsen, Kvernenes, Wiker, & Dundas, 2016). Following self-awareness, self-compassion provided the ability to manage symptoms of depression rather than ruminating on one's problematic issues. This outlines the relationship between the ability to attend and tolerate one's personal experience in the presence of anxiety and depressive symptoms.

Validation of Mindfulness-Based Therapy

There are studies examining the validity of mindfulness-based interventions but not to the to the same extent as CBT interventions. A meta-analysis of non-randomized studies found that mindfulness-based therapy is associated with reduced symptoms of depression and anxiety (Piet, Würtzen, & Zachariae, 2012). Mindfulness-based therapy shows medium effect sizes for symptoms of anxiety and mood disorders (Hofmann, Sawyer, Witt, & Oh, 2010). Researchers have examined the use of mindfulness

meditation on anxiety by measuring participant stress and heart rate. Participant outcomes were compared among three groups: those who engaged in mindfulness meditation sessions, those who spent time interacting with a dog, and a no-treatment group. The researchers found that those who engaged in mindfulness mediation displayed a significantly higher ability to stabilize one's heart rate and manage the body's physiological stress response (Shearer, Hunt, Chowdhury, & Nicol, 2015). In this way, participants that engaged in mindfulness meditation displayed significant improvements in anxiety compared to those in the comparison groups. Similarly, a RCT comparing mindfulness-based therapy to standard treatment of CBT found that mindfulness-based therapy showed significant improvements in anxiety and depression comparable to the outcomes in the CBT group (Sundquist et al., 2015). Thus, the empirical study of mindfulness-based interventions has shown efficacy for addressing conditions of anxiety and depression.

Literature Related to Key Variables

Brief, Low-intensity, Large-group Intervention and Participant Outcomes

The CBT intervention in this study consisted of psychoeducational classes, which are large-group interventions that introduce participants to components of cognitive and behavioral therapy through the use of coping strategies and assigned homework activities. This type of low-intensity intervention provides patients with skills for managing and reducing symptoms of mental illness (Horrell et al., 2014). This type of intervention also offers participants the opportunity to learn about mental health and develop practical

strategies within a single session, thus providing a gentler introduction to the treatment process.

Typically, these type of large-group psychoeducational interventions may be implemented as stand along interventions or as the first step within the beginning stages of a stepped-care model. These low-intensity, brief interventions appear to be a clinically effective first step in mental health services. The beginning stages of an intervention may be a critical time period during the client's process of recovery. The majority of patients who successfully recover begin to show improvement following the low-intensity interventions that occur during the beginning stages of the stepped-care process (Nordgreen et al., 2016). A recent evaluation of large-group psychoeducational CBT found a medium effect size ($d = 0.70$) for managing symptoms of anxiety (Delgadillo, Kellett, et al., 2016). In this way, psychoeducational classes may be an effective intervention and should be implemented early in the beginning stages of receiving mental health services.

However, there are some controversial views regarding the effectiveness of using this newer type of mental health intervention. There is preliminary discussion in the literature focusing on the type of client that may not benefit from psychoeducational interventions. For example, specific patient characteristics such as symptom severity and disability may predict poorer outcomes following psychoeducational classes (Delgadillo, Kellett, et al., 2016; Horrell et al., 2014). This suggests that low-intensity interventions may show lower clinical effectiveness for use with individuals experiencing more severe impairment and symptoms. Since low-intensity interventions offer limited therapist

support for the patient, psychoeducational classes might not offer adequate support for those requiring higher- intensity treatment. Thus, one may question the effectiveness of using psychoeducational classes with more severely impaired patients and whether this model of mental health service is appropriate for these types of individuals.

Although psychoeducational classes follow a manualized approach, this type of intervention is still susceptible to issues with fidelity. Differences in teaching styles among class facilitators and clinicians may lead to issues with consistency in the type of psychoeducation provided to patients. Research examining the efficacy of psychoeducational CBT across various sites have found possible confounding issues arising from the classes offered at different sites. Variability in class facilitators and differences in classes offered among sites have led to between-group differences in patient outcomes following psychoeducational CBT (Delgadillo, Kellett, et al., 2016). Since psychoeducational classes are largely based on the expertise and teaching styles of the facilitator, it is important for studies to used manualized approaches when examining the efficacy of psychoeducational interventions. The fidelity of the intervention may account for differences in patient outcomes and may have an impact on the clinical effectives of the psychoeducational classes.

Cognitive-Behavioral Therapy and Participant Outcomes

CBT is one of the more extensively studied therapeutic approaches and has shown high clinical effectiveness for the treatment of mental health conditions. It has been recommended as a first-line treatment of anxiety and mood disorders (Katzman et al., 2014; Parikh et al., 2016).

CBT has been found to be effective for treating symptoms of anxiety, depression, and mixed anxiety and depression when compared to either no treatment or treatment as usual (Pim Cuijpers, Cristea, Karyotaki, Reijnders, & Huibers, 2016; Watts, Turnell, Kladnitski, Newby, & Andrews, 2015). Compared to psychopharmacological therapy with medications such as antidepressants, CBT has proven to be as effective as treatment with medications for individuals with anxiety and depression (Siddique, Chung, Brown, & Miranda, 2012; Weitz et al., 2015), and treatment with CBT may be required when symptoms are resistant to pharmacotherapy (Campbell-Sills et al., 2016).

However, a limitation in the current literature pertains to the generalization and applicability of the findings of CBT studies to the wider population. For example, the exclusion criteria for research examining the treatment of depression often includes high levels of psychosis, current suicidality, and borderline personality disorder (Zimmerman, Mattia, & Posternak, 2002). Those who meet these criteria are excluded from the study, which may cause concerns about the generalizability of the study's findings. These exclusion criteria are necessary aspects of the research design, as patients experiencing these types of mental health issues often require immediate care and higher-intensity treatment to address their needs. Implementing these types of exclusion criteria aids in minimizing the impact of confounding variables, but leads to a biased patient sample. This limitation must be taken into account when interpreting findings from CBT studies.

Implications of Past Research on Present Research

Due to these limitations of determining the clinical utility of brief, low-intensity CBT interventions for prevention of mental health conditions, further research is needed

to identify the effectiveness of implementing CBT psychoeducational classes as an intervention for preventing anxiety and depression in PSP. Some authors have noted that there is limited evidence of significant differences in clinical effectiveness between CBT psychoeducation conducted as a beginning stage in a stepped-care model compared to immediate face-to-face delivery (Nordgreen et al., 2016). CBT with limited therapist – patient interaction has not been found to be superior to the face-to-face model, as completion of both models of service delivery has led to improvement in symptoms of anxiety and depression. Although brief, low-intensity CBT interventions may not be superior to the usual face-to-face interventions, it may still be a useful type of service delivery model and requires less therapist time than the CBT face-to-face model (Nordgreen et al., 2016). In this way, brief, low-intensity psychoeducational classes may work more efficiently by allowing individuals to receive support for mental health issues with the opportunity to engage in further treatment as needed. Thus, the use of brief, low-intensity psychoeducational classes is a unique area of the literature, and examining the impact of this type of intervention on participant outcomes would greatly contribute to the existing body of research.

Summary and Conclusions

This literature review established the foundation of this study by focusing on studies that examined that use of CBT psychoeducational classes for the treatment of anxiety and mood disorders. The theoretical framework was based on the cognitive-behavioral theory, which emphasizes the unique characteristics of CBT and its directive nature for addressing mental health conditions. The addition of mindfulness meditation in

the CBT intervention provides the client with support for accepting and tolerating the distressing symptoms in order to effectively develop skills for managing symptoms. Although CBT is an area that has been extensively researched, the use of psychoeducational classes as a preventative model for PSP is a novel area of the existing literature. The design for this study was based upon the findings of previous studies that focused on the use of CBT, psychoeducational classes, and prevention strategies for mental health conditions. The next chapter will provide an overview of the study's methodology.

Chapter 3: Research Method

The CBT psychoeducational intervention for prevention of mental health conditions warrants empirical examination of its efficacy for preventing anxiety and mood disorders among PSP. This chapter establishes the study design by providing a detailed overview of the sample population, procedures, measurement instruments, analytical strategy, and ethical procedures. This chapter will also address the operationalization of the variables as measured by standardized self-report questionnaires and justification of the analytic plan. Additionally, procedures for ensuring confidentiality, safety, and well-being of the participants will be outlined in detail.

Research Design Rationale

The research design for this quantitative study was an RCT to examine the relationship between the CBT intervention and symptom levels of anxiety and depression in PSP. An RCT is a quantitative method of examining whether a cause-and-effect relationship exists between variables of interest such as between intervention and outcome variables. An RCT may be used to address any gaps of knowledge within the existing literature pertaining to a specific topic (Navaneethan et al., 2010; Schulz et al., 2010). In mental health research, the RCT is used to identify the effectiveness of treatment for mental health conditions such as CBT for mood and anxiety disorders (Williams et al., 2016). There are various guidelines for reporting protocols and findings of randomized trials, including the Consolidated Standards of Report Trials (CONSORT) guidelines (Schulz et al., 2010). The CONSORT guidelines promote transparency and

clarity during development of the study's design, conducting the trial, and dissemination of findings.

The components of an RCT typically include at least two study arms, which are the experimental group and the comparison group. The experimental group refers to the participants who receive the intervention, and participants in the comparison group may either receive no treatment, an alternative form of treatment, or a placebo (Kendall, 2003). Collecting data from both the experimental and comparison groups allows researchers to compare outcomes between the groups (Kendall, 2003). Participants are randomly assigned to the study arms to decrease bias when assigning participants to the different groups. Ensuring similarity of the baseline and demographic characteristics among participants in the study arms is also necessary to decrease the presence of confounding variables, which may affect the outcomes of the groups (Kendall, 2003). The most stringent RCT design is a double-blinded design in which both the participant and researcher are unaware of which group the participant has been assigned (Kendall, 2003). This design aids in minimizing confounding variables such as providing additional attention to participants in the experimental condition; however, this type of design may not be feasible or realistic to implement in a study.

Because the RCT is a useful design for investigating the impact of a specific intervention, I used it to examine the impact of the CBT intervention on individuals with potential symptoms of anxiety and mood disorders. This design choice is consistent with research designs needed to advance knowledge in the area, and controlled trials are considered essential for contributing to the growing knowledge of evidence-based

treatments (Chambless & Ollendick, 2001). Limitations in the current literature include a lack of data from control groups (Delgadillo, Kellett, et al., 2016; Hawley et al., 2016). But the multiple arms of an RCT allows the researcher to not only examine within-group comparisons but also between-group comparisons. Causal inferences may be drawn using the RCT design, which allows for the comparison in outcomes between the treatment and control groups.

For this study, the RCT design allowed for comparison of those who participated in the intervention and those who received the usual services offered within Manitoba. Participants who were randomized to the control group were placed on a waiting list. The waitlist design is commonly used in RCT studies examining the effectiveness of low-intensity CBT interventions for anxiety and mood disorders (Williams et al., 2016). Within the existing literature, no procedure has emerged as the standard for control conditions. The waitlist design appears to be the most commonly used method in CBT studies; however, there are limitations of using waitlisted control conditions including the possibility of inflated effect sizes (Patterson et al., 2016). For CBT interventions addressing anxiety and depressive disorders, effect sizes may appear larger when compared to waitlist control conditions but may appear smaller when compared to care-as-usual control conditions (Cuijpers et al., 2016). Since the effect size of the treatment may depend on the strength of the control group, the effect size of the CBT intervention may appear larger than its actual value. This is an important limitation to consider when interpreting the results of this study. However, using an RCT design, the results of this study will contribute to understanding the impact of the of the CBT intervention.

Research Questions

Research Question 1: Is there a significantly greater reduction in anxiety symptoms among PSP who received the CBT intervention in comparison with those who did not participate in the intervention during the CBTm implementation period?

Null Hypothesis 1: There is no significant difference in anxiety symptom scores among those who participated in the CBT intervention compared to those who did not participate in the intervention during the CBTm implementation period.

Alternative Hypothesis 1: There is a significantly greater reduction in anxiety symptoms among those who participated in the CBT intervention compared to those who did not participate in the intervention during the CBTm implementation period.

Research Question 2: Is there a significantly greater reduction in depression symptoms among PSP who received the CBT intervention in comparison with those who did not participate in the intervention during the CBTm implementation period?

Null Hypothesis 2: There is no significant difference in depression symptom scores among those who participated in the CBT intervention compared to those who did not receive the intervention during the CBTm implementation period.

Alternative Hypothesis 2: There is a significantly greater reduction in depression symptoms among those who participated in the CBT intervention compared to those who did not participate in the intervention during the CBTm implementation period.

Research Question 3: Is there a significantly greater reduction in anxiety symptoms among PSP who received the CBT intervention in comparison with those who did not participate in the intervention during the post-CBTm period?

Null Hypothesis 3: There is no significant difference in anxiety symptom scores among those who participated in the CBT intervention compared to those who did not participant the intervention during the post-CBTm period.

Alternative Hypothesis 3: There is a significantly greater reduction in anxiety symptoms among those who participated in the CBT intervention compared to those who did not participate in the intervention during the post-CBTm period.

Research Question 4: Is there a significantly greater reduction in depression symptoms among PSP who received the CBT intervention in comparison with those who did not participate in the intervention during the post-CBTm period?

Null Hypothesis 4: There is no significant difference in depression symptom scores among those who participated in the CBT intervention compared to those who did not participate the intervention during the post-CBTm period.

Alternative Hypothesis 4: There is a significantly greater reduction in depression symptoms among those who participated in the CBT intervention compared to those who did not participate in the intervention during the post-CBTm period.

Methodology

Participants were recruited from Manitoba, Canada. This study involved random allocation of consenting participants to either an intervention condition or comparison condition. Participants in the intervention condition were immediately invited to attend a CBT psychoeducation course, which involved five sessions of in-person classes facilitated by a mental health professional. Participants in the comparison condition did not receive the intervention and were placed on a waiting list to receive the intervention

after completion of the study period. The independent variable was the CBT intervention, and the outcome variables were symptoms of anxiety and depression. Linear regression was used to examine post-intervention scores on each measurement instrument.

Setting

The setting took place in Manitoba, which is a province located in Western Canada. Facilitators for the study's CBT intervention were employed by hospitals under the Regional Health Authority and currently supervise the CBT intervention at their respective institutions. These hospitals offer both outpatient diagnostic assessments and treatment including psychopharmacological consultation and treatment, individual psychotherapy, and CBT classes and groups. For this study, the facilitators included psychiatrists, doctoral level clinical psychologists, and a master's level social worker. Regular meetings for the study's CBT team of facilitators were led by the psychiatrist who also serves as the medical director at the Health Sciences Center of Winnipeg's Adult Mental Health Clinic. This study provided an empirical evaluation of the existing CBT intervention for use with a new population, and the findings of this study can better inform the type of mental health services offered to PSP.

Population and Sample

For this study, I partnered with agencies such as WPS or WFPS to assist with recruitment of participants. In the WPS, there are approximately 1,360 total police members, and an additional 554 civilian and cadet members. The police members rank from constables to the chief of police. Approximately 15.7% of police members are female, 10.9% are Indigenous, 7.5% are visible minorities, and 0.2% have a disability

(Winnipeg Police Service, 2018). WPS officers respond to offenses such as violent crimes (e.g., homicide), property crimes (e.g., arson), and traffic offenses (e.g., impaired driving; Winnipeg Police Service, 2018).

The WFPS employs 727 licensed paramedics who respond to both emergency and non-emergency situations, providing care in hospital and community-based settings (Paramedic Association of Manitoba, 2019; Winnipeg Fire Paramedic Service, 2019). Paramedics are healthcare professionals with three classifications including primary care (e.g., basic life support), advanced care, and critical care. Paramedics may be deployed in settings such as ambulances, fire department vehicles, and air ambulance helicopters (Paramedic Association of Manitoba, 2019). The WFPS also employs firefighters who work in various capacities including hazardous materials response, high rise fires and elevated rescues, trench rescues (i.e., rescues from rivers, lakes, and ponds), and safely removing individuals from entrapment in vehicles (Winnipeg Fire Paramedic Service, 2016b).

Emergency communication personnel work within the police, firefighters, and paramedics services to coordinate and dispatch both emergency and non-emergency calls. The communication operators call-takers are responsible for obtaining detailed information from the caller such as the location of the emergency, nature of the problem, and contact information. Dispatchers are responsible for monitoring staff in the field, ensuring appropriate coverage of staffing throughout the area for emergency purposes, and coordinating efforts with other agencies (Winnipeg Fire Paramedic Service, 2016a).

The current study's sample was comprised of adult workers currently employed as either a firefighter, paramedic, or police officer, and emergency communications personel in Manitoba, Canada. The study was open to interested PSP with various gender identities (those who identified as male, female, or other types of genders) and various age ranges (18 years and older). PSP residing within Winnipeg and in the surrounding rural areas with various educational and cultural backgrounds were eligible to be included in the sample. PSP with various amounts of training backgrounds, experience in their occupational roles, rankings in their respective occupational communities, and years of service were also eligible to be included in the sample. Those who experienced symptoms of a mental health condition but did not meet full criteria for a diagnosis were eligible to be included in the sample. However, those who had a current mental health diagnosis, were currently receiving treatment for a mental health condition, or currently experienced suicidal ideation were not included in the sample. Individuals with a current diagnosis, or those who were currently receiving treatment for a diagnosis may require higher-intensity support, which was beyond the scope of the type of service provided in this study.

Selection Criteria

All patients who were referred for CBT services at the clinic and also met the study's eligibility criteria were invited to participate in the study. To be eligible, individuals must: (a) have adult legal status (18 years or older); (b) be employed as either a police officer, firefighter, or paramedic; (c) have active duty status, and (d) be employed in Manitoba. Individuals who met the following criteria were not eligible to participate in the study:

1) diagnosed by a psychologist or psychiatrist with a mental health disorder in the past 6 months,
2) a history of mental health service use related to a mental disorder in the past 6 months,
3) posttraumatic checklist score > 37 (Resick et al., 2016),
4) PHQ-9 score (depression) > 10 (Kroenke et al., 2001b),
5) GAD-7 score >10 (Spitzer et al., 2006), and
6) suicidal ideation in the past 6 months. Individuals meeting this exclusion criteria may require an immediate high-intensity intervention rather than a low-intensity preventative intervention, which was beyond the scope of this study.

Based on a statistical power calculation, it was initially proposed that the total sample size would consist of a minimum of 120 participants from each of the three professions (30 police, 30 firefighters, 30 paramedics, and 30 emergency communications personnel). Approximately 60 participants would be assigned to each study arm. With an anticipated drop-out rate of 30%, the sample size may have increased to a total of approximately 180 participants. This was based on a statistical power of $1-\beta = .80$, a significance level of $\alpha = .05$, and a medium effect size of Cohen's $f^2 = .15$. Although there were variable findings from cognitive-behavioral interventions trials range from small to large effect sizes, these values are consistent with a medium effect size which is typically targeted in CBT trials (Furukawa et al., 2012; Horrell et al., 2014).

Procedures

Recruitment

Participants were recruited from the WFPS and the WPS. Two main types of recruitment approaches were used. First, I sent recruitment materials to the occupational organizations involved in this study, and the materials were then distributed by the appropriate personnel as determined by each occupational organization (e.g., human resources department, and behavioral health department). Recruitment materials included posters and brochures that outlined the study details, which included specifying the voluntary nature of participating in the study and providing assurance of both privacy and confidentiality of participant information. The materials listed the research team's (myself and research assistants) contact information, and those who were interested in receiving more information about the study could contact the research team. A research assistant from the University of Manitoba's department of psychiatry briefly met with the interested individuals either by phone or in-person to provide information about information about the current study. If the individual was interested in participating or wanted further information about the study, the research assistant notified me.

Second, the research assistants from the University of Manitoba visited the occupational organizations' respective sites during designated times to meet in-person with interested individuals and provided information about the study. If the PSP was interested in participating or wanted further information about the study, the research assistant notified me.

Informed Consent

The consent process was conducted by a research assistant from the University of Manitoba's department of psychiatry, who did not have direct clinical responsibilities for the participants being recruited. To participate in the study, participants were required to review and sign a consent form. Consent was conducted either in-person, over the phone, or electronically using an online survey system. 1) In person: The research assistant met with the interested individual and reviewed the study in detail during this appointment. The individual was given the opportunity to consent to participate at that time, and alternatively, the individual was also given the opportunity to take the consent form home and return it to the research team at a later time. Participants were notified of their right to refuse or withdraw consent at any time. 2) A research assistant mailed a copy of the consent form and self-addressed envelope to the interested individual, and the researcher reviewed the consent form with the individual by phone. If the PSP was interested in participating, the PSP signed the paper-copy of the form and return it to the research team via mail. 3) If the interested individual decided to provide consent through the electronical method, the PSP was sent the consent package and a link to Qualtrics to e-sign a consent form. E-signing was completed by having the interested individual check an acknowledgement statement in place of a signature.

The main components of consent included: 1) consent to participate in the study and be randomized to either the intervention group or placed on a waitlist in the comparison group, and 2) consent to complete the study measures and allow the data to be used in the study. There were no known physical or financial risks to the participant.

However, some items on the self-report questionnaires could potentially trigger difficult emotions for participants, as the items referred to mental health issues such as suicidal ideation. Participants were informed of their right to refuse to answer any items on the questionnaires at any time, and their refusal to answer certain questions did not affect their eligibility to attend the CBT intervention. Participants were also informed that should they experience any significant emotional issues or mental health symptoms while participating in this study, they may alternatively choose to request support from other public and private mental health organizations. Research assistants provided participants with information about mental health support services available in the local community, and participants were encouraged to contact their regular doctor or employee benefits program if they were experiencing distressing emotional issues.

Design and Randomization

An RCT design was used for this quantitative study. Participants who consented to participate in the study were assigned to either the intervention arm or the comparison arm. For this study, the comparison arm was termed the "waitlist" comparison arm and did not receive the CBT intervention during this study. Participants in the waitlist arm were placed on a 3-month waiting-list and were invited to attend the CBT intervention after the study had been completed. Waitlist participants received the usual mental health services offered by the clinic and other external organizations.

Participants who consented and were eligible to participate in the study were assigned to either the intervention group (CBT) or the waitlist comparison group. A one-factor stratified, permuted block randomization strategy was used for this study, which

provided assurance of attaining balanced study arms. For each occupational group, 30 participants were randomized to CBTm, and 30 participants were randomized to waitlist.

Step 1: Randomization was stratified to ensure study arms were balanced based on 1 factor, which is the participant's occupational group (firefighters, police, paramedics, and emergency communications personnel). This 1-factor stratified randomization was necessary to ensure that participants from all occupational groups are assigned equally to CBT and waitlist (Kim & Shin, 2014).

Step 2: A permuted block randomization strategy was then be used to assign participants to either the CBT arm or the waitlist arm. Since all participants were enrolled into the study prior to randomization, it is possible to determine the specific number of participants required per block. Randomization occurred in blocks of 4 participants in effort to decrease bias during assignment to groups. A random number table was used to assign participants to each study arm (Cheng, 1996). The random number sequence was based on a strategy previously used in an RCT (Bolton, 2015), which involved randomly choosing a start-point on the random number table (eyes-closed, pointing at the table). In each block, the first 2 numbers to appear between 1 and 160 in a 3-digit sequence were assigned to the CBTm arm. The other 2 participants were assigned to the waitlist arm.

Data Collection Process

Participants in both the CBT intervention arm and the waitlist comparison arm completed measures at 3 time-points: baseline, post-intervention (6 weeks) and long-term follow-up (3 months). At baseline, participants completed the demographic questionnaire, GAD-7, and PHQ-9. At post-intervention and long-term follow-up time points,

participants completed the GAD-7 and PHQ-9. It took approximately five minutes to complete the PHQ9 and five minutes to complete the GAD7. The full package took approximately 10 minutes to complete.

Data collection was conducted electronically using the University of Manitoba's REDCap survey system. This process was used for both the intervention and waitlist study arms. The research assistant sent an email to the participant, which contained a specialized and secure link to access the online survey. Participants could complete the online surveys using any electronic device with WI-FI capability such as personal smartphones or computers. Participants who did not have access to an electronic device had the option of coming to the University of Manitoba and completing the survey on a study iPad. The research assistant was available to answer any questions participants may have had about the surveys, and participants could discuss any questions or concerns with the research assistant in-person, by phone, or by email. If a response was not received from the participant by the date the survey was to be completed, the researcher contacted the participant with a reminder using the participant's preferred method of contact such as by phone or email.

Completion of Participation in the Study

Participants in both the CBT intervention arm and waitlist comparison arm exited the study after completion of the 3-month follow-up period. At the final time-point of data collection, the researcher notified the participant that their participation in the study had been completed. The researcher was available to answer any questions the participant may have had about the study including future dissemination of the study's findings. It is

important to note that a participant could have also chosen to exit the study at any time, and declination to continue involvement in the study did not affect the participant's ability to access services through the employment assistance program or any other programs affiliated with the intervention facilitators in this study. Upon completion of the study, the CBT intervention was offered to participants in the waitlist arm.

Intervention

The CBT intervention was comprised of psychotherapy classes, which have been developed by mental health clinicians at local hospitals in Winnipeg, Manitoba. The intervention was administered by clinicians (psychiatrists and psychologists) and social workers, and the program was supervised by the medical director of the Mood and Anxiety Disorders Program, in the Adult Mental Health Clinic at the Health Sciences Centre of Winnipeg. The clinicians providing the CBT program were employees of the University of Manitoba's departments of Psychiatry and Clinical Health Psychology. Funding for this project was provided by the Worker's Compensation Board of Manitoba and the University of Manitoba's Department of Psychiatry's General Research Funds.

The CBT intervention in the current study was based on the CBTm Course for the general public developed at the Anxiety and Mood Disorders Clinic in the Health Sciences Center of Winnipeg. The CBTm Course for the general public has shown promising findings associated with improvements in anxiety symptoms as measured by the GAD 7-item scale and depressive symptoms as measured by the Personal Health Questionnaire 9-item scale (Palay et al., 2018; Thakur et al., 2019). For this study, an adapted version of the CBTm Course containing an additional module focusing on

managing emotional responses to traumatic stress was used. This 5-session, manualized large-group intervention provided strategies for symptom reduction for mood and anxiety disorders. Each class occurred one week apart, was 90 minutes in length, and addressed the fundamentals of CBT and mindfulness (such as describing the cognitive behavior theoretical model of symptom etiology, mindfulness meditation, cognitive restructuring, goal setting, exposure therapy, behavioral activation, problem solving, assertive communication skills, and strategies for managing symptoms in response to stressful events).

Instrumentation and Operationalization of Constructs

Standardized self-report measures were administered at pre-intervention, post-intervention, and long-term follow-up. Data was collected from the participant-completed questionnaires to acquire: 1) demographic information (including age, gender, marital status, and occupation), 2) symptom and distress levels as defined by the GAD-7 measure (Spitzer et al., 2006) and PHQ-9 (Kroenke et al., 2001a).

Demographic Data

Demographic data was collected from the participant-completed questionnaire. Basic demographic information included marital status, age, gender, and occupation.

Anxiety

The GAD-7 is a 7-item self-administered instrument, which measures GAD in adults by measuring the level of severity in anxiety symptoms (Spitzer et al., 2006). Participants were asked to rate the presence of symptoms of anxiety over the past 2 weeks. Items were measured on a 4-point Likert-scale ranging from 0 (“not at all”) to 3

("nearly every day"), with higher scores indicating higher levels of GAD. The scale has shown good reliability as well as good criterion, construct, factorial, and procedural validity in both clinical settings and in the general population (Ruiz et al., 2011; Spitzer et al., 2006). The total scores on this instrument ranges from 0 to 21. A total score on the instrument determines the level of symptom severity and is reflected as follows: a total score of 5 to 9 indicates mild anxiety, 10 to 14 indicates moderate anxiety, and 15 to 21 indicates severe anxiety (Spitzer et al., 2006). This instrument was scored by hand for the purposes of this study. The GAD-7 was available for researchers and additional permission from the authors was not required.

Depression

The PHQ-9 is a 9-item self-administered instrument measuring the severity of depressive symptoms. Participants were asked to rate the presence of depressive symptoms over the past two weeks. Items were measured on a 4-point Likert-scale ranging from 0 ("not at all") to 3 ("nearly every day"), with higher scores indicating higher levels of depression. Total scores on this 9 item instrument ranges from 0 to 27. The total score on the instrument determines the level of symptom severity and is reflected as follows: a total score of 5 to 9 indicates mild depression, 10 to 14 indicates moderate depression, 15 to 19 indicates moderately severe depression, and 20 to 27 indicates severe depression (Kroenke et al., 2001a). The PHQ-9 is a validated and reliable measure for assessing the severity of depression in the general population (Kroenke et al., 2001a; Martin, Rief, Klaiberg, & Braehler, 2006), which has been shown to detect changes over time for outcome scores measuring depression (Löwe, Kroenke, Herzog, &

Gräfe, 2004). This instrument was scored by hand for the purposes of this study. The PHQ-9 was available for researchers and additional permission from the authors was not required.

Data Analysis Plan

The data was analyzed using the Statistical Package for Social Sciences (SPSS) version 25. The analytical strategy for this study examined whether there was greater improvement in symptoms amongst those who participated in the CBT psychoeducational intervention compared to those who did not participate in the intervention during the CBTm implementation period (from baseline to final class), and whether there was greater improvement in symptoms amongst those who participated in the CBT psychoeducational intervention compared to those who did not participate in the intervention during the CBTm implementation period (from 1 week post-intervention to 12 weeks post-intervention). Linear regression analysis (linear mixed models) was used to address each research question as presented below.

1) Research Question 1: Is there a significantly greater reduction in anxiety symptoms amongst Public Safety Personnel (PSP) who received the CBT intervention in comparison with those who did not participate in the intervention during the CBTm implementation period? Linear regression model: CBT intervention predicts anxiety symptom levels as measured by the GAD-7 during the CBTm implementation period.
2) Research Question 2: Is there a significantly greater reduction in depression symptoms amongst PSP who received the CBT intervention in comparison

with those who did not participate in the intervention during the CBTm implementation period? Linear regression model: CBT intervention predicts depression symptom levels as measured by the PHQ-9 during the CBTm implementation period.

3) Research Question 3: Is there a significantly greater reduction in anxiety symptoms amongst PSP who received the CBT intervention in comparison with those who did not participate in the intervention during the post-CBTm period? Linear regression model: CBT intervention predicts anxiety symptom levels as measured by the GAD-7 during the post-CBTm period.
4) Research Question 4: There is no significant difference in depression symptom scores among those who participated in the CBT intervention compared to those who did not participate the intervention during the post-CBTm period. Linear regression model: CBT intervention predicts depression symptom levels as measured by the PHQ-9 during the post-CBTm period.

Threats to Validity

Threats to the study's internal validity posed statistical limitations for this study. Confounding variables, such as concurrent treatment with psychotropic medication or concurrent participation in psychotherapy at other clinics, could affect the outcomes of the study. Involvement in other forms of mental health therapy and medical services, might have occurred in both the intervention and control groups. Positive changes in patient outcome scores could be misattributed to the CBT intervention rather than the additional treatments and services the client receives from other clinics. A type I error

(false positive) might have occurred if the presence of the confounding variable leads to favorable findings in the intervention group compared to the wait-list group. To address this issue, an alpha value of .05 (95% confidence interval) was used to control the chance occurrence of a type I error. A type II (false negative) may have occurred if the presence of the confounding variable led to favorable findings in the wait-list comparison arm rather than the CBT intervention arm. It was proposed that an adequate sample size would be used to increase power of the statistical test and therefore decrease the probability of a type II error.

Ethical Procedures

Institutional Approval

This study was approved by the research ethics boards at both Walden University (#12-03-19-0276340) and the University of Manitoba / IRB of Record (#HS22801). This study has also been approved by the Research Impact Committee to obtain institutional approval from the Health Sciences Centre of Winnipeg (#RI2019:048). This study is registered with the U.S. National Institutes of Health's Clinical Trials Registry (#NCT04002050). An application for permission to conduct research was submitted and approved by WPS. Approval to conduct research was received from WFPS, and no additional standardized application process was required by that organization.

Privacy and Confidentiality

Each data collection form was numbered for handling (by site and consecutive form), but no participant identifiers that connected back to the individual participant were used. Paper copies of consent forms and self-report questionnaires were stored in Dr.

Jitender Sareen's Canadian Foundation for Innovation secured laboratory at the University of Manitoba. Potentially identifying information did not leave the project site. To protect the privacy of participants and ensure confidentiality, a separate database contained the names, addresses, phone numbers, consent status, and unique identifier for participants who consent to participating in the research. Only the research coordinator and research assistants who entered the data had access to the key for this separate database. Personal information was de-identified to protect the privacy of the participants.

Participant Safety and Well-Being

A safety protocol was implemented during the study to ensure participant safety and well-being (see Appendix A). Since some items on the self-report questionnaires asked about the participants' emotional state, it was possible that some participants may have experienced some mild emotional upset. If a participant was in crisis during the study, the participant was provided with a list of contact information for crisis resources including the Adult Mobile Crisis Service (204-940-1781) or Winnipeg Police (911). All researchers who interacted with participants were trained in this protocol. If there was a suspected incidence of child or elder abuse, the researcher documented known information about the incident and immediately notified the research coordinator. Additionally, in the event that a participant employed by the WPS was identified as being acutely suicidal/homicidal, the researcher notified the WPS Behavioral Health Unit personnel as per the Safety Protocol.

Data Storage

All data was stored in REDCap using the University of Manitoba REDCap installation, which was located on a password-protected computer in Dr. Sareen's laboratory. Data entered directly into the online survey was also hosted and stored on the University of Manitoba's REDCap's survey server. Only authorized study staff could access this computer using a person-specific username and password. All existing patient confidentiality regulations were respected and adhered to, and all computer database materials were devoid of unique patient identifiers. Data collected on paper was destroyed using a confidential waste system following the completion of the data analysis and manuscript writing phases of the study.

Members of the research team (myself and research assistants) who were directly involved with the recruitment/enrollment, data collection, and analysis phase of the study completed ethical training for working with human participants. Team members completed the Personal Health Information Act training and pledge through the University of Manitoba and Winnipeg Regional Health Authority, and the Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans Course on Research Ethics. In addition, I completed the National Institutes of Health's training course: Protecting Human Research Participants.

Summary

A RCT design was used to systematically examine the impact of this CBT intervention for preventing anxiety and mood disorders in PSP. Participants were recruited from the WFPS and WPS in Manitoba, Canada. The study was composed of

two study arms, and participants were randomized into either the intervention group or the comparison group. Standardized instruments pertaining to anxiety and depression were completed at three time-points: screening, post-classes and long-term follow-up. Linear regression analysis was used to identify the impact of the intervention on outcome scores during the CBTm-implementation period and during the post-CBTm period. Ethical procedures were closely followed to ensure the protection and well-being of the study's participants.

Chapter 4: Results

The purpose of this study was to examine the impact of this CBT intervention in reducing anxiety and mood disorders in PSP (police, firefighters, paramedics, and emergency communications personnel) by conducting an RCT. Participants were randomized into either the intervention study arm or the comparison study arm. It was initially proposed that data would be collected at three timepoints (screening, post-classes, and long-term follow-up), and linear regression analysis would be used to identify the impact of the intervention on post-psychoeducation and long-term follow-up outcome scores. The study addressed research questions related to whether there was a reduction in anxiety and depression symptoms for PSP who received CBT intervention both during the implementation phase and the post-intervention period. This chapter will provide an overview of the data collection process, intervention fidelity, participant flow and demographics, and results of the linear regression analysis.

Data Collection Results

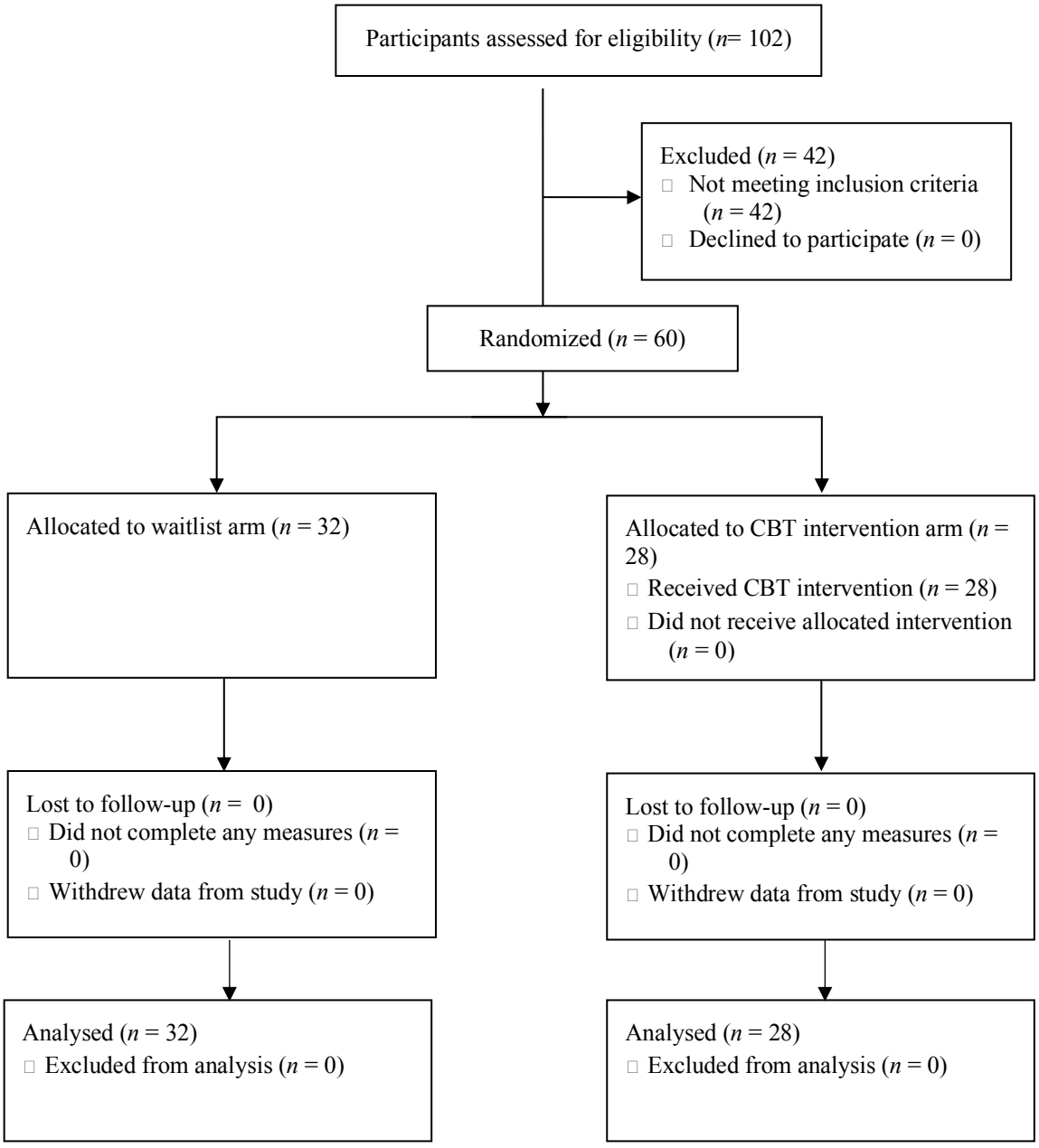
The data collection time frame spanned a total of 6 months. The screening process to determine participant eligibility was 5 weeks (August to September 2019). Data collection for the intervention took place over 1 month (five classes held on a weekly basis for 5 weeks). Two cycles of the intervention were conducted (September 2019 to November 2019). Data collection for the post-intervention (6 weeks follow-up) and the long-term follow-up (3 months follow-up) time points took place over the course of 12 weeks (November 2019 to February 2020).

Participant Recruitment and Responses

A description of participant flow including the total participants screened, enrolled, completed study, and attrition from study is shown in Figure 2.

Figure 2

Diagram of Participant Flow Through the Study Process



One hundred and two PSP were assessed for eligibility to participate in the study. Forty-two personnel did not meet inclusion criteria and were not eligible to participate. Sixty participants were eligible to participate and were randomly assigned to the CBT intervention arm (n = 28) and the waitlist arm (n = 32), and data from all 60 participants were included in the analysis with the number of completed measures at each timepoint (see Table 1). At Week 1 (baseline), all 60 participants from the CBT intervention arm (n = 28) and the waitlist arm (n = 32) completed the measures. At 5 weeks, 46 participants from the CBT intervention arm (n = 23) and the waitlist arm (n = 23) completed the measures. At Week 6 (post-intervention), 44 participants from the CBT intervention arm (n = 23) and the waitlist arm (n = 21) completed the measures. At 3 months (long-term follow-up), 39 participants from the CBT intervention group (n = 22) and the waitlist arm (n = 17) completed the measures. The number of completed measures at each time point were equally distributed among the CBT intervention arm and waitlist arm with no significant differences between the two arms, X^2 =1.34, *ns*.

Table 1

Number of Completed Study Measures at Each Timepoint

	Intervention Group N(%)	Waitlist Group N(%)	X^2(df)	Significance
Completed Measures			1.34(6)	NS
Class 1	28(16.0)	32(19.0)		
Class 2	27(15.4)	29(17.3)		
Class 3	26(14.9)	24(14.3)		
Class 4	26(14.9)	22(13.1)		
Class 5	23(13.1)	23(13.7)		
1 Week Post	23(13.1)	21(12.5)		
12 Weeks Post	22(12.6)	17(10.1)		

Deviations from the Initial Data Collection Plan

This study initially proposed to use data from three timepoints (screening, 1 week post-intervention, and 3 month follow-up); however, the total sample size for the study was smaller than anticipated ($n = 60$). Due to the small sample size, the study would have low statistical power for a regression analysis, which may produce biased results (e.g., a false negative Type II error). Data from additional timepoints were necessary to ensure the study had sufficient power to conduct the analytic models. Thus, data collected from the following seven timepoints across the study were included in the analysis: Classes 1 to 5, 1-week post-intervention, and 12-weeks post-intervention (long-term follow-up). Additionally, the data collected at the screening timepoint (e.g., a participant's first meeting with the research team to determine eligibility in the study) was not included in the analysis due to the potential confounding variable of time. As participants were recruited over a few months, participants did not complete the screening measures on the same date, which led to differing time frames between the screening and Week 1. Additionally, there may have been events that occurred during the time frame between the screening timepoint and class (e.g., changes in occupational environment or personal life), which could have impacted a participant's scores on the measures. Therefore, it was decided that Class 1 would serve as the baseline timepoint. Revisions made to the study protocol were submitted to and approved by the research ethics boards at Walden University and the University of Manitoba (IRB of Record).

Intervention Fidelity

There were no changes or deviations from the proposed intervention implementation plan. The 5-session CBTm course was delivered once a week for five weeks. The intervention clinicians adhered to the CBTm facilitator manual for standardized delivery of the intervention. Class dates were scheduled in collaboration with the key stakeholder groups. The course was offered in two consecutive blocks spanning over three months to accommodate the shift work schedule of the PSP. There were no adverse events related to the study intervention. Additionally, none of the participants endorsed suicidal ideation during the study.

Data Analysis Results

Demographic Characteristics

A total of 60 participants were used in the analysis. Twenty-eight participants were randomized into the CBT intervention arm, which was characterized by police officers (39.3%), paramedics (32.1%), firefighters (21.4%), and dispatchers (7.1%). Thirty-two participants were randomized into the waitlist arm, which was characterized by police officers (37.5%), paramedics (31.3%), firefighters (18.8%), dispatchers (9.4%), and correctional officers (3.1%). Chi-square tests of independence were performed to examine the relationship between demographic variables (i.e. age, sex, marital status, and occupation) and assignment to study arms. The CBT intervention arm and the waitlist arm were equally distributed on all baseline characteristics. The majority of participants in the study were police officers, male, age 34 to 39, and married/common-law. There

were no significant differences between groups on the demographic variables. Baseline demographics are shown in Table 2.

Table 2

Demographic Characteristics of the Participant Sample at the Baseline

	Intervention Group N(%)	Waitlist Group N(%)	X^2(df)	Significance
Age			0.43(3)	NS
22 - 33	7(25.0)	6(18.8)		
34 - 39	8(28.6)	11(34.4)		
40 - 46	6(21.4)	7(21.9)		
47 - 64	7(25.0)	8(25.0)		
Sex			2.1(1)	NS
Male	20(71.4)	17(53.1)		
Female	8(28.6)	15(46.9)		
Non-Binary	0(0.0)	0(0.0)		
Marital Status			0.6(2)	NS
Single	5(17.9)	7(21.9)		
Married / Common-Law	21(75.0)	24(75.0)		
Divorced / Separated	1(7.1)	1(3.1)		
Occupation			1.0(4)	NS
Police Officers	11(39.3)	12(37.5)		
Paramedics	9(32.1)	10(31.3)		
Firefighters	6(21.4)	6(18.8)		
Dispatchers	2(7.1)	3(9.4)		
Other	0(0.0)	1(3.1)		

Research Question and Hypotheses 1 Results

Research Question 1: Is there a significantly greater reduction in anxiety symptoms amongst PSP who received the CBT intervention in comparison with those who did not participate in the intervention during the CBTm implementation period?

Null Hypothesis 1: There is no significant difference in anxiety symptom scores among those who participated in the CBT intervention compared to those who did not participate in the intervention during the CBTm implementation period.

Alternative Hypothesis 1: There is a significantly greater reduction in anxiety symptoms among those who participated in the CBT intervention compared to those who did not participate in the intervention during the CBTm implementation period.

The results indicated acceptance of the null hypothesis. Table 3 illustrates GAD-7 mean scores over time across the two study arms during the CBTm implementation period (i.e., baseline to final class). The GAD-7 scores in the intervention arm decreased significantly by 1.52 points on average between Class 1 (baseline) and Class 5 (final class) during the 5-week CBT intervention; this change was determined to be significant based on linear mixed model analysis ($p<.001$). However, this decrease was not significantly greater than the decrease in means among the waitlist arm over this similar time period at a trend-level ($p=.07$).

Table 3

Mean GAD-7 Scores from General Linear Mixed Models from Baseline to Final Class

	Intervention Mean (SD)	Waitlist Mean (SD)	p-value
GAD-7			
Trend During Classes			.07
Class 1	3.07(3.07)	3.52(2.53)	
Class 2	2.78(2.78)	2.82(2.14)	
Class 3	2.44(1.85)	3.78(2.52)	
Class 4	2.00(2.00)	3.24(2.49)	
Class 5	1.55(1.41)	3.09(2.50)	

Research Question and Hypotheses 2 Results

Research Question 2: Is there a significantly greater reduction in depression symptoms amongst PSP who received the CBT intervention in comparison with those who did not participate in the intervention during the CBTm implementation period?

Null Hypothesis 2: There is no significant difference in depression symptom scores among those who participated in the CBT intervention compared to those who did not receive the intervention during the CBTm implementation period.

Alternative Hypothesis 2: There is a significantly greater reduction in depression symptoms among those who participated in the CBT intervention compared to those who did not participate in the intervention during the CBTm implementation period.

The results indicated rejection of the null hypothesis. Table 4 illustrates PHQ-9 mean scores over time across the two study arms during the CBTm implementation period (i.e., baseline to final class). The PHQ-9 scores in the intervention arm significantly decreased on average by 1.31 points between Class 1 (baseline) and Class 5

(final class) during the 5-week CBT intervention (*p*=<*.001)*, which was a significantly greater decrease than scores in the waitlist arm at trend level (*p*=<.001).

Table 4

Mean PHQ-9 Scores from General Linear Mixed Models from Baseline to Final Class

	Intervention Mean (SD)	Waitlist Mean (SD)	p-value
PHQ-9			
Trend During Classes			<.001
Class 1	3.04(2.98)	2.90(2.29)	
Class 2	2.96(2.62)	2.61(2.47)	
Class 3	2.16(2.51)	3.56(2.13)	
Class 4	1.77(1.66)	3.00(2.92)	
Class 5	1.73(1.52)	2.78(2.56)	

Research Question and Hypotheses 3 Results

Research Question 3: Is there a significantly greater reduction in anxiety symptoms amongst PSP who received the CBT intervention in comparison with those who did not participate in the intervention during the post-CBTm period?

Null Hypothesis 3: There is no significant difference in anxiety symptom scores among those who participated in the CBT intervention compared to those who did not participant the intervention during the post-CBTm period.

Alternative Hypothesis 3: There is a significantly greater reduction in anxiety symptoms among those who participated in the CBT intervention compared to those who did not participate in the intervention during the post-CBTm period.

The results indicated acceptance of the null hypothesis. Table 5 illustrates GAD-7 mean scores over time across the two study arms during the post-CBTm period (i.e., 1-

week post-CBTm implementation period to 12-weeks post-intervention). When comparing GAD-7 scores from the Class 5 timepoint to the final post-intervention timepoint (12-weeks post-intervention), there was no significant difference in GAD-7 scores between the CBT intervention arm and the waitlist arm (*p*=.72). However, the improvement in scores achieved during the CBT intervention did not significantly change over time (p=.47).

Table 5

Mean GAD-7 Scores from General Linear Mixed Models from 1 Week Post-Intervention to 12 Weeks Post-Intervention

	Intervention Mean (SD)	Waitlist Mean (SD)	p-value
Trend Post-Classes			.72
1 Week Post-Intervention	1.61(1.75)	2.24(2.02)	
12 Weeks Post-Intervention	1.77(1.75)	3.18(3.03)	

Research Question and Hypotheses 4 Results

Research Question 4: Is there a significantly greater reduction in depression symptoms amongst Public Safety Personnel who received the CBT intervention in comparison with those who did not participate in the intervention during the post-CBTm period?

Null Hypothesis 4: There is no significant difference in depression symptom score among those who participated in the CBT intervention compared to those who did not participate the intervention during the post-CBTm period.

Alternative Hypothesis 4: There is a significantly greater reduction in depression symptoms among those who participated in the CBT intervention compared to those who did not participate in the intervention during the post-CBTm period.

The results indicated acceptance of the null hypothesis. Table 6 illustrates PHQ-9 mean scores over time across the two study arms during the post-CBTm period (i.e., 1-week post-CBTm implementation period to 12-weeks post-intervention). The PHQ-9 scores between Class 5 (final class) and the final post-intervention timepoint (12-weeks post-intervention) did not change significantly when comparing the intervention arm to the waitlist control arm (p=.48). However, the decrease in depressive scores that occurred during the CBTm implementation period did not significantly change over the follow-up period among those in the intervention arm (p=*.10)*.

Table 6

Mean PHQ-9 Scores from General Linear Mixed Models from 1 Week Post-Intervention to 12 Weeks Post-Intervention

	Intervention Mean (SD)	Waitlist Mean (SD)	p-value
Trend Post-Classes			.48
1 Week Post-Intervention	1.91(1.96)	2.55(2.69)	
12 Weeks Post-Intervention	1.81(1.60)	3.24(2.68)	

Summary

The results of this study indicated a significant decrease in scores among PSP who received the CBT intervention on measures of anxiety (GAD-7) and depressive symptoms (PHQ-9). Consistent with the null hypothesis for research question 1, there was a no significant difference in anxiety symptom scores amongst those who

participated in the intervention during the CBTm implementation period compared to those in the waitlist control arm. Rejecting the null hypothesis for research question #2, there was a significantly greater decrease in depressive symptom scores amongst those who participated in the intervention during the CBTm implementation period compared to those in the waitlist control arm. Consistent with the null hypotheses for research question #3, there was no significant difference in anxiety symptom scores among those who participated in the CBT intervention compared to the wait-list control arm during the post-CBTm period. However, the reduction in anxiety symptom scores that occurred during the CBTm implementation period did not significantly change during the post-CBTm period. Consistent with the null hypotheses for research question #4, there was no significant difference in depressive symptom scores among those who participated in the CBT intervention compared to the wait-list control arm during the post-CBTm period. However, the reduction in depressive symptom scores that occurred during the CBTm implementation period did not significantly change during the post-CBTm period. The next chapter will discuss the interpretations of these results, limitations of the study findings, recommendations for further research, and the implications of these findings for effecting positive social change.

Chapter 5: Discussion, Conclusions, and Recommendations

A pilot RCT was conducted to examine the impact of a large group, CBT psychoeducational intervention for prevention of symptoms of anxiety and mood disorders in PSP (police, firefighters, paramedics, and emergency communications personnel). Participants were randomly assigned to either the intervention study arm or the comparison study arm. Linear regression analysis (general linear mixed models) was used to identify the impact of the intervention on outcome scores for symptoms of anxiety and depression.

Consistent with the study's hypotheses, there was statistically significant improvement in self-reported symptoms of depression on average during the 5-week CBT intervention phase for those who participated in the CBT intervention arm compared to the waitlist control arm. There was also improvement in self-reported symptoms of anxiety on average amongst those who participated in the intervention during the 5-week CBT intervention phase; however, this decrease in levels of anxiety was not significantly different from the waitlist control arm. There was also no statistically significant difference in anxiety or depression scores during the post-CBTm period between the two study arms. The findings of this study provide preliminary evidence for the efficacy of the CBT psychoeducational intervention for PSP working in highly stressful environments. This chapter will extend knowledge in this area by discussing the interpretations of the study's findings, limitations, recommendations for further research, and implications for effecting positive social change.

Interpretation of Findings

Cognitive Behavioral Therapy with Mindfulness Classes

Based on my review of the literature, this study was one of the first RCT's to address the impact of the CBTm classes on self-reported symptoms of anxiety and depression in PSP. Preliminary findings from previous studies have shown that CBTm may be associated with improvement in anxiety and depressive symptoms within a general adult outpatient population (Palay et al., 2018; Thakur et al., 2019). For instance, a retrospective chart review by Thakur et al. (2019) showed that CBTm was viewed as acceptable by clients and was associated with improvement in anxiety and depressive symptoms. Building on these findings, this current study showed statistically significant improvement in self-reported symptoms of depression on average amongst those who participated in CBTm classes when compared to the waitlist control arm during the 5-week intervention period.

Additionally, the findings of this study showed improvement in self-reported symptoms of anxiety on average amongst those who participated in CBTm; however, this improvement in symptoms of anxiety was not significantly different from those in the waitlist-control arm. Although there was no further statistically significant improvement in levels of anxiety and depression during the post-CBTm phase (from 1-week post-intervention to 12 weeks post-intervention) among those who participated in the CBTm classes, the improvements in self-reported levels of anxiety and depression achieved during the 5-week intervention were maintained during the post-intervention period.

These findings suggest potential efficacy of a brief, low-intensity psychoeducational intervention with minimal interaction between the clinician and participant.

Preventative Findings

The study's findings appear promising when compared to the preventative framework for mental health conditions, which posits that interventions should focus on two main goals: (a) the preventative framework recommends that the intervention should diminish the development of symptoms and (b) the preventative framework recommends that the intervention should increase the possibility of symptom remission and recovery (Qi et al., 2016). First, the results of this study indicated that participants with mild levels of depressive symptoms showed statistically significant improvement during the 5-week intervention phase when compared to the waitlist arm. Second, although there was no further statistically significant reduction in levels of depression, the results of this study showed that the improvement in depressive symptoms on average were maintained during the post-CBTm follow-up phase. Additionally, the improvement in symptoms of anxiety on average amongst those who participated in the CBTm classes was maintained during the post-CBTm period.

These preliminary findings suggest that the psychoeducation and skills training provided during the CBT intervention may have contributed to the maintenance of low levels of depressive and anxiety symptoms over a longer period. As such, participants may have developed adequate knowledge and ability to implement appropriate coping strategies necessary for addressing new symptoms thus supporting longer-term maintenance of treatment outcomes. It is important to note that identifying the impact of

the CBT intervention after the 3-month post-intervention follow-up period was beyond the scope of this study. Since relapse refers to the re-emergence of clinically significant symptoms within 12-months post-intervention (Bockting et al., 2015), a longer follow-up period for the current study may also be required to observe whether there was a re-emergence of symptoms among study participants.

Cognitive Behavioral Findings

The first hypothesis of this study was that PSP who participated in the CBT intervention would show a statistically significant greater reduction in anxiety symptoms compared to those who did not participate in the intervention during the CBTm implementation period. The findings of this study indicated that PSP in the CBT intervention arm displayed a statistically significant decrease on average in level of anxiety between Class 1 and Class 5, but this decrease was not significantly greater than the decrease in scores among PSP in the wait-list control arm. As such, this hypothesis was not confirmed because levels of anxiety was not significantly different between the two study arms. In comparison, earlier studies from the Improving Access to Psychological Therapies initiative in the United Kingdom showed that CBT psychoeducational interventions focusing on the development of coping skills were associated with significant reductions in anxiety levels (Delgadillo, Kellett, et al., 2016). However, it is important to consider that participants in the current study had low levels of anxiety at baseline with minimal room for improvement in measurement scores. Additionally, due to the study's small sample size, small, nuanced changes in scores may not have been detected by the study's statistical analysis.

The second hypothesis of this study was that PSP who participated in the CBTm intervention would show a significantly greater reduction in depression symptoms compared to those who did not participate in the intervention during the CBTm implementation period. This hypothesis was confirmed. The findings indicated that PSP who attended the CBT intervention displayed significantly greater improvement in depression symptoms compared to those in the waitlist control arm. These findings are similar to a study by Horrell et al. (2014), which showed that a brief CBT psychoeducational intervention focusing on the development of coping skills were associated with reductions in depression levels. Additionally, Delgadillo et al. (2016) showed improvement in symptoms of anxiety after engaging in the 6-session psychoeducational intervention, noting that low-intensity CBT interventions offered in a long-term format may not be necessary as improvement in symptoms can be found in four to six sessions. Similar to other study's examining the efficacy of the cognitive-behavioral approach, the findings of this study showed that participation in the brief, 5-session CBT intervention was associated with improvement in symptoms of depression. This preliminary finding suggests that CBTm may provide clients with adequate knowledge and skills to effectively manage symptoms of depression.

The third hypothesis of this study was that PSP who participated in the CBTm intervention would show statistically significant greater reduction in anxiety symptoms compared to those who did not participate in the intervention during the post-CBTm period. This hypothesis was not confirmed as there was no further significant difference in symptoms of anxiety amongst PSP who participated in the CBT intervention.

However, improvements in symptoms of anxiety that were achieved during the 5-week intervention phase were maintained during the post-CBTm follow-up period. Levels of anxiety did not worsen during the post-CBTm period, and improvements in symptoms of depression achieved during the 5-session CBT intervention were maintained over a longer period post-intervention. As participants had minimal levels of anxiety at baseline, this finding shows that participating in a CBT psychoeducational intervention is associated with maintenance of low symptom levels over a longer period.

The fourth hypothesis of this study was that PSP who participated in the CBTm intervention would show statistically significant greater reduction in depression symptoms compared to those who did not participate in the intervention during the post-CBTm period. This hypothesis was not confirmed as there was no further significant difference in symptoms of depression amongst PSP who participated in the CBT intervention compared to those who did not participate in the intervention. However, levels of depression did not worsen during the post-CBTm period and improvements in symptoms of depression achieved during the 5-session CBT intervention were maintained over a longer period post-intervention. These findings are comparable to a RCT conducted by Horrell et al. (2014), which showed that a brief CBT workshop was associated with improved levels of depression and anxiety at 12 weeks post-intervention. Similar to these findings, the current study showed that improvements in depressive symptoms were maintained during the post-intervention follow-up time period (1 week post-intervention to 12 weeks post-intervention). This suggests that participating in the CBT intervention not only results in symptom improvement immediately post-

intervention but may also be effective for long-term maintenance of symptom management.

A novel aspect of this study is that it employed an RCT to examine the use of a CBT intervention in a PSP population with anxiety and depressive symptoms below the clinical range. Although the participants in this study reported low levels of symptomatology and did not meet criteria for a mental health diagnosis at baseline, there was improvement in symptoms of anxiety and depression amongst those who participated in CBTm during the 5-week intervention phase. Further, these improvements in symptoms were maintained during the post-intervention phase. As PSP work in highly stressful environments with ongoing stressors such as repeated exposure to traumatic events and long shift-work hours (Carleton et al., 2018; Jones et al., 2018), the cognitive-behavioral approach may be effective for providing clients with skills for managing a person's anxious or depressive thoughts, emotions, and behaviors in response to these ongoing occupational stressors. These findings suggest that an intervention based on the cognitive-behavioral approach may provide PSP with skills to manage and cope with symptoms of anxiety and depression prior to the occurrence of more severe mental health difficulties. However, the current study only included participants with mild symptom levels at baseline, which may have aided with participant motivation and engagement and thus improvement in self-reported symptoms. In contrast, those with more severe symptom levels may have difficulty maintaining engagement in CBT interventions due to the nature of depressive symptomatology such as social withdrawal, hopelessness, and slowed psychomotor ability (Delgadillo, Kellett, et al., 2016; Fernandez et al., 2015).

Mindfulness-Based Findings

Since the intervention used in this study is comprised of elements from both the cognitive-behavioral approach and the mindfulness-based approach, the findings of this study support the inclusion of mindfulness practices within a CBT psychoeducational intervention. Similar to other studies examining the efficacy of mindfulness-based approaches for PSP, the findings of this study showed that participation in a mindfulness-based intervention is associated with improvement in anxiety and depressive symptoms. This is comparable to other resilience training programs that have used mindfulness-based interventions to prevent occupational injuries amongst PSP (Antony et al., 2020).

Christopher et al. (2016) examined the use of an 8-week mindfulness-based resilience training program aimed at improving mental and physical health outcomes amongst law enforcement officers. The authors found that participation in the mindfulness-based intervention was associated with improvement in mental health outcomes including emotional regulation. In explaining their findings, the authors noted that participation in the intervention was associated with both improved mindfulness (i.e., the intentional practice of compassionate awareness and bringing one's attention back to the present moment without judgment) and decreased self-reported stress (Christopher et al., 2016). This suggests that mindfulness-based approaches may support clients in adopting attention, awareness, and acceptance of one's experience thus aiding in the ability to employ skills for managing mental health symptoms. Although the current study differs in that it solely focused on symptoms of anxiety and depression, it extends

the literature by providing preliminary evidence for psychoeducational mindfulness-based interventions for PSP working in highly stressful environments.

Limitations

Generalizability

There are several limitations to consider when interpreting the findings of this study. Firstly, the study's restrictive inclusion criteria may have impacted the generalizability of the findings. Individuals who met the following criteria were not eligible to participate as those who met this exclusion criteria would have required an immediate high-intensity intervention rather than a low-intensity preventative intervention, which was beyond the scope of this study. The exclusion criteria is stated again for reference: diagnosed by a psychologist or psychiatrist with a mental health disorder in the past 6 months, a history of mental health service use related to a mental disorder in the past 6 months, posttraumatic checklist score >37 (Resick et al., 2016), 4) PHQ-9 (depression) score above the mild range of severity >10 (Kroenke et al., 2001b), 5) GAD-7 (anxiety) score above the mild range of severity >10 (Spitzer et al., 2006), and suicidal ideation in the past 6 months.

As such, the sample did not include participants whose scores on these measures were above the minimum clinical threshold. As previously mentioned, more severe symptomatology may be associated with difficulties in retention and drop-out from an intervention (Delgadillo et al., 2014; Fernandez et al., 2015). Thus, it is unknown whether using CBTm with a population with more severe levels of anxiety and depressive symptoms would lead to similar outcomes.

Validity

The study's validity may have been impacted by characteristics of the study's design and sample. Firstly, the external validity of the findings may have been impacted by the context and setting where the study was conducted thus affecting the generalizability of the study's findings. For instance, the study's external validity may have been impacted by the limitation of including PSP participants from only one geographical region, specifically, Manitoba, Canada. The findings of the study may not reflect the impact of the intervention for PSP or first responders working in other geographical locations within Canada, such as PSP working in rural settings or in other provinces and territories. PSP working in rural settings may further experience stressors such as isolation from colleagues, limited personnel, and harsh environmental conditions (Regambal et al., 2015).

Since the CBT intervention was only offered in a face-to-face type of setting, it is unknown whether delivering the intervention through a virtual format would produce similar outcomes. Despite attempts to offer intervention sessions multiple times a week, the sample may have been limited to those whose professional and personal schedules were able to accommodate attendance for in-person classes. Those with more complex professional or personal responsibilities (e.g., childcare) may not have been able to attend the in-person intervention.

Secondly, the study sample was limited to a few specific occupational groups (i.e., police officers, firefighters, paramedics, and correctional officers), and therefore the results might not reflect the impact of CBTm for other types of PSP such as Canadian

Armed Forces personnel. In 2013, approximately 16.5% of Canadian Armed Forces personnel experienced a mental health disorder with the most common conditions being posttraumatic stress disorder, major depressive episode, and GAD (Zamorski et al., 2016). As such, additional research is required to identify whether the CBT intervention is effective for use with other types of PSP across Canada including the Canadian Armed Forces population. As well, the current study did not include other frontline workers such as physicians and nurses. A recent systematic review examining both Canadian and American survey data from 1996 – 2019 showed that 18.6% of emergency care personnel experienced symptoms of posttraumatic stress disorder (Trudgill, Gorey, & Donnelly, 2020). As such, additional research is required to identify whether the CBT intervention is effective for use with other types of PSP including the CAF population and other types of frontline workers such as emergency care personnel.

Additionally, there may have been confounding variables that impacted the internal validity of the study's findings thus potentially affecting the cause-and-effect relationship between the CBT intervention and participant outcomes. Since the questionnaires were dependent on participant self-report, the questionnaires may not have accurately captured information from individuals who were less self-aware of their mental health symptoms and issues. Participants in both the intervention and comparison groups may have received other forms of mental health therapy and medical services during participation in this study. Although the exclusion criteria specified that patients may not actively engage in other forms of psychotherapy while participating in the study's intervention, this cannot be definitively confirmed.

As CBTm is a manualized approach and the program materials were standardized, a systematic approach for measuring fidelity of the intervention (e.g., fidelity ratings of intervention facilitators) was not implemented during the study. As such, there may have been nuanced differences in the way facilitators delivered the intervention (e.g., such as the amount of time a facilitator spent interacting one-on-one with participants), which may have impacted participant self-reported outcomes.

Recommendations for Further Research

There are several recommendations for future research based on the findings of this study. Firstly, the findings of this study indicated that improvements in outcome scores were maintained during the post-CBTm period; however, it is unknown whether improvements in outcomes were maintained past the 3-month follow-up timepoint. Further research is necessary to identify whether the brief intervention provided adequate knowledge and skills for longer-term maintenance of symptom management, which may include extending the observation phase from 6 months to at least 1-year post-intervention. As such, it is recommended that future studies include larger sample sizes and longer-term follow-up periods.

Secondly, this study used a sample of PSP with minimal symptoms, and further research is required to identify whether CBTm is effective for use with PSP who have a higher level of symptomatology or whether higher-intensity interventions are required to meet the needs of this population. Similarly, further research is also required to understand the generalizability of this study's findings and identify the impact of CBTm when used with other types of PSP (e.g., Canadian Forces Personnel) and PSP in other

geographical locations (e.g., PSP in rural settings). Additionally, future research may expand the scope of the target population to include front line workers such as nurses and physicians working in emergency services

Thirdly, the intervention in this study incorporated principles and skills of mindfulness. Further research is needed to systematically measure and examine the impact of CBTm in developing mindfulness skills and building resilience amongst those who attend the intervention. Future research may also pertain to identifying whether the ability to develop mindfulness skills during the CBT intervention may have a moderating effect on participant outcomes including symptoms levels of anxiety and depression. Additionally, in light of the recent COVID-19 pandemic and physical distancing guidelines to stop the spread of COVID-19, future studies should examine the impact of delivering CBTm through a virtual format for PSP.

Implications

Positive Social Change

This study's findings may have potential impact on effecting positive social change at the individual, organizational, and societal/policy level. The findings of this study also inform policy by showing promising evidence for the impact of a brief, CBT psychoeducational intervention for PSP working in highly stressful environments. These findings may be of interest to PSP organizations which are faced with the task of ensuring newly hired PSP staff are equipped to worked in highly stressful environments. As such, psychoeducation and promotion of mental health awareness and tools to build

resilience may be an essential aspect of equipping new trainees and staff (Ricciardelli, Andres, Kaur, Czarnuch, & Carleton, 2020).

The findings of this study indicated that a brief, CBT psychoeducational intervention may contribute to the improvement in symptoms of anxiety and depression amongst PSP. This type of intervention may aid in equipping PSP with knowledge and coping skills prior to the occurrence or re-emergence of more severe symptomatology. Since participants in this study had low levels of symptomatology at baseline yet still showed improvement in mental health functioning post-intervention, there may be clinical utility in offering this type of intervention to new recruits or junior PSP who are beginning in their roles. The findings of this study and future research in this area may better inform PSP organizations about the potential benefits of implementing a brief, low-intensity CBT intervention within the training process for new PSP.

Since PSP work in highly stressful environments and are at increased odds for experiencing symptoms of a mental health disorder (Carleton et al., 2017), there is a need for access to high-quality mental health services. In keeping with the deinstitutionalization movement, it is essential to provide community-based mental health services that empowers individuals with the opportunity to access services while maintaining autonomy within their communities (Fakhoury & Priebe, 2007; Sealy, 2012), thus destigmatizing the importance of maintaining mental health and wellness.

Community-based mental health services may provide PSP, both newly hired and longtime staff, with the opportunity to receive support for building resilience and managing symptoms without disrupting their personal and professional lives. In

collaboration with the PSP communities, the study was implemented in a way that fit with the needs of PSP, such as holding flexible class dates to fit within their shift-work schedules. As such, this study showed preliminary evidence for improvement of anxiety and depressive symptoms following participation in the CBT psychoeducational intervention, and these findings should be taken into consideration when making decisions regarding funding, development, and sustainability of mental health services for PSP.

Methodological Implications

In regard to logistical implications for conducting research with PSP communities, the unique needs of this population should be considered when conducting future studies. This study attempted to conduct an RCT to implement a 5-session CBT psychoeducational intervention held in-person for PSP with complex shift-work schedules. As observed during the implementation phase of the CBT intervention, it is essential for researchers to work closely with PSP stakeholder groups to design a format for service delivery that fits with the complex shift work schedules of the PSP. In the current study, the in-person intervention was delivered in two consecutive cycles to provide adequate opportunities for PSP to attend the intervention as advised by the key stakeholder groups. Additionally, researchers should consider the method of data collection and use an accessible format, such as virtual data collection, to accommodate PSP work schedules. Thus, it is recommended that researchers work collaboratively with PSP communities and stakeholder groups when designing and carrying-out intervention studies.

Conclusion

This pilot study provided preliminary evidence for the efficacy of a brief, large-group, CBT psychoeducational intervention and extended the knowledge of offering this type of intervention for PSP working in highly stressful environments. Participation in CBTm was associated with statistically significant improvement in self-reported symptoms of depression on average compared to the waitlist control arm, and these improvements were maintained during the follow-up period.

Additionally, participation in CBTm was also associated with improvement in symptoms of anxiety on average, and these improvements were further maintained during the follow-up period. As symptom improvement was found amongst those with low levels of symptoms at baseline, it may be useful to implement this type of intervention prior to the occurrence of more severe symptomatology such as during the training process for new PSP recruits. Future research in this area may provide insight about the long-term impact of this intervention for maintaining improvements in symptoms of anxiety and depression, as well as the impact of this intervention when offered to PSP in broader contexts and settings such as through a virtual format.

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Appendix A: Operating Procedures for Participant Safety and Well-Being

Study: Cognitive Behaviour Therapy with Mindfulness Course for Building Workplace Resilience: A Pilot Randomized Controlled Trial

Procedures for Ensuring Participant Safety

- All participants will be provided with a general list of contact information for crisis resources, including the Crisis Response Centre (CRC) and Health Sciences Centre Emergency room.

Protocol for identified immediate crisis will be as follows

- If a participant is identified as being in immediate crisis, the researcher will provide the participant with contact information for mental health personnel and resources available through the participant's employment organization.

- For participants employed by the [redacted] who are identified as being acutely suicidal or homicidal, researchers will also immediately notify the following [redacted] personnel who are available 24/7: [redacted]

- The [redacted] does not require additional notification beyond the steps listed in this document during instances when a participant employed by [redacted] is identified as being actively suicidal or homicidal.

Protocol for identified distress (but not immediate crisis) will be as follows

- If a study intervention-facilitator identifies a participant as feeling upset while participating in the intervention, the facilitator will ask the participant if they want to take a short break, discontinue or continue at a later date, or withdraw from the study if the participant requests to do so.
- In cases that participants want to withdraw from the intervention, the facilitator will notify the researcher. The researcher will meet with the participant to thank them for their time. The researchers will also provide the Resource Sheets**,** offer to explain the resources on the sheets, and offer to be present if the participant wants to contact the listed resources immediately.
- In cases that participants would like to take a short break or skip the questions, the facilitators and researchers will comply with the request.

- If researchers identify participants as feeling upset while completing the self-report questionnaires, the researcher will ask participants if they want to skip questions, take a short break, discontinue or continue at a later date, or withdraw from the study if the participant requests to do so.
- In cases that participants want to withdraw from completing the self-report questionnaires, researchers will thank them for their time. Researchers will also provide the Resource Sheets**,** offer to explain the resources on the sheets, and offer to be present if participants want to contact the listed resources immediately.
- In cases that participants would like to take a short break or skip the questions, researchers will comply with the request.

Protocol for identified suicidal ideation

- If a participant discloses they are actively suicidal, the researcher will ask "How often?". If the respondent replies with a response between 'a little of the time' to 'all of the time', the researcher will ask if the respondent is feeling that way right now. If the respondent states that they are not, the researcher will continue as usual.
- If the respondent states that they are currently feeling suicidal, the researcher will ask the respondent if they would like them to call either The Crisis Response Centre (open 24 hours a day: [redacted]) or 911 for assistance. If the respondent states they would like the researcher to call for assistance, he/she will stay with them until assistance arrives. This must be recorded in the **Incident Report**.
- If the respondent states that they do not want anyone to be called, the researcher will ask them if they would like to continue and do so accordingly. Participants will be referred to the mental health services in the brochure. This must be recorded in the Incident Report.

Protocol for identified inter-partner violence

- If the participant does not ask for help, but intimate partner violence is suspected, the researcher is to ensure that they explain the relevant resources in the brochure at the end of the survey with the participant. This is to be done very casually and not in a way that leads the participant to believe the researcher thinks they need to use the resources. In order to do this, when he/she is explaining the brochure, they will make sure to point out relevant resources and inform the participant that they "might find these resources helpful".
- Health care professionals/providers and staff affiliated with Health Sciences Centre or the University of Manitoba are not obligated either legally nor professionally to report suspected or verified partner violence. Accordingly, researchers will not be required to give specific information on sources of help to a participant unless the participant asks for assistance.

- Note that this does not need to be recorded in the Incident Report unless a participant specifically asks for assistance and agrees to have this documented.

Circumstances Involving Verified or Suspected Child Abuse

- Any suspected incidences of child abuse must be documented in an Incident Report and reported to the Child and Family Services ([redacted]). If a participant indicates that a child they know is being abused by them, a partner/spouse, or any other party, or if the researcher comes into contact with a child that he/she assumes is suffering from abuse, this procedure will be followed.

Circumstances Involving Verified or Suspected Elder Abuse

- If a participant indicates that an elderly person they know is being abused by them, a partner/spouse, or any other party, researchers will be instructed to document this information in an Incident Report and pass it on to the Winnipeg Police Service.

Circumstances Involving Verified or Suspected Intent to Harm Others

- If a participant indicates that they have homicidal intent or a homicidal plan to harm others, researchers will be instructed to document the information in an Incident Report and notify the Winnipeg Police Service.
- If at any point the researcher feels that their safety is compromised, they are to leave the interview immediately using any exit strategy that they feel is necessary.

Documenting Incidents

- If a problem should arise, please document it on the **Incident Report** form below (Appendix III) and return it to the Research Coordinator as soon as possible. Researchers should have these forms with them at all times.
- All Incident Reports will be made to the Research Coordinator within 24 hours of the event's occurrence.
- If an incident occurs after normal office hours, advise the patient to call 911 or go to the ER and report the incident to the Research Coordinator and appropriate [redacted] personnel as soon as possible.