SHIFTING FOCUS: FEASIBILITY OF ONLINE MINDFULNESS MEDITATIONS AS AN ADJUNCT TO TAILORED INTERNET-DELIVERED COGNITIVE BEHAVIOUR THERAPY FOR PUBLIC SAFETY PERSONNEL

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Caeleigh Ann O'Sullivan Landry

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SUPERVISORY AND EXAMINING COMMITTEE

Caeleigh Ann O'Sullivan Landry, candidate for the degree of **Master of Science in Clinical Psychology,** has presented a thesis titled, ***Shifting focus: Feasibility of online mindfulness meditations as an adjunct to tailored internet-delivered cognitive behaviour therapy,*** in an oral examination held on **August 30, 2022**. The following committee members have found the thesis acceptable in form and content, and that the candidate demonstrated satisfactory knowledge of the subject material.

External Examiner:	Dr Jenn de Lugt, Faculty of Education*
Supervisor(s):	Dr Heather Hadjistavropoulos, Department of Psychology*
	Dr R. Nicholas Carleton, Department of Psychology*
Committee Member:	Dr Shadi Beshai, Department of Psychology*
Committee Member:	Dr Natasha Gallant, Department of Psychology*
Chair of Defense:	Dr June LeDrew, Faculty of Kinesiology and Health Studies*

*Attended via Zoom conferencing

Abstract

Background. Public safety personnel (PSP) are at an increased risk for developing mental disorders compared to the general population. The *PSP Wellbeing Course* is a transdiagnostic internet-delivered cognitive behaviour therapy (ICBT) course tailored to assist PSP to manage symptoms of depression, anxiety, and posttraumatic stress injuries using cognitive behavioural strategies. While the effectiveness of this course is supported by evidence (Hadjistavropoulos, McCall, et al., 2021), incorporating mindfulness as an additional strategy to assist PSP with symptoms could potentially improve the program. Mindfulness interventions can help people learn to experience the world and their reactions to the world in open and non-judgmental ways, which may complement the existing *PSP Wellbeing Course* content. **Objective.** To examine the feasibility of mindfulness meditations in the *PSP Wellbeing Course*. **Methods.** The current study used a mixed-methods design including quantitative and qualitative data collection. Participants included 40 treatment-seeking PSP who were asked to complete five mindfulness meditations including grounding, loving kindness, awareness of breath, awareness of five senses, and body scan meditations alongside five core *PSP Wellbeing Course* lessons. On a weekly basis, participants indicated how often they participated in mindfulness meditation. Participants completed measures (i.e., anger, depression, anxiety, posttraumatic stress disorder, insomnia, and resilience) pre- and post-treatment, and treatment satisfaction scales post-treatment. There were 12 participants who also completed an interview about perceptions of the mindfulness meditations. **Results.** There were 27 (67.5%) participants who reported using the mindfulness meditations, putting in 4.8 minutes (*SD* = 8.1) of practice each week. The course was associated with significant improvements in the primary symptom measures, functional impairment, and resilience.

Practice was not associated with improved outcomes. Most interviewed participants described the mindfulness meditations as beneficial, helping to slow down and regulate their bodies and emotions. Participants also reported challenges with the meditations, such as discomfort sitting with their feelings. Participants provided suggestions for improvement (e.g., creating shorter meditations, adding clear signals to indicate the end of meditations).

Discussion. The current study demonstrates the feasibility of adding mindfulness meditations to the *PSP Wellbeing Course w*ith many PSP making use of and reporting benefits from the meditations. Nevertheless, improvements could be made to improve use of meditations. Future research appears warranted to systematically test the benefits of adding mindfulness to the *PSP Wellbeing Course* as well as longer term outcomes of the meditations.

Keywords: Public safety personnel; internet therapy; mindfulness.

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Dedication

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Shifting focus: Effectiveness of online mindfulness exercises as an adjunct to internet-delivered cognitive behaviour therapy for public safety personnel

Public safety personnel (PSP; e.g., border services agents, correctional workers, firefighters, paramedics, police officers, public safety communicators, search and rescue personnel) repeatedly put themselves in potentially dangerous situations for the communities they serve. PSP have greater exposure to potentially psychologically traumatic events (PPTEs) and appear at a greater risk for several psychological disorders, due at least in part to their vocations (Carleton, Afifi, et al., 2018; Carleton, Afifi, Turner, et al., 2020; Trombka et al., 2018). Previous estimates of posttraumatic stress disorder (PTSD) prevalence in Canadian PSP were between 10 and 35% (Oliphant, 2016), with a meta-analysis reporting a worldwide pooled 10% prevalence rate of PTSD (Berger et al., 2012). Studies using data from the United States estimated that police officers were roughly twice as likely to experience suicidal ideation as the general population, reporting 25% lifetime prevalence rate of suicidal ideation (Stanley et al., 2016). In a recent pan-Canadian study, 44.5% of PSP screened positive for at least one mental disorder (Carleton, Afifi, et al., 2018), which is four times greater than the rate experienced in the general population (i.e., 10%; Statistics Canada, 2012). The three most common mental disorders for which PSP screened positive included major depressive disorder (MDD; 26.4%), posttraumatic stress disorder (PTSD; 23.2%), and generalized anxiety disorder (GAD; 18.6%; Carleton et al., 2018). PSP reported higher rates of social anxiety disorder, panic disorder, and alcohol use disorder (Carleton et al., 2018). PSP also report high levels of anger (Bergman et al., 2016), which is a potential risk factor for PTSD (Meffert et al., 2008).

PPTE exposure risk varies across PSP professions (Adams et al., 2015; Ricciardelli et al., 2020). PSP such as police and firefighters are more likely to experience stressors and PPTEs first hand; in contrast, PSP such as dispatchers may be more likely to experience PPTEs vicariously (Adams et al., 2015). Certain PSP professions may be more likely to know the outcome of the PPTEs with which they are involved (e.g., paramedics may be more likely to accurately predict patient survival). The knowledge or lack thereof regarding the conclusion of a call may have an important impact on psychological responses, including stress, PTSD symptoms, and the experience of helplessness (Adams et al., 2015). PSP face stressors beyond PPTE exposures, such as shift work, dangerous and unpredictable environments, and the physical demands of their jobs (Crowe et al., 2015), all of which appear associated with increased risk for mental disorder symptoms (Carleton, Afifi, Taillieu, et al., 2020).

The full impact of work-related stressors on PSP across a range of professions is still unknown. In 2016, the Canadian Government's Standing Committee on Public Safety and National Security reported that there was not sufficient evidence on PSP mental health to support decision makers in understanding the scope and depth of the concerns, as well as for implementing evidence-based solutions (Ricciardelli et al., 2020). The Standing Committee further reported that stigma and associated discrimination is another complicating factor when considering PSP mental health (Ricciardelli et al., 2020). Accordingly, the limited scope of research impedes our understanding of PSP mental health and acts as a potential barrier to PSP accessing effective, timely, and culturally appropriate mental health care.

The impact of mental disorder symptoms can go beyond the individual experiencing symptoms. For example, police officers who are strongly impacted by stress are more likely

to exhibit errors as well as uncontrolled anger or excessive use of force towards suspects (Trombka et al., 2018). Police officers with mental disorders are more likely to report absenteeism (Anderson et al., 2020; Trombka et al., 2018), which can put more strain on an already taxed system (Ricciardelli et al., 2020). Mental disorders can negatively impact family life (Anderson et al., 2020; Trombka et al., 2018), which can be especially deleterious as a positive family life may be an important protective factor against mental disorders (Carleton, Afifi, et al., 2018). Increased exposure to PPTE has been associated with diverse physical health conditions in PSP, such as respiratory and cardiac conditions, chronic pain, and cancer (Sommer et al., 2020).

In the general population, women appear twice as likely as men to develop major depressive disorder, anxiety disorders, and PTSD (Breslau, 2002; McLean et al., 2011; Salk et al., 2017). Women police officers also appear at increased risk for developing a mental health disorder when compared to men police officers (Carleton, Afifi, et al., 2018). Various factors likely play a role in women being at increased risk; for example, women police officers appear more likely to report challenges from sleep problems, organizational structures, and lower levels of social support (Angehrn et al., 2022).

Barriers to Treatment

A substantial proportion of individuals in the general population with mental disorders (i.e., 52-74%) do not receive mental health treatment due to limited access to treatment (Clement et al., 2015; Thakur et al., 2019). The number of people not receiving treatment is even greater for people living with lower socioeconomic status (Clement et al., 2015). PSP may be particularly resistant to seeking treatment because of fear of stigmatization, confidentiality breaches, or potential for a negative impact on their careers

(Crowe et al., 2015). Insufficient accessing of effective treatment poses potentially severe consequences as leaving mental disorders untreated is associated with worse outcomes and decreased well-being (Clement et al., 2015).

Many barriers might prevent people from seeking help. Commonly identified barriers include the financial cost of treatment, concern about the effectiveness of treatment, lack of perceived need for treatment, stigma, and difficulty booking an appointment (Mojtabai et al., 2011). Attitudinal barriers seem to have a greater impact on treatment-seeking behaviours than structural barriers (Mojtabai et al., 2011). PSP face several unique barriers to treatment as a function of their internal culture and their vocational requirements (Ricciardelli et al., 2020). PSP report concerns about engaging in in-person mental health treatment options, such as speaking to a therapist or attending a group therapy session, due to confidentiality concerns associated with attendance (Carleton et al., 2019b; Ricciardelli et al., 2019). The concerns facing PSP may be intrinsically tied with fear of stigma and the potential of being perceived as weak or unable to meet the demands of their job. PSP serve in locations across the country ranging from populace urban centres to small rural areas with little or no access to amenities or treatment options (Creswell, 2017). Other potential barriers to treatment for PSP include the cost of treatments, lack of awareness of or difficulty navigating services, and long wait times (Hadjistavropoulos, McCall, et al., 2021). Reviews on help-seeking have identified stigma as one of the greatest factors contributing to inhibiting help-seeking behaviour (Clement et al., 2015).

Researchers have consistently demonstrated stigma as an important barrier to seeking treatment among PSP (Haugen et al., 2017). Stigma is when a relationship between an attribute and a stereotype exist, which may result in the target being evaluated as dangerous

or less deserving than their peers (Goffman, 1963). People experiencing stigma may feel as though seeking care makes them discreditable by their peers and, thus, seen as weak, lazy, deceitful, or not suited for their job (Goffman, 1963). The most prominent concerns related to stigma include confidentiality of sessions and fear that seeking psychological services would negatively impact their career (Haugen et al., 2017). Stigma has further been related to increased alcohol use in PSP, which can cause detrimental impacts on their careers (Haugen et al., 2017). Stigma may make people less likely to access care and could lead to them having a negative social identity (Haugen et al., 2017; Ricciardelli et al., 2020). As such, stigma may be associated with reduced help seeking or requests for time off work by PSP (Ricciardelli et al., 2020).

People may experience several different forms of stigma (Clement et al., 2015). Anticipated stigma is the belief that one will receive social repercussions if others were to find out about a trait or perceived deficit they possess. Experienced stigma refers to true lived social repercussions because of traits or perceived deficits. The specific act of seeking treatment can be stigmatized based on the belief that the need for treatment indicates weakness or other similar deficits. Internalized and treatment stigma have both been consistently associated with decreased help-seeking behaviour (Clement et al., 2015).

PSP report being genuinely concerned about mental disorder symptoms, including concern for people who have been or could be exposed to a PPTE, and concern for how the potential mental health needs of them and their peers will be met (Ricciardelli et al., 2020). PSP report concerns that mental health care use could be abused such that there would be insufficient resources for people in need. The mental health concerns of PSP may be partially

addressed by increasing access to care and ensuring that care is culturally acceptable and effective for the given diagnosis.

Lack of education regarding mental disorder symptoms and treatment contributes to reduced help-seeking among PSP. PSP may feel uncomfortable being partnered with someone who has a mental health challenge and may worry that a person with mental health challenges is less reliable than peers without such challenges (Ricciardelli et al., 2020). Time off for mental health care might facilitate resentment among peers because of the increased strain on other team members due to staffing limitations. Evidence of a pervasive belief that senior PSP managers may not be open to hearing about the mental health concerns of their staff and may be unwilling to help with accessing appropriate resources also exists (Haugen et al., 2017; Ricciardelli et al., 2020). Beliefs that help-seeking will not be well-received can lead to fear of negative evaluation and stigma, therein preventing people from reporting their concerns and not receiving help. Insufficient mental health education may reduce capacity for recognizing treatment needs and uncertainty about accessing mental health care (Krakauer et al., 2020).

Mental disorder education programs for PSP have been relatively limited, as has the research regarding program effectiveness (Anderson et al., 2020; Krakauer et al., 2020). Programs that have been researched, like the Road 2 Mental Readiness (R2MR) Program that was adapted for Canadian police (Carleton, Korol, et al., 2018), have produced inconsistent results. R2MR was developed to provide psychoeducation and increase resiliency training (Szeto et al., 2019). Evaluations of R2MR for police have demonstrated statistically significant but time-limited results (Carleton, Korol, et al., 2018), cross-sectional associations with fewer mental health symptoms (Carleton, Afifi, Turner, et al., 2020), or have not

evidenced statistically significant changes in mental health knowledge, resilience, or symptoms (Krakauer et al., 2020). Accordingly, more research and development are needed to support the broad mental health needs of PSP.

Cognitive Behaviour Therapy

Cognitive behaviour therapy (CBT) has been largely accepted as the gold standard of psychological care and is supported by a robust evidence base as a first line treatment for symptoms of anxiety, depression, and several mental disorders (David et al., 2018; Thakur et al., 2019). CBT is currently the most researched form of psychotherapy and appears more effective than other forms of psychotherapy and more effective than medication based on many clinical trials (Beck, 1979; David et al., 2018; Hayes & Hofmann, 2017).

The early wave of CBT therapies was focused on behaviour and learning principles (Hayes & Hofmann, 2017). In the 1970s, CBT shifted focus in response to perceived limitations of psychoanalytic and behavioural therapies (Beck, 1993). At the time, 30-40% of people with symptoms of MDD reported medication was insufficient or ineffective. Others refused to take medication or found medication side effects to be intolerable. The second wave of CBT drew focus to schemas (Beck, 1979) and the role of maladaptive thought patterns (Hayes & Hofmann, 2017). Schemas are developed by each individual based on their previous experience of the world (Beck, 1979). Our schemas inform our thoughts, behaviours, and physiological reactions to the world. Negative automatic reactions (e.g., depressive or anxious thoughts, flashbacks, anger) can then create a negative feedback cycle, which may result in negative views about the world, negative views of the future, and negative view of self, which are collectively referred to as the cognitive triad (Beck, 1979, 1993). The cognitive triad involves bidirectional pathways, and any element of the triad can

start the cycle that produces a negative thinking pattern. This negative thinking pattern can inform the actions that the individual makes, which could result in further consequences. As such, the consequences prolong the negative unhelpful thinking pattern and the cycle of maladaptive negative thoughts, feelings, and behaviours continues. CBT was developed to interrupt the cognitive triad and the negative feedback cycle by helping patients identify and challenge unhelpful negative cognitions (Beck, 1979, 1993).

In CBT, a person learns to 1) identify their negative, automatic thoughts, to recognize the connection between their thoughts, actions, and behaviours; 2) examine evidence for and against their negative thoughts; 3) to replace those negative thoughts with reality-based interpretations; and 4) learn to identify and alter dysfunctional attitudes. In the case of anxiety-related disorders and PTSD, systematic desensitization and exposure therapy may also be used. Systematic desensitization involves imagining the feared stimulus in a state of relaxation. Imaginal exposure for PTSD includes the individual vividly picturing the event of their psychological trauma, which is believed to promote habituation and reduce anxiety. Individuals learn to identify the relationship between their thoughts, feelings, and behaviours and how changing their behaviours can have an impact on their thoughts and feelings.

CBT was initially developed to treat MDD and an initial randomized control trial (RCT) demonstrated that CBT was associated with superior symptom improvement over medication (Beck, 1979). Clients who completed CBT did better in the follow-up period and their improvements were believed to result from new skill development. Many subsequent studies supported the effectiveness of CBT for treating symptoms of MDD (Cuijpers et al., 2016); as such, the research focus shifted to seeing whether CBT could be effective for symptoms of anxiety-related disorders (Beck, 1993). An early RCT demonstrated that CBT

was superior to pharmacotherapy for anxiety-related disorders even at a 2-year follow-up (Butler et al., 1991). CBT has since been evidenced as superior to other treatments for anxiety-related disorders as well as several other disorders (e.g., depression, eating disorders, substance use disorder, schizophrenia, bipolar disorder, insomnia; Beck, 1993; David et al., 2018; Hofmann et al., 2012).

CBT is designed to provide diverse coping mechanisms that flexibly suit the individual needs of clients (Beck, 1979). CBT can reasonably be improved by designing and deploying additional coping mechanisms that address more diverse client needs. The customizability of CBT has supported effective treatments for clients across a variety of different social groups and cultures (David et al., 2018).

The "third wave" of CBT is believed to have begun in 2004 (Hayes & Hofmann, 2017). The third wave focuses on an individual's relationship to their thoughts and emotions. The third wave has led to new models and intervention approaches, including acceptance and commitment therapy (ACT), dialectical behaviour therapy (DBT), and mindfulness-based therapies, among others (Öst, 2008). A large body of evidence suggests that third wave principles and therapies are effective for treating a broad range of disorders (Goldberg et al., 2018). The addition of third wave practices to more traditional second wave therapies has also showed benefit (Hayes & Hofmann, 2017). New research is beginning to focus on which combination of second and third wave therapies works best with which population.

The third wave of CBT has begun to focus more on transdiagnostic therapies instead of disorder specific therapies (Hayes & Hofmann, 2017). Disorder specific therapies were the initial focus of CBT, emphasizing how certain behaviours and thought patterns distinguished one disorder from another (Dudley et al., 2011). Disorder specific therapies are not always

effective for all individuals and may overlook the impact of comorbid disorders on the individual in treatment. Transdiagnostic therapies are developed based on the pathways of change that are consistent across various disorders (Hayes & Hofmann, 2017). A robust body of evidence supports the use of transdiagnostic therapies across a range of disorders (Dudley et al., 2011).

Internet-Delivered Therapy

Internet-delivered therapy offers a compelling potential solution for increasing the accessibility of CBT (Andersson, Titov, et al., 2019). Internet-delivered therapies were developed in the 1990s and have since been the subject of many research studies (Andersson, Carlbring, et al., 2019); indeed, over 300 trials of internet interventions have been conducted to date (Andersson, Titov, et al., 2019). Internet interventions have demonstrated medium to large effect sizes (Andersson, Carlbring, et al., 2019). Internet-delivered cognitive behaviour therapy (ICBT) is currently the most common form of internet-delivered psychological intervention and is typically delivered through a secure platform that users can access using a computer, tablet, or smartphone.

ICBT was developed based on the principles of face-to-face CBT, which recognizes the cyclical influence of thoughts, feelings, and behaviours. ICBT maintains the core components of face-to-face CBT, including psychoeducational materials regarding the relationship between thoughts, feelings, and behaviours; strategies for challenging maladaptive thoughts; and behaviours, and relapse prevention information. Clients are asked to complete weekly lessons and homework exercises. Typically, ICBT programs span a period of eight to ten weeks (Andersson, Carlbring, et al., 2019).

ICBT can be delivered with different levels of therapist guidance (Andersson et al., 2009). In guided interventions, the therapist regularly engages in contact with the client most commonly by monitoring client progress of the program and reaching out to clients on a weekly basis typically via email or phone calls; in contrast, unguided interventions involve the client working without a therapist (Andersson et al., 2009). Guided interventions can vary greatly in terms of how often the therapist communicates with the client. Unguided interventions can be offered at a lower financial cost, but guided interventions appear to be more effective (Andersson et al., 2009). Guided interventions allow for the development of a therapeutic alliance (Hadjistavropoulos, Pugh, et al., 2017), which is often an important predictor of therapeutic success (Norcross & Lambert, 2011). Therapist-assisted ICBT (T-ICBT) has been associated with better outcomes compared to unguided interventions and has been especially important for individuals with clinical symptoms (Karyotaki et al., 2021).

T-ICBT has demonstrated similar outcomes in symptom reduction to that of face-to-face therapy with effects being maintained longer term (Andersson et al., 2014; Andersson & Hedman, 2013; Carlbring et al., 2018; Hedman et al., 2012). Therapists provide support and guidance to clients via weekly email messages or telephone calls. Clients choose how often they email their therapist and how much or how little information they share about themselves (Hadjistavropoulos et al., 2018). T-ICBT provides a unique opportunity for exploring ways to improve the online therapy experience for clients and for therapists by examining client/therapist correspondence or lack thereof (Hadjistavropoulos et al., 2018).

Like in-person CBT, ICBT appears effective for treating diverse mental health challenges. Various studies have evidenced small to large effect sizes for transdiagnostic ICBT for anxiety and depression (Andersson, Carlbring, et al., 2019). ICBT also seems to be

effective for PTSD and comorbid MDD (Sijbrandij et al., 2016). ICBT appears effective and it is comparably effective to face-to-face CBT treatment protocols (Andersson & Hedman, 2013; Hedman et al., 2012). ICBT has moved from being only offered in research settings to being offered in routine care settings, where further evidence of its effectiveness has been established (Etzelmueller et al., 2020; Hadjistavropoulos, Peynenburg, et al., 2021; Titov et al., 2018).

Given the potential of ICBT, PSPNET is a clinical research team that was developed to focus on ICBT for PSP, and to implement and evaluate tailored ICBT for PSP. Tailoring programs for specific populations can increase treatment uptake and improve treatment outcomes (Fleming et al., 2016; Ludden et al., 2015). Tailoring for PSP involved modifying a previously developed ICBT course to include stories and examples of PSP that would allow PSP to learn and apply the content to their experiences. PSPNET's tailoring was informed by interviews with 120 PSP stakeholders (e.g., border services agents, correctional workers, firefighters, paramedics, public safety communicators) regarding their perceptions of ICBT (McCall, Hadjistavropoulos, et al., 2020; McCall, Sison, et al., 2020). In these interviews, while PSP expressed some reservations about ICBT, they also expressed a high degree of openness towards ICBT, with most participants (93%) believing that a need for ICBT existed, that they would likely use ICBT (62%), and that they believed online therapy complemented existing services. After tailoring, the program was subsequently offered and found to be effective, with clients reporting large reductions in symptoms of depression and anxiety and moderate reductions in PTSD, panic disorder, anger, and disability (Hadjistavropoulos, McCall, et al., 2021).

Subsequent studies have investigated why PSP seek ICBT and the characteristics of ICBT treatment-seekers. PSPNET clients primarily hear about PSPNET through work-related sources (e.g., union, colleague, employer) and report seeking the PSPNET *PSP Wellbeing Course* for several reasons, including interest in ICBT (49.8%), interest in managing their symptoms themselves (47.1%), and the convenience of ICBT (42.5%; McCall et al., 2021). Most PSP reported that their primary motivation was to deal with their perceived symptoms (52%). Most PSPNET prospective clients screened positive for at least one mental disorder (84.7%), with symptoms of depression, anxiety, and PTSD being the most common (McCall et al., 2021). A further study explored client experienced stressors. Clients who participated in the *PSP Wellbeing Course* reported experiences several occupational stressors, including operational stressors (e.g., PPTEs, sleep/shiftwork issues) and organizational stressors (e.g., issues with leadership, workload, and resources, the most common of which being PPTE exposures (Beahm et al., 2022). Clients reported that the PSPNET skills (e.g., controlled breathing, graduated exposure, thought challenging) were helpful in managing occupational stressors. A previous evaluation of the *PSP Wellbeing Course* included qualitative data for 57 participants, expressing impactful and hindering events experienced during the course, helpful and challenging course content and areas of the course, and areas for improvement (Beahm et al., 2021). Clients reported that thought challenging was the most useful skill, that they enjoyed the flexible nature of the course, and that they liked the access to therapist support.

Available evidence supports PSP across professions, believing they and their colleagues could benefit from an ICBT intervention tailored to PSP. The PSPNET *PSP Wellbeing Course* was designed as an ICBT intervention tailored for PSP and is already

demonstrating strong evidence of substantially beneficial outcomes (Hadjistavropoulos, McCall, et al., 2021); nevertheless, there is—and should be—ongoing efforts to improve the accessibility, acceptability, and effectiveness of ICBT for treating diverse concerns across a variety of populations (Fleming et al., 2016; Ludden et al., 2015). PSPNET has made an ongoing commitment to advance CBT and improve outcomes for PSP.

Learning Health System

RCTs are the current standard for evaluating mental health interventions; however, this can lead to interventions becoming quickly obsolete (Mohr et al., 2017). Interventions that do not demonstrate additional value over the comparison intervention may be written off, or additions to programs may be beneficial may be overlooked due to low increases in effect size. Methods that are able to rapidly assess interventions and allow for interventions to be iteratively developed and updated efficiently are needed (Mohr et al., 2017). The current study focuses on providing and improving ICBT tailored to meet the needs of PSP. Growing interest in identifying the needs of the target population and tailoring psychotherapies to meet their specific needs and facilitate engagement exists (Fleming et al., 2016; Ludden et al., 2015). Tailored approaches for PSP mental health may be especially useful for addressing the need for flexible timelines, cultural realities, and frequent PPTE exposures (Hadjistavropoulos, McCall, et al., 2021).

Learning Health Systems (LHS) refer to programs that are designed to allow for continuous growth and innovation so that new information is integrated within the program regularly and efficiently (Menear et al., 2019). LHSs have been increasingly supported and may allow for rapid transformation of health care (Menear et al., 2019). A LHS generally works through using data to gain knowledge, knowledge to optimize performance, and using

subsequent performance to generate new data, then create value by improving patient and provider experiences and population health while decreases the cost associated with care.

The current study uses the LHS framework to optimize PSPNET client care by implementing mindfulness meditation to respond to patient calls and collecting client feedback on the changes. PSPNET has yielded consistently positive results, but some clients still do not complete the course and some clients (9%) report being unsatisfied with the course (Beahm et al., 2021). The current study attempted to introduce new skills to help reduce client attrition and address client concerns.

In our stakeholder interviews, PSP have emphasized that internet-therapy is critical for overcoming multiple barriers (McCall, Hadjistavropoulos, et al., 2020). We have heard that PSP want a service tailored to meet their specific needs. PSP stakeholders have explicated several options for potential content, with the following top six: 1) identifying and understanding symptoms; 2) relationships and communication; 3) improving sleep; 4) regulating emotions; 5) substance misuse/dependency; and 6) real case stories specific to PSP. As such, data has informed the next steps regarding how care can be improved for treatment-seeking PSP. The *PSP Wellbeing Course* has tried to address these concerns, but mindfulness meditations may provide additional help for PSP. Our clients have also reported difficulties with concentration (e.g., “I had trouble getting into reading or concentrating it seemed that I had to read things twice cause I was not getting it or remembering what I was reading. I just could not get myself motivated my mind was off wandering”; Hadjistavropoulos, 2021). The practice of mindfulness meditation has demonstrated promise in improving sleep, emotion regulation, and concentration (Black et al., 2015; Davis & Hayes, 2011); as such, mindfulness meditation could offer unique gains for PSP. Our clients

who have spontaneously begun practicing mindfulness meditation as an adjunct to our treatment have reported their efforts were complimentary to the existing course content (e.g., "since starting this course I have really made a conscious effort to meditate every day (mostly before bed) and I feel it has definitely helped me when my emotions start to rise. I feel my brain doesn't jump to conclusions as much"; (Hadjistavropoulos, 2021)). In the sections below, background on mindfulness is reviewed followed by an overview of the current study.

Mindfulness

Defining Mindfulness

The term mindfulness was coined in the 19th century to reflect the Pali word "sati," which means mental stability and focus of attention (Wielgosz et al., 2019). Contemporary mindfulness has been derived from several cultural and philosophical traditions, primarily Buddhism (Shapiro et al., 2006; Van Dam et al., 2018). Buddhism contains specific instructions for the principles and practices of mindfulness (Melbourne Academic Mindfulness Interest Group [MAMIG], 2006). Buddhism includes a premise that attention can only truly be directed at one object at a time and that directed attention involves an emotional component (Grabovac et al., 2011). People often habitually pursue emotional reactions that can create automatic associations between the emotional reactions and the object.

Disagreement over the exact definition of mindfulness exists. Kabat-Zinn (1994) provided the most commonly used definition of mindfulness: a three-component definition that calls for paying attention (1) on purpose; (2) in the present; and (3) non-judgementally. Bishop and colleagues (2004) posited a two-component definition where the individual pays

attention to internal and external events occurring in the present and experiences the events with acceptance (Vujanovic et al., 2009). Disagreement on a singularly nuanced definition may complicate research on mindfulness; nevertheless, researchers often identify mindfulness as a way of directing attention that is accepting, non-judgemental, and present-focused (Brown & Ryan, 2004). Mindfulness is cultivated through the practice of mindfulness meditation.

CBT can help individuals learn to identify their thoughts and then search for evidence to challenge dysfunctional and unhelpful thoughts. Skilled use of mindfulness can help individuals learn to simply notice their thoughts without reacting to them (J. Teasdale et al., 2014). Mindfulness shifts awareness to focus on present-moment activities, thoughts, and sensations, which overtime improves emotion regulation, and in turn reduces symptoms. Increased mindfulness is associated with improved personal and situational awareness that can help to interrupt rumination and may disrupt the cognitive triad spiral.

Mindfulness-Based Stress Reduction (MBSR) was originally developed by Jon Kabat-Zinn at the University of Massachusetts Medical School to treat stress in ambulatory care patients experiencing chronic pain (Kabat-Zinn, 2011; Wielgosz et al., 2019). MBSR is a specific way of practicing mindfulness skills traditionally taught to small groups of people in an 8-week program (Wielgosz et al., 2019). In developing MBSR, Kabat-Zinn maintained many aspects of the traditional mindfulness, but reformulated for secular practice (MAMIG, 2006; Wielgosz et al., 2019). Most mindfulness protocols in psychological research have been based on Kabat-Zinn's MBSR program (Wielgosz et al., 2019); however, several variations exist, including "second-generation" mindfulness-interventions that depart from

MBSR's structure and content (e.g., incorporating explicitly Buddhist teachings and meditations).

Purpose of mindfulness

The general public appears increasingly interested in mindfulness as access to the skills has become more readily available and recognized as a way to support relaxation (Creswell, 2017; Teasdale et al., 2014); however, mindfulness skills may offer many other opportunities for improving mental health (MAMIG, 2006). Many CBT-informed interventions focus on identifying and then changing thoughts or feelings as initial or primary goals (David et al., 2018). Mindfulness interventions focus on accepting thoughts and feelings as experienced in the present moment and changing the way we interact with those thoughts (J. Teasdale et al., 2014). Mindfulness interventions is an umbrella term that refers to the many ways mindfulness can be offered as a therapeutic tool (e.g., mindfulness-based cognitive therapy, MBSR).

Many studies support the efficacy of mindfulness (Shapiro et al., 2006); nevertheless, no consensus on the mechanisms of action of mindfulness meditation has been established (Alsubaie et al., 2017). Some researchers have postulated that the mechanisms of action of mindfulness vary based on disorder-specific factors (e.g., rumination and worry for depression; Loucks et al., 2015), while other researchers argue that the underlying mechanisms remain constant (Carlson, 2012). The extant literature suggests more nuanced experimental studies may be needed to identify the mechanisms of action in mindfulness (Alsubaie et al., 2017; Coffey et al., 2010; Shapiro et al., 2006).

One conceptualization of mindfulness includes the development of meta-awareness, present-centered awareness, non-reactivity, and dereification (Wielgosz et al., 2019). Meta-

awareness is the process of thinking about one's own thoughts and forms the center of mindfulness practice; present-centered awareness involves bringing thoughts to the present moment, often first through focusing on physical sensations; and non-reactivity includes not reacting to thoughts and present sensations. Dereification refers to the understanding that thoughts are not fixed, finite, or determinants, but are time-limited experiences that can either be accepted or disregarded based on their perceived relevance and importance. Non-reactivity and dereification have been theorized to help reduce emotional reactivity and anxiety symptoms (Wielgosz et al., 2019).

Another conceptualization of mindfulness includes cultivating facets of mindfulness: 1) observing, describing, and acting with awareness; and 2) accepting without judgement. (Baer et al., 2006). "Observing" refers to noticing and attending to both internal and external stimuli; "describing" includes using words or short labels to indicate objective feelings; and "acting with awareness" includes focusing undivided attention on one thing at a time (Baer et al., 2006). "Accepting without judgement" involves intentionally viewing present experiences in a nonjudgmental fashion and becoming comfortable with the experiences rather than trying to change the experiences (Chopko & Schwartz, 2009). Conceptualizing mindfulness as inherently including acceptance has been contested (Coffey et al., 2010).

Coffey and colleagues (2010) argue that theoretical and limited empirical evidence supports three potential mechanisms to explain how mindfulness reduces psychological distress, including emotional regulation, decreasing rumination, and non-attachment. Emotion regulation refers to the ability to manage negative affect states (Coffey et al., 2010). Reducing reactivity and decreasing rumination refers to improving focus on the present moment and ability to control the focus of attention (Coffey et al., 2010). Non-attachment

refers to decreasing the focus on goal-orientations that decrease happiness (Coffey et al., 2010). There is evidence for relationships among emotion regulation, decreased rumination, and non-attachment, as well as relationships with decreased psychological distress (Coffey et al., 2010; Coffey & Hartman, 2008).

Attention and acceptance have both been identified in one model as the main important components of mindfulness (Lindsay & Creswell, 2017). Attention skills appear developed more readily with practice, but acceptance skills appear to take more time to cultivate (Lindsay & Creswell, 2017). Without the development of greater acceptance, the increased attention to external and internal stimuli have the potential to increase distress, which is why some researchers argue attention and acceptance must be taught together (Lindsay & Creswell, 2017). Indeed, attention and acceptance may be the primary mechanisms of action for mindfulness, with other commonly associated factors (e.g., affect regulation, reductions in stress) stemming from attention or acceptance (Lindsay & Creswell, 2017).

Shapiro and colleagues (2006) used Kabat-Zinn's definition to introduce a three-axiom model of mindfulness, including intention, attention, and attitude. Intention refers to identifying why one is practicing mindfulness and appears to be less researched. Attention involves the length and focus of thoughts. Attitude refers to the quality of focus. Shapiro and colleagues argue that reperceiving (i.e., disidentifying from one's own thoughts) is a key mechanism of mindfulness meditation. Reperceiving of thoughts and feelings allows the person to understand that they are not their thoughts or feelings, and that pain and undesirable feelings are not permanent and immovable. Shapiro and colleagues propose that

the reperceiving process, which is achieved through intention, attention, and attitude, might lead to a greater sense of wellbeing (Shapiro et al., 2006).

People who regularly practice mindfulness meditation are expected to better transition from experiential *reacting* to *responding* by shifting the focus away from goal-directed behaviours and functioning on "auto-pilot" (J. Teasdale et al., 2014). Goal-directed behaviour can help with goal attainment but is not necessarily well-suited to encountering obstacles. Practitioners of mindfulness meditation may suggest that a goal of "happiness" could paradoxically lead to rumination and unhappiness as obstacles successively threaten the goal and require eternally progressive problem-solving (J. Teasdale et al., 2014). Individuals may experience reductions in rumination and increased happiness when they are able to turn away from goal-directed processing (MAMIG, 2006). Recognizing thoughts without criticism or rumination (i.e., reduced reactivity) is associated with preventing avoidant and dysfunctional behaviours.

Purposefully attending to the present moment can expedite identifying and mitigating rumination (MAMIG, 2006). Present awareness and greater mindfulness can reduce activity in the Default More Network (Thakur et al., 2019) and thus appear to reduce the tendency to engage in mind-wandering. Decrease in mind-wandering have been associated with greater enjoyment of the here and now (MAMIG, 2006). A spirit of non-judgemental acceptance can help people notice experiences rather than reacting to experiences, thus enhancing the range and acceptability of thoughts and actions, increasing openness to experience, and decreasing the tendency to label experiences as bad (MAMIG, 2006). Mindfulness skills then loosen the associations between thoughts and negative emotionality (J. D. Teasdale, 1988). Mindfulness can help reduce over-general autobiographical memory, reducing the use of statements such

as “my childhood was bad” (MAMIG, 2006; Wielgosz et al., 2019). Mindfulness shifts awareness to all facets of memory, rather than focusing on salient bad experiences, and is associated with decreased negative affectivity (MAMIG, 2006; Wielgosz et al., 2019). Mindfulness can help increase empathy and spiritual experiences (Thakur et al., 2019).

Mindfulness meditation can be taught in groups and is often less costly than traditional psychotherapies. There are no geographical limitations on where mindfulness can be practiced and no requirements for specific equipment or a therapist. Mindfulness meditation is normally taught in-person and in groups. Questions remain as to whether mindfulness meditation can be appropriately delivered online (Krusche et al., 2012); however, online mindfulness meditation appears to be effective as a stress reduction program (Krusche et al., 2012). Online mindfulness programs have been shown to be helpful in reducing symptoms of anxiety and depression (Cavanagh et al., 2013; Spijkerman et al., 2016). Stress reduction has been the greatest effect resulting from online mindfulness interventions, with users reporting small improvements in anxiety and depression (Spijkerman et al., 2016).

Short inductions of mindfulness online and very brief online interventions have been associated with improvements in well-being in the general population (Kappen et al., 2019). New studies are beginning to focus on whether online mindfulness interventions can aid in parent-child and romantic relationships in clinical and non-clinical populations (Grepmair et al., 2007; Singh et al., 2010). Online mindfulness meditations have also been offered as preventative interventions, resulting in small to medium effect sizes for decreases in perceived stress (Jayawardene et al., 2017). The current body of research regarding

mindfulness meditations delivered online is still limited (Spijkerman et al., 2016) and research on PSP use of online mindfulness meditation is even more limited.

Other potential benefits of mindfulness meditation include mild improvements in selective and executive components of attention (Wielgosz et al., 2019), working memory, meta-awareness, cognitive flexibility, and memory specificity and decreases in mind wandering. By directing thought to emotional states, many people report enhancement of emotional awareness which allows for better control of emotional states (Alsubaie et al., 2017). Mindfulness meditation can help promote cognitive reappraisal through greater cognitive flexibility and has been associated with reductions in the tendencies to brood and worry (J. Teasdale et al., 2014). Mindfulness can help improve quality of life and enhance relationships by allowing people to be fully present and less critical in their daily lives (J. Teasdale et al., 2014). The current study conceptualizes mindfulness using Kabat-Zinn's definition whereby mindfulness includes paying attention (1) on purpose; (2) in the present; and (3) non-judgementally.

Mindfulness Research

Modern clinical research on mindfulness took off in the 1980s and rose with cognitive neuroscience (Wielgosz et al., 2019). Mindfulness has since been increasingly incorporated into clinical practices, which has further supported research on effectiveness and mechanisms of function (Shapiro et al., 2006). The increased clinical engagement with mindfulness is likely based on several reasons. First, mindfulness is thought to be versatile and transdiagnostic, allowing for improvement across a variety of conditions and contexts. Second, mindfulness can be introduced to provide resources for clients who may struggle with the tools offered in traditional psychotherapeutic interventions. Third, increases in

perceived relevance of online therapies may be associated with greater engagement and adherence to mindfulness meditation (Ludden et al., 2015); as such, the development of mindfulness content for PSP may result in increased PSP engagement and adherence. Mindfulness also fulfills a societal need for increased compassion, which can aid in reducing suffering and drive inclusion and equity.

Mindfulness appears promising for treating anxiety disorders (e.g., social phobia, panic disorder, and agoraphobia), mood disorders (e.g., bipolar disorder), stress, as well as the psychological and physiological pain associated with cancer and multiple sclerosis (MAMIG, 2006; Mills & Allen, 2000; Reibel et al., 2001; Speca et al., 2000). Mindfulness-based interventions appear to have therapeutic outcomes comparable to other treatments (Goldberg et al., 2018). Mindfulness appears particularly effective for treating current MDD and reducing relapse risk at rates equal or superior to CBT and anti-depressant medication (J. Teasdale et al., 2014; Wielgosz et al., 2019). Mindfulness could help people with MDD to rely less on medication and other psychotherapies (J. Teasdale et al., 2014). Preliminary research results from using mindfulness meditation to mitigate anxiety-related symptoms suggest a similar pattern of meeting or exceeding the performance of medication and other psychotherapies (Wielgosz et al., 2019). Mindfulness meditation has been associated with greater quality of life and greater pain reduction in chronic pain patients than what can be achieved through placebo or opioids (Wielgosz et al., 2019). When incorporated into CBT protocols, mindfulness meditation appears to result in greater reductions in substance use than with CBT alone. For example, in smoking cessation studies, mindfulness meditation outperformed other evidence-based treatments by reducing automatic thoughts and emotional reactivity (Davis & Hayes, 2011). Dialectical behaviour therapy (DBT) and acceptance and

commitment therapy both include mindfulness as a central component (ACT; MAMIG, 2006; Wielgosz et al., 2019).

Several studies have addressed the comparison of the efficacies of second-wave CBT to third-wave mindfulness interventions (e.g., Arch et al., 2013; Dowd et al., 2015; Garland et al., 2016) and have reported that CBT and mindfulness interventions are similar in effectiveness, though may impact certain symptoms differently. A mindfulness-based intervention has also been demonstrated as superior to traditional CBT only for treating the symptoms of PTSD in people with co-occurring substance abuse (Garland et al., 2016). CBT and mindfulness both appear efficacious, but may address different symptoms; as such, researchers have begun to investigate the impacts of combined mindfulness and CBT interventions.

Initial studies have supported the effectiveness of combining mindfulness meditation and CBT (Kladnitski et al., 2018, 2020; Ritvo et al., 2021; Woolhouse et al., 2012). RCTs examining the effectiveness of combined mindfulness and CBT often begin with a pre-existing CBT course and add mindfulness meditations (Kladnitski et al., 2020; Ritvo et al., 2021), allowing for the comparison of effects from prior to after the addition of mindfulness meditations. Kladnitski and colleagues (2018) completed a single group observational pilot trial (n = 22) examining the effectiveness of combined ICBT and mindfulness for anxiety and depression in the general population. The enhanced course was associated with reductions in anxiety, depression, and distress, as well as improvements in trait mindfulness and well-being (Kladnitski et al., 2018); however, course completion rates (59%) were lower than anticipated, potentially due to the increased length of the course (i.e., 10 to 14 weeks; Kladnitski et al., 2018). In a follow-up RCT, online ICBT and ICBT with mindfulness

meditations appeared to be superior to treatment as usual for depression, anxiety, and distress, but were not different from each other (Kladnitski et al., 2020). Ritvo and colleagues (2021) completed an RCT (n = 45) comparing psychiatric care with ICBT and mindfulness meditation to psychiatric care alone for the treatment of MDD in youth aged 18 to 30 years. Psychiatric care with ICBT and mindfulness meditation was successful in treating symptoms of MDD and was superior to psychiatric care alone (Ritvo et al., 2021). Additionally, the dropout rate was significantly lower for the intervention group (9%) than the psychiatric care only group (61%; Ritvo et al., 2021).

The potential risk of negative side effects associated with the use of mindfulness exists, although adverse events are still likely underreported in the literature (Farias et al., 2020). Mindfulness is associated with costs in time and opportunity (MAMIG, 2006). Mindfulness requires substantial practice, which may be difficult for clients who have time constraints. The initial learning stages of mindfulness often require guidance that can be costly. The most common reported side effects of mindfulness include short-term anxiety and depression (Farias et al., 2020). Other reported potential side effects include increased anxiety, rumination, risk of suicidal ideation, boredom, pain, and impaired reality testing (Farias et al., 2020; MAMIG, 2006). The side effects from mindfulness have been reported for other treatment protocols, including CBT (MAMIG, 2006). Various studies have reported mindfulness can cause psychotic and delusional symptoms, as well as traumatic re-experiencing (Farias et al., 2020). Some individuals report experiencing somatic symptoms when practicing mindfulness meditation, such as increased tension, pain, and gastrointestinal problems (Farias et al., 2020). The true prevalence of adverse effects is currently unknown

(Farias et al., 2020) and Kabat-Zinn (2003) warns against the potential misuse of mindfulness, placing the onus of caution on therapists.

People who practice mindfulness meditations longer and more often in a given trial often have better outcomes than those who practice less (Parsons et al., 2017). Adherence to mindfulness practice is generally higher with therapist assistance (Spijkerman et al., 2016) and is usually measured using either attendance to offered classes or through the use of weekly practice logs (Grupe et al., 2019; Spijkerman et al., 2016). Advances are being made, however more research is needed to identify increasingly optimal levels of practice and adherence (Strohmaier et al., 2020).

Mindfulness and PSP

Relatively few studies have been conducted assessing the effect of mindfulness practice on symptoms of PTSD (J. Teasdale et al., 2014; Wielgosz et al., 2019), and even fewer studies have focused on PSP (Chopko et al., 2018). The available studies of mindfulness meditation with PSP have been limited by lack of appropriate control groups and small sample sizes (Creswell, 2017; MAMIG, 2006); nevertheless, mindfulness-based interventions are considered potentially effective for treating PPTE-related symptoms among PSP (Chopko & Schwartz, 2013). Regular practice of mindfulness meditation has been related to a reduction in amygdala size and increased capacity to modulate emotional reactivity (Teasdale et al., 2014). Mindfulness practice appears well-suited for treating PTSD symptoms and may help increase resilience (Chopko et al., 2018). By extension, mindfulness may help manage PPTE sequalae (Chopko et al., 2018), which would be particularly important for PSP who are frequently exposed to PPTE (Carleton, Afifi, Turner, et al., 2020; Trombka et al., 2018). Mindfulness practice has also been associated with increased

compassion towards the self and towards others, and with mitigating compassion fatigue (i.e., a stress response characterized by difficulty feeling compassion for clients; McDonald et al., 2021; Trombka et al., 2018), which has been commonly associated with PTSD and reported in PSP professions (Papazoglou & Chopko, 2017; Ricciardelli et al., 2018).

PSP organizations often promote emotional management as a vocational necessity (Eddy et al., 2019; Ricciardelli et al., 2020); as such, online mindfulness meditation delivery may provide accessible and confidential options for supporting PSP mental health (Wielgosz et al., 2019). Mindfulness interventions have improved mental health in general populations and may be effective for PSP (Cavanagh et al., 2013; Chopko et al., 2018; Fitzhugh et al., 2019). PPTE sequalae reactions may vary across populations; accordingly, mindfulness practice may be effective for the general population (Chopko et al., 2018), but more evidence is needed for PSP who are more frequently exposed to PPTEs (Chopko & Schwartz, 2009; Grupe et al., 2019). Lessons of non-judgement may be especially beneficial to PSP in allowing for the acceptance of past PPTE experiences and the experience of current PPTE-based cognitions (Vujanovic et al., 2009).

One of the first mindfulness-based interventions tailored to PSP was associated with reductions of stress, sleep troubles, burnout, and anger, as well as reductions in symptoms of anxiety and depression (Christopher et al., 2016, 2018; Grupe et al., 2019). Mindfulness interventions with PSP have had promising results, but have been limited to police and an in-person class delivery style (Kearney et al., 2013; Trombka et al., 2018).

Current PTSD models postulate that avoidance of, and an inability to accept, PPTE experiences may exacerbate subsequent symptoms (Vujanovic et al., 2009). Being non-judgemental has been inversely correlated with PTSD symptoms post-intervention,

suggesting mindfulness meditation may help to mitigate PTSD symptoms (Chopko et al., 2018; Chopko & Schwartz, 2013; Vujanovic et al., 2009). Mindfulness meditation offered by way of in-person courses over an 8-week period may be effective in reducing stress, burnout, and aggression in police officers as well as in increasing their cognitive flexibility (Trombka et al., 2018). More research is needed to examine the impact of online mindfulness interventions for PSP.

Combined mindfulness meditation and CBT interventions may mitigate PTSD symptoms in military veterans (King et al., 2013), but research regarding the use of mindfulness meditation for PSP with PTSD remains nascent (Polusny et al., 2015). An inverse relationship between PTSD symptoms and mindfulness practice appears to have been established (Vujanovic et al., 2009). A recent study examined the impact of mindfulness meditation in police officers with low to moderate PTSD symptoms and reported a decrease in symptoms that was maintained at a 5-month follow-up (Grupe et al., 2019). The study required police officers attend 8 weeks of in-person classes, which would be difficult to implement on a large scale, especially for PSP in rural areas.

Few stress management interventions for PSP are adequately sensitive to occupational and cultural factors, and current programs have had no significant impact on the wellbeing of PSP (Patterson et al., 2012). The unique needs of PSP require tailored evidence-based interventions to support their mental health (Hadjistavropoulos, McCall, et al., 2021; Ricciardelli et al., 2018). ICBT and mindfulness meditation appear to be promising options for supporting PSP mental health.

The Current Study

The *PSP Wellbeing Course* is showing promising results, but there is room for improvement (Hadjistavropoulos, McCall, et al., 2021). Most PSP (51.3-59.5%) report clinically significant reductions in symptoms; nevertheless, many PSP (40.5-48.7%) do not report clinically significant reductions in symptoms (Hadjistavropoulos, McCall, et al., 2021). The addition of mindfulness meditation to the *PSP Wellbeing Course* may increase the effectiveness and usability of ICBT for PSP who are seeking treatment. The proposed study is the first to evaluate a combined mindfulness meditation and ICBT protocol tailored for PSP.

PSP have expressed a desire for the introduction of coping strategies to help them cope with their emotions, as well as with symptoms related to depression and anxiety (Hadjistavropoulos, 2021). Few studies have been conducted analyzing the impact of mindfulness for PSP and fewer focus on mindfulness and CBT interventions (Cavanagh et al., 2013; Chopko et al., 2018; Fitzhugh et al., 2019); however, combined mindfulness and CBT interventions have been effective in reducing mental disorder symptoms in the general population (J. Teasdale et al., 2014; Wielgosz et al., 2019). PSP enrolled in the *PSP Wellbeing Course* have reported independent practice of mindfulness meditation as effective for reducing their symptoms. The current study responds to stakeholder interests by integrating and studying mindfulness meditation within the *PSP Wellbeing Course*.

The current study was designed to specifically examine the feasibility of the *PSP Wellbeing Plus* Mindfulness Meditation Course (referred to as the PSP PMMC) by 1) evaluating the level of engagement with the mindfulness meditations (e.g., practicing length and frequency); 2) assessing client experiences with mindfulness meditations during and

after treatment; 3) measuring changes in symptoms of anxiety, depression, and PTSD; resilience scores; and functional impairment in order to assess for potential trends of changes in outcomes as compared to previously published research on the PSP Wellbeing Course (Hadjistavropoulos, McCall et al., 2021); 4) assessing for a relationship between meditation use and outcomes; and 5) assessing for differences in mindfulness meditation use and symptom change related to gender. The current study focussed on five areas of mindfulness (e.g., grounding, awareness of breath, awareness of five senses, body scan, loving kindness meditation). The loving kindness meditation is relatively novel as a component of mindfulness (Fredrickson et al., 2017), but was included based on successful implementation in other studies (Fredrickson et al., 2017; Kearney et al., 2013). The meditation styles were chosen due to their successful implementation in other programs (Feldman et al., 2010; Hofmann et al., 2011; Kearney et al., 2013; Schöne et al., 2018; Thakur et al., 2019).

Hypotheses

First, participants will engage with the mindfulness meditations and describe mindfulness meditation as a credible and satisfactory aspect of the *PSP WPMMC*. Second, participants will report positive experiences (e.g., increased relaxation, increased self-compassion, enjoyment of the exercises) associated with the use of the mindfulness meditations as well as difficulties and identify areas for improvement. Third, participants will show statistically significant improvements in symptoms of anxiety, depression, PTSD, and functional impairment and increases in resilience and mindfulness. Fourth, there will be a statistically significant inverse relationship between self-reported mindfulness meditation use (i.e., length and frequency) and symptom reductions (Parsons et al., 2017). Fifth, women are

expected to demonstrate statistically significant greater adherence to the mindfulness protocol than men (Katz & Toner, 2013).

Methods

Context

The current study was conducted in Canada (i.e., Alberta, New Brunswick, Nova Scotia, Nunavut, Ontario, Prince Edward Island). ICBT has been available to the general population in Saskatchewan since 2010 through the Online Therapy Unit; however, the original ICBT courses were not tailored to PSP and PSP within the original course were not a specific focus of research. The *PSP Wellbeing Course* is the first ICBT program for PSP within the Canada and was developed by PSPNET, a clinical research team focused on ICBT for PSP. The current study was the first to implement mindfulness meditation within ICBT for PSP.

Participants

To be eligible for the study, participants needed to be a current or past PSP; screen positive for psychological symptoms consistent with mental health disorders (e.g., MDD, PTSD, GAD); be residing in Alberta, New Brunswick, Nova Scotia, Nunavut, Ontario, Prince Edward Island; be at least 18 years old; have access to an internet connection; and be willing to provide a medical contact. Prospective participants were ineligible if a high suicide risk or a current psychotic episode was evident. No prospective participants were participating in regular mindfulness practice. Participants who met all the eligibility criteria were invited into the *PSP Wellbeing Plus Mindfulness Course* (*PSP WPMMC*).

Participants included 40 treatment-seeking PSP recruited through PSPNET to participate in a wellbeing study. PSPNET is an established online therapy platform tailored

for PSP. The sample size was based on a G*Power 3 analysis for examining pre-post outcomes consisting of paired samples *t*-test statistical analyses, with alpha set to 5% and a medium effect size of .5 (Faul et al., 2007). The recommended sample size was 27 participants. The sample was increased to 40 to ensure adequate power in the event of approximately 30% drop-out (Hadjistavropoulos, 2021; Weise et al., 2016; Zachariae et al., 2016).

Participants were invited to complete an interview on their perceptions of the course and the mindfulness meditations after completion of the course. There were thirty participants who were invited to complete the interviews. Six of the invited participants declined to participate. Twelve participants consented and completed interviews with a member of the research team. The remaining 12 participants were not recontacted as the sample size of 12 was reached. The current study was a pilot study, designed to gain a better understanding of the usability and feasibility of the *PSP WPMMC* by gathering rapid feedback to drive rapid, iterative improvement (Menear et al., 2019). Pilot studies can be conducted on approximately 10 participants or on 10% of the final study size (Hertzog, 2008). Indeed, 10 to 15 participants can provide meaningful qualitative data, depending on the topic of inquiry (Boddy, 2016; Hertzog, 2008). The current study is not designed to generalize and create a theory of behaviour; as such, saturation was not necessary. We expected 12 interviews to be sufficient to produce codes in exploring participant perceptions of mindfulness meditation to allow us to rapidly improve on the course offerings (Boddy, 2016; Hertzog, 2008).

Materials

PSP Wellbeing Course. The *PSP Wellbeing Course* is a transdiagnostic ICBT course for PSPNET, adapted from a previous Canadian ICBT course, the *Wellbeing Course*. The *Wellbeing Course* was initially developed at Macquarie University in Australia for people with anxiety and depression and was later adapted for the Canadian population. The course has been successful in treating a range of symptoms in Australia (Dear et al., 2015, 2016; Fogliati et al., 2016; Titov, Dear, Staples, Bennett-Levy, et al., 2015; Titov, Dear, Staples, Terides, et al., 2015) and Canada (Hadjistavropoulos et al., 2016, 2017; Hadjistavropoulos, Peynenburg, Nugent, et al., 2020; Hadjistavropoulos, Peynenburg, Thiessen, et al., 2020). The *PSP Wellbeing Course* includes five modules, including: (1) introduction of cognitive behaviour therapy and identifying symptoms; (2) monitoring and challenging automatic thoughts; (3) management of physical symptoms; (4) graded exposure; and (5) relapse prevention. Lessons are presented in a slide show format and include text, diagrams, and case stories about PSP. Participants can download materials and homework assignments as well as supplementary information (i.e., information on panic, assertiveness, anger, worry, PTSD, sleep, family, supporting colleagues, building motivation, health anxiety, workplace mental health, grief, pain, mental skills, beliefs, communication with significant other, and general communication skills). The *PSP Wellbeing Course* is designed to be completed in 8 weeks, but participants can have access to a therapist for a 16-week period and to the course materials for the period of a year. The *PSP Wellbeing Course* was developed using feedback from PSP stakeholders using both interviews and surveys (Hadjistavropoulos, McCall, et al., 2021; McCall, Beahm, Fournier, et al., 2020).

Mindfulness Meditations. The PSPNET team includes social workers, clinical psychologists, and students who wrote a series of guided audio mindfulness meditations after reviewing the literature on mindfulness meditation. One member of the PSPNET team had previously completed a course in mindfulness. The mindfulness meditations written for the course included:

- grounding meditation (Appendix A; e.g., turning attention to physical sensations);
- loving-kindness meditation (Appendix B; e.g., cultivating feelings of love for self and others);
- awareness of the breath meditation (Appendix C; e.g., focus on breathing slowly and deeply);
- awareness of the five senses meditation (Appendix D; e.g., cultivating awareness of the environment through the five senses); and
- body scan meditation (Appendix E; e.g., focus on body for areas of tension)

Mindfulness meditation topics were chosen based on evidence of effectiveness from previous studies (Thakur et al., 2019). Mindfulness meditations were added to the pre-existing 8-week, 5-lesson PSPNET transdiagnostic ICBT Wellbeing Course. Each mindfulness meditation was added with the psychoeducational materials for that week's lesson and was presented in both audio and text. Psychoeducational material on mindfulness meditations was offered prior to the first meditation. Mindfulness meditations were chosen for each lesson to complement the skills taught in the course that lesson (e.g., controlled breathing and awareness of breath meditation). Each mindfulness meditation was audio-recorded by a voice talent and was designed to be approximately 10 minutes long

(Grounding meditation: 11:48, Loving Kindness: 8:27, Awareness of Breath: 8:39, Awareness of Five Senses: 9:57, Body Scan: 12:58). The length is consistent with the literature recommendations that mindfulness meditation can have positive effects when practiced for 10 minutes daily, however shorter periods of time can be associated with benefit (Innes et al., 2018; Mrazek et al., 2013; Strohmaier et al., 2020). The length also allowed participants flexibility in listening to the mindfulness meditations and to be an appropriate length for beginners. Each mindfulness meditation was available for download so that participants could practice at their convenience.

Measures

Participants were asked to complete several self-report measures throughout the course of their participation in the PSPNET program. The measures relevant to the current study are detailed below. Other measures administered were not used in the current study. At pre-treatment, participants were administered the Alcohol Use Disorders Identification Test (Saunders et al., 1993) and the Drug Use Disorders Identification Test (Berman et al., 2005). At initial screening and follow-up assessments, participants were administered the Canadian Adapted Treatment Inventory of Costs in Patients with Psychiatric Disorders (Bouwmans et al., 2013), the Panic Disorder Severity Scale (Shear et al., 1997), the Social Interaction Anxiety Scale (Mattick & Clarke, 1998), and the Social Phobia Scale (Peters et al., 2012). At an 8-week follow-up, participant were administered the Working Alliance Inventory (Hatcher & Gillaspy, 2006).

Demographics. Participants were asked for their age, gender, ethnicity, level of education, and marital status. Participants were also asked for their field of work, length of

time in their current position, time spent in front-line duty, the age at which they became a PSP, and how often they practiced mindfulness meditation.

Symptom Measures

Patient Health Questionnaire-9 (PHQ-9; Kroenke et al., 2001). The PHQ-9 is a 9-item self-report measure of past two-week frequency and severity of symptoms of depression. Items (e.g., "over the past 2 weeks, how often have you been bothered by feeling down, depressed, or hopeless?") are scored on a 4-point Likert-type scale ranging from 1 (*not at all*) to 3 (*nearly every day*). Item scores are summed to create a scale total, with scores above 5 indicating mild depression, scores above 10 indicating moderate depression, and scores above 15 indicating moderately severe to severe depression (Kroenke et al., 2001). The PHQ-9 has demonstrated good sensitivity, specificity, and convergent validity (Löwe, Gräfe, et al., 2004; Löwe, Unützer, et al., 2004). Reliability was good to excellent for the current study (a = 0.78-0.85; ω = 0.79-0.85).

Generalized Anxiety Disorder-7 (GAD-7;Spitzer et al., 2006). The GAD-7 is a 7-item self-report measure of past two-week frequency of symptoms of anxiety. Items are rated on a 5-point Likert-type scale ranging from 0 (*not at all*) to 4 (*nearly every day*). Items include questions such as "Over the past 2 weeks, how often have you been bothered by [feeling nervous, anxious or on edge]?" Item scores are summed to create a total score, with scores above 4 indicating mild anxiety, scores above 10 indicating moderate anxiety, and scores above 15 indicating severe anxiety (Spitzer et al., 2006). The GAD-7 has demonstrated good internal consistency (a = .89) and good test-retest reliability (r = .83; Spitzer et al., 2006) among adults seeking care from primary care clinics. Reliability was good to excellent for the current study (a = 0.87-0.91; ω = 0.87-0.92).

Posttraumatic Stress Disorder Checklist for the DSM-5 (PCL-5; Blevins et al., 2015). The PCL-5 is a 20-item measure of the four clusters of PTSD (i.e., intrusive thoughts, avoidance, negative alterations in mood, and alterations in arousal and reactivity) as defined in the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (American Psychiatric Association, 2013). Items are rated on a 5-point Likert-type scale ranging from 0 (*not at all*) to 4 (*extremely*) and include questions regarding how often one has been "bothered by repeated, disturbing, and unwanted memories of the stressful experience?" in the past month (Weathers et al., 1993). Item scores are summed to create a total score, with higher scores indicating higher distress. Scores of 31 indicating probable PTSD. The PCL-5 has demonstrated strong diagnostic utility within the general population (Buckley et al., 1996) as well as strong test-retest reliability (r = .82) and high internal consistency (a = .94; Blevins et al., 2015). Reliability was good to excellent for the current study (a = 0.85-0.95; ω = 0.94-0.95).

Life Events Checklist for the DSM-5 – Extended (LEC-5; Blevins et al., 2015; Weathers et al., 2013) was used to assess whether participants have had lifetime exposure to any of 16 different potentially traumatic events. For use within a PSP population, two of the items were slightly modified: "natural disaster" was revised to "a life threatening natural disaster" and "transportation accident" was revised to "a serious transportation accident." For each event, participants were asked to indicate if: (a) it happened to them personally, (b) they witnessed it happen to someone else, (c) they learned about it happening to a close family member or close friend, and/or (d) they were exposed to it as part of their jobs as public safety personnel. For each event, participants were asked to select all instances that apply or check "does not apply" to events they have not experienced. A total number of exposures will

be calculated for each participant by summing the events they indicated they experienced. The participants were then asked to indicate the worst traumatic event they experienced (i.e., "Please think about the events that you have experienced in your lifetime and consider which event from the list was the worst, most distressing event. If more than one of these events happened to you, select the one event that currently causes you the most distress"). Following their selection, they were prompted to provide further details on the identified event (e.g., "how long ago did it happen?"). The questionnaire is not scored, but rather provides information regarding symptoms of PTSD.

Dimensions of Anger Reaction Scale-5 (DARS-5; Forbes et al., 2004). The DAR-5 is a 5-item self-report measure designed to assess dimensions of anger reactions, especially in stressful situations, over the past four weeks. Items (e.g., "I found myself getting angry at people or situations") are rated on a 5-point Likert-type scale ranging from 1 (*none* or *almost none of the time*) to 5 (*all* or *almost all of the time*). Item scores are summed to calculate a total score, with higher scores indicating higher levels of distress and scores of 12 and above indicating high levels of anger. The DARS-5 has demonstrated convergent and discriminant validity (Forbes et al., 2014; Hawthorne et al., 2006) as well as high internal consistency (a = 0.95; Forbes et al., 2014). Reliability was good to excellent for the current study (a = 0.88; ω = 0.89-0.90).

Insomnia Severity Index (ISI; Bastien et al., 2001). The ISI is a 7-item self-report measure designed to assess difficulties with sleep and insomnia. Frequency items regarding how often someone experienced a problem in the last two weeks (e.g., difficulty falling asleep) are rated on a 5-point Likert-type scale ranging from 0 (*None*) to 4 (*Very severe*). Items regarding satisfaction with sleep, noticeability of sleep problems, worries about sleep,

and interference with daily functioning are rated on a 5-point Likert-type scale, with higher scores indicating greater sleep difficulties. The ISI has demonstrated adequate concurrent validity and good internal consistency (a = 0.74; Bastien et al., 2001).

Sheehan Disability Scale (SDS; Sheehan, 1983). The SDS is a 3-item measure that assesses respondent's functioning in different facets of their lives, including their home, social, and work/school lives. Items (e.g., "The symptoms have disrupted your work/school life") are rated on a 10-point scale ranging from 0 (Not at all) to 10 (Extremely). Higher scores indicate higher levels of dysfunction. The SDS has good sensitivity (83%) and specificity (69%) for identifying functional impairment in people with alcohol dependence, drug dependence, GAD, MDD, obsessive compulsive disorder, and panic disorder. Reliability statistics cannot be computed as each scale is represented by a single item.

Resilience and Mindfulness Measures

Brief Resilience Scale (BRS; Smith et al., 2008). The BRS is a 6-item self-report measure of resilience. Items (e.g., "I tend to bounce back quickly after hard times") are rated on a 5-point Likert-type scale ranging from 1 (*Strongly disagree*) to 5 (*Strongly agree*). Items are summed to create a total score, with higher scores indicating higher levels of resilience. The BRS has demonstrated good validity and good to excellent internal consistency, (a = 0.80-0.91; Smith et al., 2008). Reliability was good to excellent for the current study (a = 0.87-0.91; ω = 0.87-0.91).

The Five Facet Mindfulness Questionnaire—15 Item (FFMQ-15; Gu et al., 2016). The FFMQ-15 is a 15-item short form self-report mindfulness measure designed to assess five facets of mindfulness using five subscales: observing, describing, acting with awareness, nonjudging of inner experience, and nonreactivity to inner experience. Statements

are rated on a 5-point Likert-type scale ranging from 1 (*never or very rarely true*) to 5 (*very often or always true*). Item scores are summed, with higher scores indicating higher levels of mindfulness. The FFMQ-15 has good convergent validity with the FFMQ-39 and the factor structure is consistent with MBCT (Gu et al., 2016). Reliability for the total scale was good for the current study (a = 0.79-0.85; ω = 0.80). Subscale reliability for the current study was also good (a = 0.77-0.90; ω = 0.81-0.91).

Mindfulness Use and Treatment Satisfaction Measures

Baseline mindfulness meditation use questionnaire. Participants were asked to report on their current mindfulness meditation practices. Participants were asked if they practice mindfulness meditation and, if so, how many times and how many days they practice mindfulness meditation. They were asked to indicate what mindfulness practices they employed.

Weekly mindfulness meditation use questionnaire. Participants were asked to complete two face value questions weekly regarding their mindfulness meditation use. Participants were asked how much time they spent practicing mindfulness meditation throughout the week in minutes and how many days they practiced that week. Participants were asked to rate how helpful they found the mindfulness meditations on a scale of 0 (*not helpful at all*) to 4 (*very helpful*; Appendix F).

Treatment satisfaction - general. Participants who completed treatment were asked whether the treatment was worth their time (*yes* or *no*) and whether they would recommend the course to a friend (*yes* or *no*) and to rate their treatment satisfaction on a scale from 1 (*very dissatisfied*) to 5 (*very satisfied*). Participants were asked how the course affected their

confidence in managing their symptoms and if it influenced their motivation to seek help if required in the future on a scale of 0 (*greatly reduced*) to 4 (*greatly increased*).

Treatment satisfaction – mindfulness meditations. Participants who completed the treatment were asked to indicate whether they found the mindfulness meditation helpful using a scale from 0 (*not at all*) to 4 (*extremely helpful*), whether the mindfulness meditations were worth their time (*yes* or *no*), whether they would suggest the mindfulness meditations to a friend, and to rate their satisfaction with the mindfulness meditations on a scale from 1 (*very dissatisfied*) to 5 (*very satisfied*; Appendix G).

Post-Treatment Semi-Structured Interview

After participants completed the *PSP WPMMC,* they were contacted by a member of the research team using the PSPNET email and asked if they would be willing to participate in an interview to discuss their thoughts on the course and on the mindfulness meditations. Participants who were interested in participating were given two options to book an interview: 1) the participant was provided with a link where they could book their appointment with a member of the research team (AA, CL, or ID); 2) participants were asked to provide dates and time during which they were available and received a confirmation email with a booked time. Participants received two follow-up emails and a phone call from the research team if they did not respond to either of the emails. The assigned researcher called the participants at the scheduled time via telephone. Participants were informed that participation was voluntary, and they could skip any question they were not comfortable answering. Participants were asked for their verbal consent for the interview to be recorded and once provided, the recording was started. Participants were asked, using open-ended questions, about their experiences with the mindfulness meditations in the course.

Specifically, participants were asked which parts of treatment they found most helpful, what mindfulness meditations they liked and did not like, what aspects of the mindfulness meditation they liked and did not like, and whether they felt mindfulness meditation was a worthwhile component of treatment. Participants were asked to describe any difficulties they experienced with the mindfulness meditations and to provide overall feedback on the course to identify strengths and areas of improvement. The interview guide included 14 questions that were organized into 8 overarching themes and can be found in Appendix H.

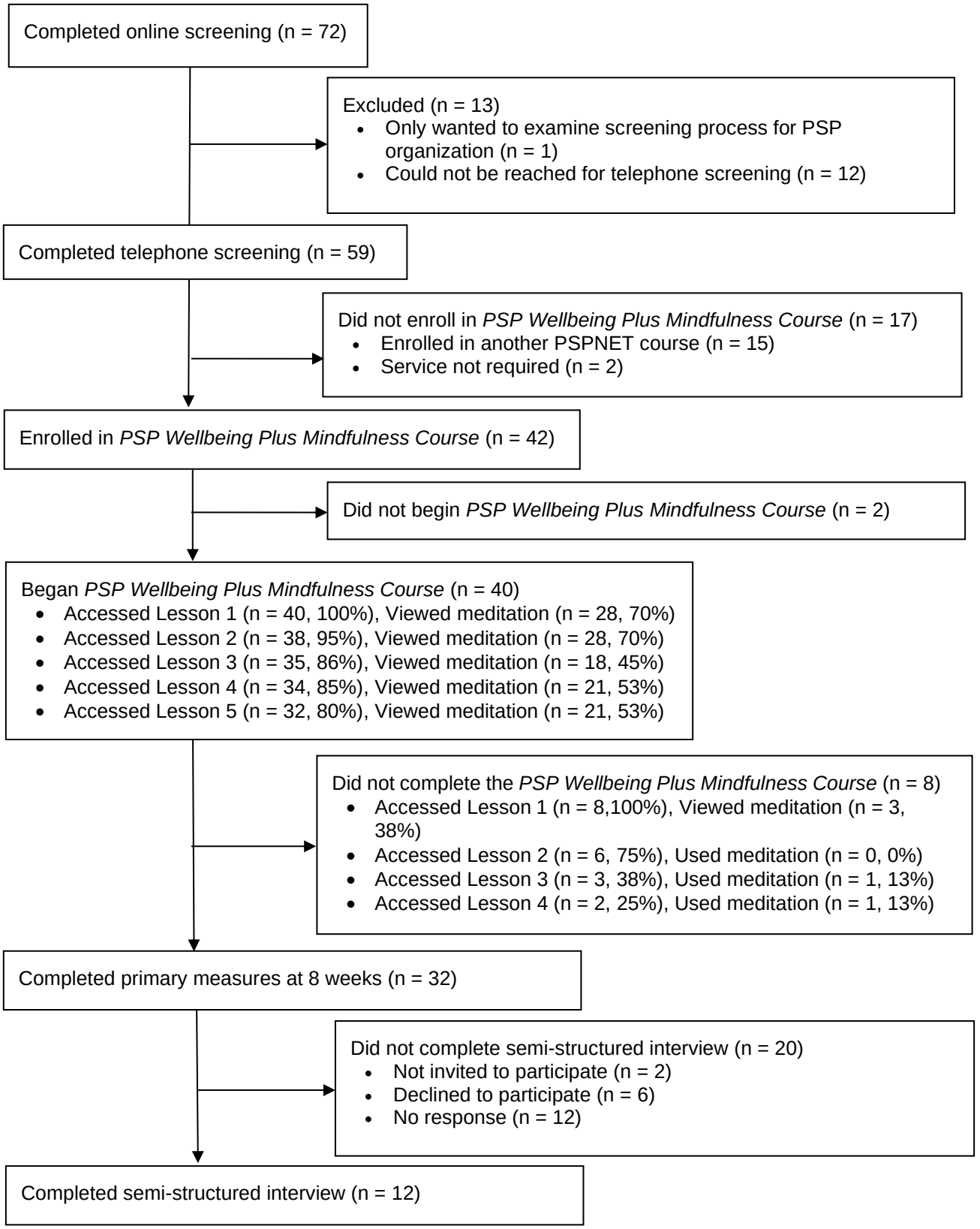
Procedure

Prospective participants first completed a brief online screening questionnaire, followed by a phone screen with a trained clinician from the PSPNET team. Upon completion of the online and phone screens, participants were enrolled in the course, assigned to a clinician, and asked to complete Time 1 symptom measures (see Figure 1). Participants completed the PHQ-9, GAD-7, PCL-5, LEC, DAR-5, SDS, FFMQ-15, ISI, and BRS. Participants were further asked to complete a brief symptom battery on a weekly basis as they completed the course (i.e., PHQ-9, GAD-7, and weekly mindfulness meditation use). Participants had optional therapist support up to two times a week by phone or by email. Therapists are available to help participants work on skills within the program, relate the program to the participants' lives, and to help them troubleshoot. As such, therapist support was available if participants experienced difficulties with the mindfulness meditations. Upon completion of the course, participants were asked to complete the PHQ-9, GAD-7, PCL-5, DAR-5, SDS, FFMQ-15, ISI, and BRS as well as measures of treatment satisfaction. The participant responses allowed for the tracking of symptoms over time and for the observation of potential gains from the modified course. Participants worked through the 8-week 5 lesson

ICBT program which consists of information about the cognitive behavioural model of anxiety and depression, information about cognitive symptoms and thought challenging, about physical symptoms and coping strategies, about behavioural symptoms and graded exposure, and about relapse prevention and goal setting.

Figure 1

Participant Flow Diagram



At the end of each CBT lesson, participants were given information on mindfulness and asked to complete a brief mindfulness meditation corresponding to the content taught in the CBT lesson. Participants were asked to record how often they meditated and how much time they spent meditating in a single session and to report this as they completed their weekly symptom measures. Participants were informed that the mindfulness meditations could be downloaded onto their personal device to allow them to have access to the recordings when they have available time. Responses were analyzed for differences in frequency and length of use impacts outcomes.

Two weeks following completion of the course, participants were invited to complete semi-structured interviews with a member of the PSPNET team to gather feedback regarding their experiences with the mindfulness meditations using a semi-structured interview (see Appendix H). Interviews ranged from 10-20 minutes and were completed over the telephone. Participants were asked for their opinions on the mindfulness meditations. Interviews were audio recorded, and transcribed verbatim. The qualitative data will allow for increased understanding of participant experiences and rapid iterative improvement to the *PSP WPMMC*.

Analyses

Quantitative Analyses

The Statistical Package for the Social Sciences, version 26 (IBM Corp, 2019) was used to conduct the quantitative analyses. Descriptive statistics were conducted on the sample to be able to describe the characteristics of the sample, including demographic characteristics and pre-treatment scores on PHQ-9, GAD-7, DAR-5, FFMQ-15, SDS, BRS, and PCL-5. Descriptive statistics were examined to review use of the mindfulness

meditations. As the current study is a pilot study, completer analysis was used as to give the best picture of outcomes.

Paired samples *t*-tests were conducted to measure changes from baseline to post-treatment in the total scores on the GAD-7, PHQ-9, PCL-5, DAR-5, SDS, FFMQ-15, ISI, and BRS. Alpha was set to .01 to control for spurious inflation of Type 1 error (Perneger, 1998).

Independent samples *t*-tests were conducted to compare mindfulness meditation use by gender, including number of minutes spent practicing meditation, number of days mindfulness meditation was used, and number of times accessing each meditation (i.e., mindfulness meditation views or listens). Independent samples *t*-tests were also run to compare change scores on the primary symptom measures (i.e., PHQ-9, GAD-7, PCL-5, DAR-5, SDS) and changes in mindfulness (FFMQ-15) and resilience (BRS) by gender.

Descriptive statistics were completed for the measures of treatment satisfaction for the *PSP WPMMC* and the mindfulness meditations.

Qualitative Analyses

Participant interview data was deidentified and analyzed in NVIVO 12 (QSR International, 2018). Data were analyzed using a directed content analysis approach (Hsieh & Shannon, 2005). An initial codebook was structured to align with the questions posed during the semi-structured interview by CL. CL is a researcher with PSPNET and is the family member of a PSP. Data were then grouped into larger categories units using a realist approach, whereby participant data were treated as their descriptions of reality (Madill et al., 2000). New codes were created when data did not fit into pre-existing codes. CL coded the data and coding was considered complete when all data were coded into one of the

categories. The codebook and data were independently reviewed by JB, a PSPNET colleague with experience in qualitative research. CL and JB met to resolve conflicts in the codebook until agreement was reached. Consistent with an LHS perspective (Menear et al., 2019), information gathered from the interviews will be used to aid in the iterative adaptations of the mindfulness meditations within the *PSP WPMMC*.

Results

Participant Flow Demographics

Figure 1 shows the study flow with 40 clients enrolling in and initiating the course and 32 clients completing outcome measures (80% completion rate). Participant characteristics are reported in Table 1. The mean age of participants was 40.57 years (*SD* = 9.75 years). Most participants identified as White women from Saskatchewan. The sample was made of PSP from diverse sectors (see Table 1 for details).

Meditation Usage

As shown in Figure 1, 70% viewed the lesson 1 meditation on grounding, 70% the lesson 2 meditation on loving kindness, 45% the lesson 3 meditation on awareness of breath, 53% the lesson 4 meditation on awareness of five sense, and 53% the lesson 5 meditation on body scan. Table 2 shows mean text views and audio listens for each meditation. Table 2 also shows self-reported number of times meditating and number of minutes meditating. There are discrepancies in system-recorded views and listens and the self-reported time spent meditating, with 9 individuals opening the materials but then subsequently reporting they did not meditate. The 27 participants who reported participating in the mindfulness meditations self-reported meditating 4.8 minutes (*SD* = 8.1) per week (see Table 2). Participants who

completed the course tended to spend more time on the meditations each week, though these differences were not statistically significant (all *p*s > .01).

Table 1

Demographics

	WPMMC (*n* = 40)
Gender, *n* (%)	
Women	26 (65.0)
Men	14 (35.0)
Non-binary	0 (0)
Province, *n* (%)	
Quebec	0 (0)
Saskatchewan	27 (67.5)
Other Province (e.g., Prince Edward Island, Alberta, New Brunswick, Nova Scotia, Nunavut, Ontario)	13 (32.5)
PSP Sector, *n* (%)	
Police	22 (55.0)
Fire	5 (12.5)
Corrections	4 (10.0)
Communications (e.g., 911, dispatch)	4 (10.0)
Paramedics/Related Emergency Service	2 (5.0)
Border services	1 (2.5)
Other	2 (5.0)
Ethnicity, *n* (%)	
White	37 (92.5)

Ethnic Minority (e.g., First Nations, Inuit, Metis; Asian; Middle Eastern; Black; South Asian)	3 (7.5)
Age, *n* (%)	
20-29	6 (15.0)
30-39	10 (25.0)
40-49	16 (40.0)
50+	7 (17.5)

-- indicates that the cell number is too small to report

Table 2

Meditation Use

	All Participants (*n* = 40)				*Course Completers (n = 32)*				*Course Non-Completers (n = 8)*			
	Text Views		Audio Listens		Text Views		Audio Listens		Text Views		Audio Listens	
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Lesson 1	1.25	1.19	0.73	0.93	1.39	1.22	0.76	0.97	0.57	0.79	0.57	0.79
Lesson 2	1.05	0.96	0.48	0.85	1.15	0.97	0.58	0.90	0.57	079	0.00	0.00
Lesson 3	0.60	0.84	0.43	0.75	0.67	0.85	0.48	0.80	0.29	0.76	0.00	0.00
Lesson 4	0.73	0.82	0.18	0.38	0.85	0.83	0.21	0.42	0.15	0.38	0.15	0.38
Lesson 5	0.78	0.92	0.25	0.44	0.85	0.87	0.30	0.47	0.43	1.13	0.00	0.00
	Days Meditated		Minutes Spent Mediating		Days Meditated		Minutes Spent Mediating		Days Meditated		Minutes Spent Mediating	
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Week 2	0.57	1.26	1.68	6.90	0.70	1.36	2.03	7.57	0.00	0.00	0.00	0.00
Week 3	0.45	0.78	3.25	6.94	0.55	0.83	3.94	7.48	0.00	0.00	0.00	0.00
Week 4	0.88	1.42	3.13	10.66	1.06	1.50	3.79	11.66	0.00	0.00	0.00	0.00

Week 5	0.48	1.01	4.20	10.75	0.58	1.09	5.09	11.67	0.00	0.00	0.00	0.00
Week 6	0.80	1.57	3.38	12.26	0.97	1.69	5.30	13.34	0.00	0.00	0.00	0.00
Week 7	0.75	1.50	4.00	14.99	0.91	1.65	4.85	16.42	0.00	0.00	0.00	0.00
Week 8	0.75	1.60	2.88	8.00	0.91	1.72	3.48	8.70	0.00	0.00	0.00	0.00

Note: "Course completer" denotes individuals who completed all five lessons and the primary measures at week eight.

Measure Changes

Participants who completed the *PSP WPMMC* reported statistically significant reductions in total scores on the GAD-7, PHQ-9, PCL-5 and DAR-5. Moreover, a statistically significant increase in BRS total scores was found. No statistically significant change in ISI total scores was found. Statistically significant decreases in SDS scores of impairment in family responsibilities and social responsibilities, but not work functioning, were identified. Participants who completed the *PSP WPMMC* reported statistically significant increases in overall mindfulness scores and in mindfulness observing scores, while the other subscales (i.e., describing, acting with awareness, non-judgement, non-reactivity) were not significant. Details are presented in Table 3.

Gender Differences

Independent samples *t*-tests were conducted to compare mindfulness meditation use and symptom change scores by gender. Results from independent *t*-tests indicated no statistically significant differences between genders in days where mindfulness meditation was used, t (38) = -0.397, $p > .01$, d = -0.13, nor in the number of minutes spent using mindfulness meditation, t (38) = -1.20, $p > .01$, d = -0.40. Independent samples *t*-tests also did not indicate any statistically significant differences between genders in number of times viewing the each of the mindfulness meditations nor number of times listening to each of the mindfulness meditations, all *p*s > .01. Independent samples *t*-tests did not indicate any statistically significant differences between genders in symptom change on any of the symptom measures (i.e., anxiety, depression, PTSD, anger, insomnia), in resilience change, or in mindfulness change, all *p*s > .01.

Table 3

Measures

PSP WPMMC							
	Pre-Treatment		Post-Treatment		T-test		
	M	*SD*	*M*	*SD*	*t*	*df*	*d*
Generalized Anxiety Disorder-7	7.88	6.13	4.48	4.07	3.74**	32	0.65
Patient Health Questionnaire - 9	8.81	5.41	5.27	3.51	5.10**	32	0.89
Post-traumatic Stress Disorder Checklist for the DSM-5	20.12	15.61	10.42	10.48	6.13**	32	1.07
Dimensions of Anger Reactions Scale	9.85	4.23	7.40	2.84	3.87**	32	0.67
Insomnia Severity Index	10.42	6.06	9.09	4.59	1.70	32	0.30
Brief Resilience Scale	3.15	0.74	3.42	0.71	-2.72**	32	0.47
Sheehan Disability Scale – Family Subscale	4.58	2.87	2.85	2.43	4.49**	32	0.78
Sheehan Disability Scale – Social Subscale	4.33	3.01	2.79	2.43	4.15**	32	0.72
Sheehan Disability Scale – Work Subscale	3.30	2.83	2.79	2.60	1.67	32	0.19

Five Facet Mindfulness Questionnaire	38.27	8.25	40.58	7.40	-3.51**	32	-0.61
Acting with Awareness	9.52	2.53	9.48	2.51	0.11	32	-0.32
Describing	9.34	3.14	9.90	2.85	-1.57	32	-0.62
Non-Judgemental	10.00	2.93	10.85	2.43	-2.68	32	-0.82
Non-reactivity	9.36	2.83	10.33	2.16	-2.55	32	-0.80
Observing	8.48	2.98	8.79	2.87	-2.72*	32	-0.50

[1]Measure completion data varies based on time participants enrolled in the course

*Significant at the .01 level.

**Significant at the .001 level.

Treatment Satisfaction

Participants who completed the *PSP WPMMC* (80%) reported that they 1) would recommend the course to a friend (32; 100%); 2) were satisfied or very satisfied with the treatment (27; 84%); 3) believed the course was worth their time (32; 100%); and 4) believed the course had increased or greatly increased their confidence in their ability to manage their symptoms (32; 100%). Participants who completed the *PSP WPMMC* and used the mindfulness meditations specifically reported that they 1) would recommend the mindfulness meditations to a friend (25; 92.6%); 2) were satisfied or very satisfied with the mindfulness meditations (15; 55.6%); 3) believed that the mindfulness meditations were worth their time (25; 92.6%); and 4) believed that the mindfulness meditations increased or greatly increased their confidence in their ability to manage their symptoms (27; 100%). See Table 4 for details.

Qualitative Results

Most interview participants (n = 11/12; 91.7%) reported that they believed participating in ICBT, in general, was beneficial. One participant indicated they would have preferred in-person therapy, “for me personally I like, I know, my style is I need to be present in a, you now, with somebody”. The most commonly cited benefits of the *PSP Wellbeing Course* included the flexibility of the program (n = 9; 75%), the psychoeducation provided (n = 6; 50%), and the availability of therapist support (n = 5; 42%).

Table 4

Treatment Satisfaction

	PSP WPMMC	*Mindfulness Meditations*
Recommend to a friend, *n* (%)		
Yes	32 (100%)	25 (92.6%)
No	0 (0%)	2 (7.4%)
Course satisfaction, *n* (%)		
Very dissatisfied	0 (0%)	0 (0%)
Dissatisfied	1 (3.1%)	1 (0.03%)
Neutral	4 (12.5%)	11 (40.7%)
Satisfied	15 (46.9%)	10 (37.0%)
Very Satisfied	12 (37.5%)	5 (18.5%)
Course worth time, *n* (%)		
Yes	32 (100%)	25 (89.3%)
No	0 (0%)	2 (7.4%)
Course increased confidence in ability to manage symptoms, *n* (%)		
Reduced	0 (0%)	0 (0%)
No change	0 (0%)	0 (0%)
Increased	22 (68.8%)	17 (63.0%)
Greatly Increased	10 (31.3%)	10 (37.0%)

Most participants (*n* = 9; 75%) reported having tried meditation prior to beginning the course. Among participants who reported having previously tried meditation, two had previously found meditation beneficial and seven reported being unsure what to expect from meditation or being skeptical of the meditations offered in the *PSP WPMMC*. One participant reported, "I kinda thought it would be maybe hokey-pokey… um, a little wishy-washy… yeah, I was a little skeptical shall we say." Most participants (*n* = 10/12; 83%) reported perceiving the mindfulness meditations in the course as beneficial for PSP, "It's nice to, it's probably a really good idea for most of us, 'cause I think anybody who is in, ah, policing and-and stuff is, ah, likely type A... go-go-go type of personality… so it's good to take a step back, focus on what you can control, because everything we deal with is out of our control." Most participants reported mindfulness meditation helped reduce stress and improved relaxation (*n* = 7; 58%) and that mindfulness meditation can be beneficial with practice (*n* = 6; 50%). One participant reported other aspects of the *PSP WPMMC* were more beneficial than the mindfulness meditation component. Participants reported several things they liked about the mindfulness meditations; specifically, participants reported that the mindfulness meditations 1) helped them to slow down and regulate their bodies and emotions (*n* = 5; 42%); 2) can be completed on their own time (*n* = 2; 17%); and 3) reminded them to be gentle with themselves (*n* = 2; 17%). One participant reported "I think definitely with stress I found if I was stressing about something in my job or my life or whatever, once I did the meditation usually I would – during meditation I'd be able to reflect on what I was stressed about." Other comments included participants liking the simplicity of following the mindfulness meditations, incorporating other strategies into the mindfulness meditations, and the variety of mindfulness meditations that were presented.

Participants also reported several challenges with completing the mindfulness meditations, including 1) feeling uncomfortable with sitting with their feelings (*n* = 8; 67%); 2) difficulty finding motivation, time, and quiet space (*n* = 8; 67%); 3) and technical issues (*n* = 2; 17%). One participant reported concerns regarding the loving kindness meditation, reporting that they felt it did not coincide with their religious beliefs; "that love and kindness one, um, like giving yourself wishes to be free from hostility. Like I guess because of my Christian faith I don't really – I trust that – like I would – I would turn around and ask God to help with that, you know?"

Some participants made suggestions for improving the mindfulness meditations (*n* = 5; 42%). Suggestions included providing videos alongside the mindfulness meditations for individuals who consider themselves to be more "visual," providing distinct endpoints in the mindfulness meditations (e.g., a bell chime to indicate when the meditation ends), and providing shorter mindfulness meditations to start. Suggestions for technical or presentation changes, including creating an atmosphere for mindfulness meditations to be completed in a group setting, were also provided.

Discussion

PSP experience greater exposure to PPTEs and appear to be at a greater risk for several psychological disorders (Carleton et al., 2018). PSPNET offers ICBT that is designed to address several concerns that PSP experience when seeking therapy, including concerns about confidentiality and geographical constraints (McCall, Beahm, Fournier, et al., 2020). Previous studies examining the PSPNET *PSP Wellbeing Course* outcomes have evidenced and clinically significant reductions with medium to large effect sizes in symptoms of mental disorders. Some participants do not complete the course and other participants report the

course did not fully suit their needs (Hadjistavropoulos, McCall, et al., 2021). Efforts to improve the accessibility, acceptability, and effectiveness of ICBT for treating diverse populations are ongoing.

Mindfulness is cultivated through the practice of mindfulness meditation and has been defined as a way of paying attention in a way that is accepting, non-judgemental, and present-focused (Brown & Ryan, 2004). Mindfulness interventions direct focus to accepting thoughts and feelings and changing the way we interact with our thoughts (Teasdale et al., 2014). Mindfulness meditation can be practiced anywhere, does not require equipment, is less costly than other therapies, and can help increase empathy (Thakur et al., 2019). Online mindfulness interventions have been previously shown to be effective for the treatment of symptoms of anxiety, depression, and stress (Cavanagh et al., 2013; Spijkerman et al., 2016). When combined with CBT, mindfulness meditation has shown greater reductions in substance use and PTSD.

Most of the participants who completed the course reported using the mindfulness meditations, and on average spent half of the recommended time practicing mindfulness meditation each week. Participants who completed the course trended toward spending more time on the meditations each week. Estimations of use may not be entirely accurate as the meditations were available for download by the participants. Participants' self-reported time spent using the mindfulness meditations is expected to be a more accurate representation of the mindfulness meditation use than the website-recorded mindfulness meditation use, though self-reports are prone to bias (Ackerman et al., 2018). Discrepancies in use between the system-recorded use and the self-reported use exist. In some cases, participants reported higher use than views, likely due to the ability to download the meditations. In other cases,

the participants accessed the meditations, but did not report using them. Thus, the results of the current study may have been affected by the limited mindfulness meditation use by the participants. Limited use of the mindfulness meditations in the current study may indicate that, while they were feasible for some, more work is needed to improve the mindfulness meditations to fully assess their impact.

No statistically significant relationships were observed between time spent practicing mindfulness meditations and reductions in symptoms, which contrasts previous evidence that increased time spent meditating is associated with increased symptom reductions (Parsons et al., 2017). Participants within the *PSP WPMMC* may have been homogenous in their time spent meditating and thus not enough variation present to associate time spent meditating and symptom reduction. An increased sample size may be better able to provide adequate variation to line up with past research. Additionally, the course itself may already require too much of the participants' time and focus, making it difficult for them to allot sufficient time to the mindfulness meditations.

Gender was also not associated with minutes spent practicing mindfulness meditation, with number of days where mindfulness meditation was used, or number of views or listens of the mindfulness meditation. Previous studies have shown that women tend to gravitate more to mindfulness meditations and benefit more, though results are inconsistent (Katz & Toner, 2013). Gender was also not associated with symptom change. Previous studies have suggested that men and women PSP differ from each other in terms of their symptoms (Angehrn et al., 2022; Carleton, Afifi, et al., 2018). The lack of association between gender and use of the mindfulness meditations may indicate that there was equal openness to mindfulness meditation by both men and women PSP.

The *PSP WPMMC* was associated with statistically significant improvements in symptoms of anger, anxiety, depression, and PTSD, but not in symptoms of insomnia, all of which is consistent with previous results regarding the *PSP Wellbeing Course* (Hadjistavropoulos, McCall, et al., 2021). Descriptively, these outcomes appear similar to the most recently published outcomes of the *PSP Wellbeing Course* offered by PSPNET (Hadjistavropoulos, McCall, et al., 2021). Effect sizes were slightly higher in the previously published study for anxiety and depression but were higher in the current study for PTSD and anger.

Statistically significant increases in resilience were reported by participants in the *PSP WPMMC* from pre- to post- treatment. Moreover, statistically significant increases in overall mindfulness scores and mindfulness observing scores from pre-to-post treatment were observed, though not the other subscale scores (i.e., describing, acting with awareness, non-reactivity, non-judgement). Resilience and mindfulness had not previously been measured in the PSP *Wellbeing Course*, so it is unclear whether the change in these scores is a result of the course or if it is a result of the mindfulness meditations, as participants did not engage with the mindfulness meditations as much as anticipated. Previous studies have shown a relationship between dispositional mindfulness and resilience among PSP (Beshai et al., 2022). Participants in the *PSP WPMMC* demonstrated statistically significant decreases in functional impairment in family and social responsibilities. Descriptively, effect sizes were larger in the current study for decreases in functional impairment in family and social responsibilities than in previously published *PSP Wellbeing Course* results (Hadjistavropoulos, McCall, et al., 2021). The effect size for decreases in functional

impairment in work responsibility scores was higher in the previously published results (Hadjistavropoulos, McCall, et al., 2021).

Treatment Satisfaction

Participants reported high levels of treatment satisfaction regarding the *PSP WPMMC* which appear comparable with published research on the *PSP Wellbeing Course* for: 1) overall treatment satisfaction; 2) appraisal of whether the course was worth the participants' time; 3) whether the course improved participant confidence in managing their own symptoms; or 4) whether participants would recommend the course to a friend (Hadjistavropoulos, McCall, et al., 2021). When adding new components to courses, the new addition could negatively impact treatment satisfaction. The high level of treatment satisfaction is consistent with levels found in previous investigations of the *PSP Wellbeing Course* (Hadjistavropoulos, McCall, et al., 2021). The high degree of treatment satisfaction across courses suggests that mindfulness meditation, at the very least, does not decrease course satisfaction or negatively impact participants' perceptions of the course. Due to the previously reported high treatment satisfaction, it is possible that the addition of mindfulness meditation could not meaningfully increase overall treatment satisfaction.

Reported treatment satisfaction scores with the mindfulness meditations were also strong, with almost all participants indicating that they: 1) would recommend the course to a friend; 2) believed the mindfulness meditations were worth their time; and 3) believed the mindfulness meditations increased their confidence in their ability to manage their symptoms. Most participants reported that they were satisfied with the meditations; however, these rates were much lower than the satisfaction rates for the course as a whole. The lower rate of treatment satisfaction indicates work is needed to improve the meditations. Some

participants reported being “dissatisfied” with the mindfulness meditations and reported that the mindfulness meditations were not worth their time. The feedback may be due, at least in part, to the technical issues that were experienced by the first few participants. The mindfulness meditations were not loading properly and were instead playing on a loop, impairing participants’ ability to follow along with the exercises. These technical issues may have decreased participant willingness to complete the meditations and led to lower meditation use in the program. The participants who reported they were “dissatisfied” with the mindfulness meditations were those who reported being unable to use the mindfulness meditations due to this error. The looping was stopped for later participants. In addition, completing mindfulness meditations can be uncomfortable (Farias et al., 2020; Kabat-Zinn, 2003); as such, some of the participants reported that the meditations caused discomfort and, therefore, they may not have wanted to complete them.

Interviews

Results from analyzing the interview data helped to clarify what participants found beneficial in the mindfulness meditations, what they liked about the mindfulness meditations, what they disliked about the mindfulness meditations, and what they found challenging. Consistent with an LHS perspective (Menear et al., 2019), information gathered from the interviews will be used to aid in the iterative adaptations of the mindfulness meditations within the *PSP WPMMC*.

Overall, the sample was very responsive to ICBT and believed that ICBT was beneficial, indicating that participants were receptive to this mode of therapy delivery. Participants reported enjoying the program flexibility, the psychoeducation provided, and the

availability of therapist support. The described strengths were consistent with previous research delineating the strengths of ICBT (Beahm et al., 2021).

Most participants reported having tried using meditation prior to beginning the *PSP WPMMC*. All participants reported not regularly engaging in mindfulness meditations before starting the course. Most of the participants who had previously tried meditation were still unsure about what to expect from the *PSP WPMMC*. Not all mindfulness meditation programs are created equally and some programs have left participants feeling disappointed and misled (Van Dam et al., 2018). The large variation in the mindfulness meditation programs available means the current participants may have been justifiably skeptical of courses offering mindfulness meditation or unsure about the potential benefits of mindfulness meditation. Participants also reported preferences for mindfulness meditation type; however, these preferences were distributed among the different mindfulness meditations offered, showing no clear consensus on mindfulness meditation type preferences.

Most participants reported perceiving the mindfulness meditations in the course as beneficial for PSP. Most participants reported mindfulness meditation helped reduce stress and improved relaxation, and that mindfulness meditation can be beneficial with practice. Mindfulness has previously been associated with stress reduction and improved relaxation, among other benefits (Krusche et al., 2012; Lindsay & Creswell, 2017; Spijkerman et al., 2016). Participants also reported that they liked that other strategies could be incorporated into the mindfulness meditations.

Participants reported several challenges regarding the mindfulness meditations in the *PSP WPMMC* that were consistent with aspects of the *PSP Wellbeing Course* reported in previous studies (Beahm et al., 2021). One participant described the loving kindness

meditation as particularly inconsistent with their religious beliefs as they believe it is up to their higher power to provide that love, and not up to any individual. In contrast, other participants described the loving kindness meditation as their favourite mindfulness meditation. A common challenge with the meditations that participants reported was difficulty sitting with their emotions. Cultivating mindfulness requires lots of practice (MAMIG, 2006) and common side effects include anxiety and depression (Farias et al., 2020). Participants also commonly reported difficulties finding time or quiet space in which to complete the mindfulness meditations.

Future iterations of the *PSP WPMMC* may want to consider including information on how mindfulness meditation can be practiced throughout the day in smaller time frames to increase the accessibility of mindfulness meditation. A suggestion for improvement included providing shorter mindfulness meditations (e.g., 2 to 3 minutes) to help people learning mindfulness meditation to work their way up to longer mindfulness meditations and gain increased comfort sitting with their feelings. Another suggestion for improvement included creating a group atmosphere in which participants can complete the mindfulness meditations.

Limitations

The current study has important limitations that will help to inform future research. First, the sample size of the study is small; however, the detailed data collected allowed for an understanding of the usability and credibility of mindfulness meditation in a sample of treatment-seeking PSP. The detailed data will also allow for iterative improvements to the *PSP WPMMC,* such as providing increased psychoeducation on mindfulness meditation, increasing therapist support for mindfulness meditation, and introducing ultra-brief meditations for people who want to work up to longer periods. Future studies should consider

using larger samples from across the Canadian provinces and territories as this study is not generalizable across the English-speaking Canadian provinces. Second, the current study does not contain a randomized design and thus is descriptively compared to the past published trial on the *PSP Wellbeing Course*. Individuals may also have been impacted by the ever-changing nature of the COVID-19 pandemic or other events that occur over time (McCall, Beahm, Landry, et al., 2020). Future studies should consider using a randomized design and a larger sample to compare the PSP Wellbeing Course with and without meditations. Third, no control comparison is associated with the current study and thus results may be impacted by a placebo effect. Fourth, the current study implemented loving kindness meditation, which is not a traditional mindfulness meditation. The effects of loving kindness meditation may be confounded with the results of the traditional mindfulness meditation. Future studies may want to consider a design that allows for these types of mindfulness meditation to be studied separately and directly compared. Fifth, only a subsample of the participants was interviewed and the experiences of those who did and did not consent to an interview could have differed. Sixth, a number of participants dropped out of the study and thus their experiences could not be fully understood. Seventh, the results of the present study may have been more powerful had there been greater engagement from participants in the mindfulness meditations. Future studies will have to consider a means to encourage mindfulness meditation use without participants feeling forced to complete the exercises. Eighth, the *PSP Wellbeing Course* plus mindfulness meditations was offered primarily in Saskatchewan and English-speaking provinces, limiting the generalizability of results to English-speaking PSP located in Saskatchewan and English-speaking Canadian

provinces. Future research should expand the geographical span to include PSP from across Canada and in both English and French.

Clinical Implications and Future Directions

The current study has several important potential implications. First, results from the current study replicated previous results regarding ICBT, evidencing the *PSP Wellbeing Course* is associated with statistically significant reductions in symptoms of anxiety, depression, PTSD, and anger with medium to large effect sizes. Furthermore, the *PSP WPMMC* showed improved resilience scores over time. The current study supports the effectiveness and continued use of ICBT for treating PSP. No evidence that outcomes are diluted by offering meditations as part of the course was identified. Future PSPNET studies may want to consider analyzing relapse rates at the six-month and one-year follow-ups to examine whether the *PSP WPMMC* is associated with long-term reductions in symptoms at a comparable rate to the *PSP Wellbeing Course.*

The use of mindfulness meditations was, on average, lower than what was recommended within the course. PSPNET may want to provide greater psychoeducation on the use of mindfulness meditation and specifically the dose-response relationship that has been identified in past research to support increased use of mindfulness meditation. Additionally, therapist assistance has been associated with greater mindfulness meditation adherence in past studies (e.g., Spijkerman et al., 2016). As such, PSPNET may want to consider increasing therapist support surrounding mindfulness meditation. PSPNET may need to increase psychoeducation regarding the potential discomfort associated with mindfulness meditation and encourage participants to consider practicing more to allow them to get used to experiencing emotions.

Despite the meditations being written in a way that was intentionally non-secular, one participant reported the mindfulness meditations did not align with their religious beliefs. PSPNET therapists may need to support PSPNET clients who feel the mindfulness meditations do not align with their beliefs by aiding participants to alter their focus during the mindfulness meditations to better align it with their beliefs. Should a participant feel the discrepancy with their beliefs cannot be rectified, therapists should encourage the participant to focus on other aspects of the course and discontinue mindfulness meditation use.

Information gathered from the interviews indicate that participants enjoyed that the mindfulness meditations could be incorporated with other strategies. PSPNET therapists may be able to help support future participants understand what works for them and how to incorporate their existing strategies with mindfulness meditation to achieve increased benefit. Participants also made suggestions for improvement. Future versions of the course may want to provide shortened mindfulness meditations as well as a list of short mindfulness activities that can be completed to help participants who feel 10 minutes is too long when beginning mindfulness meditations. Furthermore, the *PSP Wellbeing Course* has also recently been adapted to be offered with an online forum, which may address one participant's desire to have a group environment within the course. The mindfulness meditations may also be offered after the completion of the course as an additional resource for participants who may be interested in pursuing the meditations.

The current research study was conducted in a specialized online clinic (PSPNET) that primarily serves English speaking PSP in Saskatchewan, New Brunswick, and Nova Scotia (although, on occasion, when resources allow, PSP in other provinces and territories are able to enroll). The current study demonstrates significant reductions in symptoms with

large effect sizes and high rates of treatment satisfaction, supporting continued use of PSPNET. The meditations were used throughout the course and satisfaction and continued evidence of positive outcomes would support continued use of mindfulness meditation in this care setting as well as for the mindfulness meditations to be translated and researched in French along the French *PSP Wellbeing Course*. With continued improvement, the mindfulness meditations could later be used as a foundation for an independent mindfulness-based course, outside of the *PSP Wellbeing Course*, to see if this program is acceptable and effective on its own for PSP. The knowledge we gain will be integrated into practice as a function of being conducted in specialized online clinical setting and can help in the development of future interventions. The overall study goal is to increase accessible evidence-based mental health service options tailored for PSP.

Conclusion

The incorporation of mindfulness meditation was largely acceptable to participants enrolled in the PSPNET *WPMMC*, though use of the mindfulness meditations was lower than expected. The course demonstrated several strengths, including symptom reduction comparable to the original course with medium to large effect sizes and increased resilience scores. Participants reported high levels of treatment satisfaction with the course and identified many aspects that they liked about the course. Participants also expressed several challenges and suggestions for improvement. The challenges and suggestions will be used by the PSPNET team to improve the delivery of the *PSP WPMMC* for use by future PSPNET participants. The current results support that mindfulness meditations, when offered alongside ICBT, may be a culturally acceptable intervention for Canadian PSP. Future

research would be helpful, however, to determine which aspects of ICBT contribute to change.

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Appendix A

Grounding Meditation

You have likely heard of mindfulness at some point. Perhaps you have even tried it. You may be aware that mindfulness has been increasingly recognized as beneficial for mental health. In fact, combining the practice of mindfulness with other skills from the PSP Wellbeing Course can be helpful in managing symptoms in a healthier way. In this resource, you will find some short mindfulness exercises to accompany each lesson of the course.

What are the benefits of mindfulness?

First, when we are "mindful" – we are not on autopilot – but rather can be more self-aware and in touch with our symptoms. This can help us to better understand the cycle of symptoms discussed in lesson 1 and improve our awareness of how unhelpful thoughts, behaviours, and physical symptoms interact and contribute to our overall wellbeing. This is especially important for Public Safety Personnel because your needs are often set aside as you focus on helping others.

> For example, when we are mindful, we are able to focus more on our own experiences or in our own thoughts, because we have slowed down, and made time to do so. This can provide an opportunity for clarity and a better understanding of our symptoms.
>
> Mindfulness also helps us to recognize our helpful or unhelpful behaviours more easily– acknowledging the behaviours that may be related to depression, anxiety and trauma. This is an important first step to improving wellbeing.

Second, the skill of mindfulness can help us to be present in the moment.

> It can allow us to be present for the big things in life that matter to us –sometimes we accidently let these moments slip by and we regret it afterwards because we were not fully present.
>
> It also allows us to be present for ordinary moments of our lives that actually bring pleasure if we attended to them, like drinking a cup of coffee in the morning.

To practice this skill, we'd like to suggest you try the following exercise that is designed to help you become more present and self-aware.

1) Get in a comfortable position – we recommend that you begin in a sitting position, but you can also do this when lying down or walking as you become more proficient with this skill. It is important that you are in a space that has few distractions so that you can maintain your focus on the exercise. (5)

2) Next, start to pay attention to your body's physical sensations. This will help you to be present rather than thinking about where you will go next or what else you have to do today.(10)

3) As you pay attention to your body and physical sensations, you may find it helpful to notice where you are carrying tension in your muscles. Starting from the top of your head, scan yourself for parts of your body that feel tense. (30)

   Start to focus in on these areas and make adjustments to ease the stress in these muscles.

   For many people, – tension can often be held in their shoulders, chest, jaw, forehead, and lower back. If you find it hard to relax those muscles, consider breathing in, tensing/contracting those muscles for a moment, and then very slowly exhaling your breath while releasing the contraction of that muscle and letting go of those tensions.

   You can repeat this "tense up-let go" and "breathe in-breathe out" cycle as necessary. This process is gradual and can take a minute or two. (30)

4) As you settle in, take a moment to be aware of the flow of your breath – coming in and out of your body– just feel the breath and observe how you breathe – take a minute to notice your breath. (12)

   It may be helpful to pay attention to the air as it touches and flows into your nose, and the path it takes as it moves deeper through your chest and into your body. (12)

   You may also want to notice where you feel your breath the strongest – in your chest, your nose, or your stomach? (12)

   As you exhale, you may want to think about or imagine settling in a bit more into the space you are in – almost as if you were sinking into that space. (12)

   As you inhale, you can imagine that breath is helping to clear out distractions in your mind and help you to settle into a more mindful state.

   Now, start to notice how you are feeling emotionally. It is important to do so without judgement –whether you are feeling curious, hopeful, anxious, lost, or down. The goal here is not to change your emotions right now, but simply to become more **aware** of any present feelings or thoughts, whether they are pleasant, unpleasant, or neutral.(12)

   It is not necessary to think about why they are there or what will happen in the future, but instead, just take the time to acknowledge that they exist.(12)

   It is not uncommon for people to feel uncertain or even distracted during this part of the exercise. If you find yourself disengaged at any time, refocus on your breath flow. Then, you can begin to notice each new feeling, thought or sensation that occurs. It is

important to acknowledge it and then gently let it go. Remember the goal is just to **notice** these feelings, thoughts, or sensations, nothing more. (12)

5) As you do this exercise, maybe you will notice some thoughts about this exercise, yourself, someone else, your day, the future, or maybe you will have a lot of random thoughts that you do not understand – whatever they are, again, just **notice and acknowledge them** – do not worry about changing them. (12)

6) Now return to any physical sensations you may be having – you might be hearing something, might be feeling your breath, or you might be noticing the tension in your muscles. Take a moment to connect with these sensations – again, just noticing where they are occurring in your body.(15)

7) To conclude the exercise, take a few more slow deep breaths, in and out. (9)

8) You may find it helpful to take a few minutes just to sit quietly in your place before continuing on with your regular daily activities.

Thank you for taking the time to practice this exercise. It is designed to be something simple that you can do almost anywhere. The process of using mindfulness to increase your self-awareness may help you identify and manage your symptoms in a healthier way as you work through the course, ultimately it may support you in improving your wellbeing.

Many people find that the more they practice this skill, the easier and more effective it becomes. We would like to encourage you to try this exercise out this week once a day- you may listen to this recording a few times or read through the attached sheet. If you have any questions or comments, please feel free to reach out. As noted at the beginning of this recording, mindfulness has multiple benefits. We encourage you to watch for them this week as you work on the remainder of the lesson. Good luck.

Appendix B

Loving Kindness Meditation

When we are stressed, overwhelmed, or distracted, it is easy to become annoyed, angry, or disappointed with ourselves and with others. Instead of focusing on what we believe to be our shortcomings, it can be helpful to focus instead on accepting ourselves. Similarly, it can be beneficial to also develop feelings of kindness.

The following exercise is designed to help you discover and reinforce a positive focus. This meditation is sometimes called a "loving kindness meditation".

First, find a relaxed, comfortable position. This can be sitting or lying down. Allow your eyes to relax. You can close them if this is more comfortable. (10)

Feel your body sink into the position you are in. (5)

Take a deep breath. (3)

Notice how the air feels as it enters your body. (3) Allow yourself to softly inhale (3) and exhale. (3)

Take a few more deep breaths. (18)

Next, think back to a situation where you felt supported and accepted. It might include an interaction with a family member, friend, mentor, or even a pet - whoever made you feel supported and accepted. (10)

What do you see? (10)

What do you hear? (10)

What can you feel? (10)

As much as possible, immerse yourself in that experience, and become aware of what you see, hear, and feel in your body. (20)

Take a moment to notice what you're thinking about this experience, and how you're feeling emotionally. (10)

You may find yourself getting distracted as you complete this exercise. If you do, try to gently guide your attention back to the visualization. (10)

Let yourself feel warmth and kindness from this individual. (10) Expand this warmth and kindness to yourself as a whole. (10) Give yourself the following wishes: (1) may I be free from hostility; (2) may I be free from mental suffering; (3) may I be free from physical suffering; and (4) may I take care of myself happily.

Focus on directing this warmth and kindness to yourself. (10)

Take your time while you are trying this- it is okay if you struggle at first, this is common for many people. (10)

Once you feel ready, direct this warmth and kindness to a neutral stranger who you have no positive or negative experience with. (10)

Direct the same wishes you gave yourself to this neutral stranger – (1) may they be free from hostility; (2) may they be free from mental suffering; (3) may they be free from physical suffering; and (4) may they take care of themselves happily. (10)

When you are done, try to expand this unconditional compassion to someone you may have a conflict with. (10)

You may also go further and radiate the feeling of warmth to your community or the world.

Take a moment to take some deep breaths and bring yourself back to the present moment. While you begin to focus on your body, try to maintain the feeling of kindness, warmth and compassion even as you let go of the images. (18)

When you are ready, take another deep breath and open your eyes. Unless it is time for bed, slowly move your fingers and toes and gradually wake your body back up to resume your day.

In the future, depending upon what you find easiest, you could begin this meditation practice by directing the kindness and warm wishes to someone else, and then direct this kindness to yourself and your community. Feel free to follow the order that feels natural to you.

We hope you find the exercise beneficial. We would like to encourage you to try this out a few times this week, even perhaps once a day as you work on the other materials in the Wellbeing course. If you have any questions or comments, please feel free to reach out.

Best wishes to you this week!

Appendix C

Awareness of Breath Meditation

Sometimes when we try to quiet our minds and participate in mindfulness meditation, we find ourselves easily distracted by other things in our lives. This can include thoughts of family or work, or plans like making a grocery list. This is something that happens to many people when trying to meditate and is very common, and we do not need to be self-critical when these thoughts arise. Instead, when we find it hard to focus, it may be best to focus on something specific. In this exercise, we will complete a breathing meditation. Try to focus on your breath if you become distracted.

It is easy to get wrapped up in our thoughts, but this can often prevent us from being able to enjoy the present moment. Instead, it is helpful to become observers of our thoughts – to let them come and go without judgement and without needing to interact with them.

One of the easiest ways to be able to disengage from our thoughts is to focus on something else. Breathing is something that our bodies do naturally. As such, it can help us feel more in tune with our body.

Find a relaxed, comfortable position. This can be sitting or lying down – whatever position is comfortable for you in this moment. Allow your eyes to relax to a soft focus or to close completely. (10)

Feel the weight of your body underneath you. (5)

Sink into your position. (5)

Try to let go and relax your whole body. (10)

Now, turn your attention toward your breath. (5)

Notice how the breath feels entering and exiting your body. (12)

You may feel this in your nose, your shoulders and chest, or your stomach. (12)

If you cannot feel it, gently place your hands on your diaphragm or the upper part of your stomach. (5)

Feel how your diaphragm expands under your hands. (12)

Allow your breath to calm you. (12)

Now we are going to practice controlled breathing in sets of three. Breathe in for 3 seconds… and exhale for 3 seconds… in two three, out two three… in, two, three… out to three… continue to focus on your breathing and maintain this breathing pattern. (30)

It is normal to get distracted while meditating. When you feel as though you are getting distracted, gently pull your attention back to your breathing. (12)

You may find it helpful to count your breaths to help you maintain focus on them. Inhale 1, exhale 2. Continue this until you reach 10, and repeat the cycle. (15)

And start again at 1… (15)

You may find yourself getting distracted by your thoughts. Remember, this is very common. Take a moment to acknowledge them, and redirect your attention back to your breathing. (30)

Take another deep breath. (6)

What else are you aware of? (6)

Are you aware of a smell, a sound? (6)

Can you feel your breath on your chin as you exhale? (6)

Now, allow your breathing to resume a natural, relaxed pattern. (18)

When you are ready, take another deep breath and open your eyes. Slowly wiggle your fingers and toes and gradually wake your body back up to resume your day.

We hope you found the exercise beneficial. We would like to encourage you to try this out once a day this week as you work on the other materials in the course. Mindfulness has many benefits and we encourage you to look for them in your own life as you complete the week. If you have any questions or comments, please feel free to reach out.

Appendix D

Awareness of Five Senses Meditation

Sometimes when we try to quiet our minds and participate in mindfulness meditation, we find ourselves easily distracted by other things in our lives. This can include thoughts of family or work, or plans like making a grocery list. This is very common and we do not need to be self-critical when these thoughts arise. Instead, when we find it hard to focus, it may be best to focus on something specific. In this exercise, we will focus on being more aware of our senses. Try to focus on your breath when you become distracted.

Find a relaxed, comfortable position. This can be sitting or lying down – whatever is comfortable. You may want to close your eyes or simply allow them to relax to a soft focus. (10)

Feel the weight of your body underneath you. (5)

Sink into your position. (5)

Try to let go and relax your whole body. (10)

As you begin the exercise, notice how your body feels – is it heavy or light? Calm or restless? However it feels, it is okay, simply notice and acknowledge those feelings. (20)

Focus on your breathing. How it feels entering and exiting your body. Take slow, deep breaths, feeling how this allows your body to relax. (20)

To begin, focus on your sense of sight. Look around your environment and try to find 5 things that you normally don't notice. (20)

Take your time as you look around the room – you are not in a rush. (20)

Second, focus on your sense of touch. Find four things that you can feel right now. This may be the texture of your clothing or the feeling of your seat beneath you, for example. Again, take your time to find things you don't normally notice. (30)

As you practice this exercise, you may notice your mind wandering. This is completely normal. Make a mental note and gently guide your focus back to your senses. (10)

Third, focus on your sense of hearing. Identify three things that you can hear that you don't normally pay attention to, such as the ticking of a clock or the humming of an appliance. (40)

Fourth, focus on your sense of smell. Instead of ignoring the scents around you, try to identify two scents in your environment. This could be the fresh air from an open window or the residual smell of food from your kitchen. You may notice an unpleasant smell. This is okay. (40)

If you feel your mind wandering, take a slow deep breath and try to redirect your thoughts back to the exercise. (10)

Lastly, focus on your sense of taste. If you have water or coffee with you, you may want to take a sip and really take a second to notice the full flavour of them. If you do not have any, simply take a moment to consider the current taste in your mouth – something to which people seldom pay attention. (40)

As you near completion of the exercise, take a moment to again pay attention to your whole body. How does it feel now? What are some differences you have felt or noticed? Is your body feeling lighter or heavier? The same? (30)

Focus again on the feeling of air entering and leaving your body. As you slowly exhale, gradually allow yourself to transition out of your meditation and return to your day.

We hope you found the exercise beneficial and that you have noticed the benefits of mindfulness in your life. We would like to encourage you to continue practicing mindfulness, using this meditation or another meditation from the course daily. Good luck.

Appendix E

Body Scan Meditation

When we are stressed, angry, or sad it is very common that our bodies will begin to show physical signs of that stress or emotion. People often feel tension in their necks and shoulders. Others may experience this in the form of an upset stomach. These feelings, while uncomfortable, is our bodies' way of letting us know that something is going on.. In learning how to calm down our emotions, we can release these tensions and reduce the physical sensations, helping us to feel better. But first, we have to be able to identify them.

Find a relaxed, comfortable position. This can be sitting or lying down – whatever is comfortable for you in the moment. You may want to close your eyes or simply allow them to relax to a soft focus. (10)

Feel the weight of your body underneath you. (5)

Sink into your position. (5)

Try to let go and relax your whole body. (10)

Now, turn your attention toward your breath. (5)

Notice how the breath feels entering and exiting your body. (12)

Take slow deep breaths, feeling how this allows your body to relax. (12)

Now, turn your attention toward your body. To begin, simply notice how your body feels in your space. (10)

You may notice areas of tension or soreness. The goal of the exercise is not to change them, but simply to notice and accept them. (20)

Now, I will lead you through a body scan, beginning with your feet. At first, we will go over the body rather quickly to get an impression of how your body feels.

We will begin with your feet. Notice how your feet feel. (5)

Move your attention to your lower legs (5)

Your upper legs (5)

Move your attention up to you stomach (5)

And around to your back (5)

Move your attention over to your fingers… and your hands (5)

Arms (5)

Chest, shoulders, and neck (5)

Take a moment to feel the small muscles in your head – around your mouth and eyes, for example (5)

Now take a minute to feel your body in your space again. Do you notice anything different? (10)

Next, we will go through the body the second time with greater detail, taking a little longer.

To begin, notice your feet. They may feel tense or relaxed. The point of this exercise is not to change this, but only to accept it. (20)

As you move up to your lower legs, take a slow deep breath. (20)

Turn your focus towards your lower legs. (20)

Now, move towards your upper legs. Notice how they feel. Can you feel the ground or the chair underneath them? Do they feel heavy? Light? (20)

Maintain your calm breathing pattern. (10)

Now, shift your focus to your stomach. How does it feel? Does it feel full? Empty? However it feels, accept that this is okay. Feel your breath expand your stomach and your stomach shrink back to its normal size as you slowly exhale. (20)

Shift your attention to your back. Many people hold tension in their backs. Feel how your back supports you. (20)

Next, move your attention to your fingers. Where are they? What can you feel? Are they heavy? (20)

Focus on your arms. (20)

Now focus on your chest, shoulders, and neck. (10)

How do they feel? Do they feel tight? Do they rise and fall with your breath? Simply notice and accept how they feel as you inhale and exhale. (20)

Notice your face. You may find that your jaw is tight, or your tongue is at the top of your mouth. You may also feel tension in your forehead or around your eyes. (20)

Lastly, turn your attention to your whole body. How does your body feel now? (20)

Is there any tension that you have left unresolved? Focus on those areas and try to calm them.

Oftentimes, we can't fix them all at once. This is okay and is very common. What matters is that we notice and acknowledge however our bodies feel in the moment. (30)

Focus now on your whole body. Feel your breath enter and exit it and notice the calmness, relaxation, or any feelings you might feel. (20)

When you are ready, take a slow deep breath and open your eyes. Slowly wiggle your fingers and toes and gradually wake your body back up to resume your day.

We hope you found the exercise beneficial. We would like to encourage you to try this out once a day this week, either by listening to the recording or reading the attached sheet, as you work on the other materials in the course. If you have any questions or comments, please feel free to reach out.

Appendix F

Weekly Meditation Use Questionnaire

1. How many minutes did you spend practicing mindfulness meditation this past week?

2. How many days did you practice meditation this week?

3. How helpful did you find the meditations to be?
   0 (Not helpful)
   1
   2
   3
   4 (Very helpful)

Appendix G

Treatment Satisfaction – Meditations

1. How helpful were the mindfulness meditations?
   0 (Not at all)
   1
   2
   3
   4 (Extremely)

2. Where the mindfulness meditations worth your time?
   Yes
   No

3. How satisfied are you with the mindfulness meditations?
   1 (Very dissatisfied)
   2
   3
   4
   5 (Very satisfied)

Appendix H

Semi-Structured Telephone Interview Guide

Thank-you for taking time out of your day to speak with me. This interview should take about 30-45 minutes. If you have any questions at any time, please feel to ask.

Before we begin the interview, I want to let you know that you are welcome to share whatever thoughts or feedback you have on the PSP Wellbeing Course mindfulness exercises. The whole point of this research is to try to improve the program for future use by PSPNET, and the best way to do that is to hear back from PSP who tried the program.

Regarding confidentiality, no names will be attached to the interviews. Also, please know this interview is voluntary and that we can skip any questions you are not comfortable answering.

I will be recording our conversation for data collection purposes and so I do not miss any information. Do you consent to the recording of this interview?

- Participant consents to recording of telephone interview.

Before we start, do you have any questions for me?

Expectations

1. Before starting the program, had you ever tried using mindfulness before? Did you have any expectations of what it would be like?

Preferences

1. What parts of the course did you find to be the most helpful?
2. Were there any meditations that you liked more than the others? Why?
3. Were there any meditations that you liked less than the other? Why?
4. What parts of the meditations did you like best? Why?
5. What parts of the meditations did you like the least? Why?
6. Were there parts of the meditations that you did not like? Why?

Challenges

1. Did you have any difficulties or challenges in using the meditations?

Perceived Benefit Related to PSP

1. What are your thoughts on the mindfulness meditation in helping with stressors or mental health concerns related to PSP work?
    a. Was mindfulness helpful?

Improvements

2. Is there anything we can do to improve the meditations?

Process

1. Does an online program like this one (ICBT) work for you (convenience, no travel, no cost, effective)?
2. Were the meditations presented in a way that was accessible and made sense for you?

Advice for Others

1. What would you say to other PSP out there about online therapy and the program you did specifically?

Anything else

1. Is there anything else you would like to add?