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ABSTRACT

Graduate mental health has become an increasingly highlighted concern in populations ranging from PhD students (Nature, 2019), to medical students (Rummell, 2015). Clinical psychology students are also at risk; with little attention paid to their mental health needs in the United States. Specifically, one study found that in a review of psychology doctoral program handbooks, only one in three clinical programs mentioned self-care, compared to 94% of programs in the United Kingdom. This dissertation aims to address some of the gaps in care by proposing an implementation program design to reduce mental health burdens for graduate psychology programs using a mindfulness intervention example. This proposal uses the Ottawa Model of Research Use, (OMRU) a well-established model for implementation and dissemination research. Additionally, Community-Based Participative Research (CBPR) frameworks are used to frame the intervention. CBPR approaches are crucial in addressing power disparities, equity concerns, and are an important facet of linking interventions tightly to community identified needs, thus improving sustainability and efficacy of the chosen intervention. The implementation process is broken down into three steps, Assessment, Monitoring and Evaluation, which follow the AME guideline of OMRU. Detailed guides are provided for each step including overviews and applications of focus groups and needs assessments, adaptation of evidence-based interventions, and common barriers and strategies of the proposed intervention. The scope of graduate student mental health concerns are described as well as a detailed guide to implementation of a low-cost, low-impact, evidence-based mindfulness intervention. Feasibility, sustainability, obstacles and significance of findings are discussed.
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Introduction and Rationale

Recent research has highlighted the intense pressures in graduate school programs which often result in disproportionate burdens of mental illness and distress for graduate students (Evans, Bira, Beltran-Gastelum, Weiss, & Vanderford, 2017; IsHak et al., 2013 Jackson, Shanafelt, Hasan, Satele, & Dyrbye, 2016; M Rawlins, 2019; Sarmento, 2015; Storrie, Ahern, & Tuckett, 2010; Yusoff et al., 2013). One meta-analysis of medical students found that over 27% of medical students suffer from depression and 11% experience suicidal ideation (Rotenstein et al., 2016). Another exploratory study found that 49% of clinical psychology graduate students suffered from clinically significant anxiety (Rummell, 2015). While need is high, access to appropriate psychological treatment is complicated by barriers including stigma, financial instability, substandard insurance, inconvenient care providers, limited time, and concerns about disclosure (Mousavi et al., 2018; Storrie et al., 2010). Implementation science has a long history of addressing barriers to the translation of research and evidence-based treatments to practice and increasing access to care (Durlak, 2015). The following paper will outline a program design for clinical psychology graduate programs to use the Ottowa Model of Research Use implementation framework and mindfulness interventions to address barriers to care and structural contributions to student mental health.

Mental health care access: Not guaranteed

International guidelines emphasize that mental health access is a fundamental human right (WHO, 1978; United Nations Human Rights, 2018). Yet, mental health access still lags behind in the United States (Wilson, 2016). A recent study identified that between 44-54% of individuals in the United States suffer from barriers to access; the primary barrier being cost (Creedon & Cook, 2016). While many programs may assume that students have access to mental health care,
such assumptions are not supported by the extant literature, nor does it reflect the socioeconomic realities for individuals living in the United States. Without intentional assessment and often institutional support, access to mental health care is not a given.

Concerns about the needs of students have led some professional and academic programs to address gaps in care (Drolet, & Rodgers, 2010; Karp, & Levine, 2018). Discussions around graduate mental health have been profiled in high impact journals from *Nature* to *The New England Journal of Medicine*. Unfortunately, if one reviews the topics covered in an eminent psychological journal like the *American Psychologist* a simple search of "student mental health", "predoctoral mental health", or "graduate mental health" will provide no relevant articles. While psychologists are perhaps best placed to lead this important discussion, the visible profile of psychologists taking roles of leadership on this issue both within and outside the discipline appears lackluster in comparison to other fields. Simultaneously, there is ample evidence that psychology graduate students are not immune to the very same mental health burdens found in medical schools and in academia more broadly (Dearing, Maddux, & Tangney, 2005; El-Ghoroury, 2011). Additionally, because clinical psychology trainees provide care to patients during their training, the benefits of addressing student mental health burdens go beyond alleviating impacts on academic performance and life satisfaction. The impact of provider mental health burdens is such a concern that the APA has an ethical guideline around the very issue (Fisher, 2009). Patients too recognize the consequences of unaddressed provider mental health burdens. In one study, patients rated therapists who struggled with a greater degree of burnout significantly more negatively (Renjilian, Baum, & Landry, 1998).
The state of graduate student mental health

A recent editorial in *Nature* highlighted the First International Conference on the Mental Health and Wellbeing of Postgraduate Researchers aimed to address some of the prevalent issues affecting doctoral student mental health (*Nature*, 2019). The scale of this issue is striking. Not only for its severity, but for the limited attention it has received up until this point. Evans and colleagues (2018) recently looked at a significant number of graduate students across the globe and found that disproportionate rates of mental distress among students were prevalent even across national lines. According to their study, graduate students had a nearly 6-fold likelihood of experiencing depression (39% in moderate and severe depression) and anxiety (41% moderate and severe). Unfortunately, the study did not look at rates of treatment for these individuals, although it did find that certain structural interventions were associated with decreased frequencies of anxiety and depression. According to the Graduate Happiness & Well-Being Report at Berkeley (2014), these results are not an anomaly. Nearly 43% of students polled in their survey indicated significant level of depression. This is compared to general population incidence rates of between 7.1%-13.1%, for depression (NIMH, 2019) and 2.7% for generalized anxiety disorder (NIMH, 2017) respectively.

Graduate students face multifaceted stressors during their training. Financial stressors like debt and difficulties in work/school/life balance all contribute to overall mental burdens (El-Ghoroury et al., 2012). The addition of clinical work is also a potential source of stress. The insecurity of young therapists in assessing their own clinical competence and outcomes can contribute to stress (Pakenham & Stafford-Brown, 2012). Clinical students may also be at a risk of vicarious trauma (Adams & Riggs, 2008). Another international group of researchers found that early maladaptive schemas impact coping and stress; specifically, individuals ascribing to
schemas around unrelenting standards was the best predictor of burnout in their study (Kaeding et al., 2017). In that same study, fully 49% of psychology graduate students were assessed to have a high level of burnout—suggesting such norms may be well-validated cultural scripts. These different burdens suggest that high levels of stressors and stress may be the norm rather than the exception; an impression reinforced by a review of the literature (Pakenham & Stafford-Brown, 2012). With such high levels of stress, it is no surprise that professional programs have also indicated that they have observed significant distress in many of their students.

Internships and doctoral programs have noted the effects of mental distress on their trainees, though perhaps to a lesser extent than self-report surveys of trainees themselves. One study found that 66% of internships indicated that within the past 5 years they had observed clinical impairment from their trainees (Boxley, Drew, & Rangel, 1986). Those same internships identified the greatest burden of clinical impairment identified came from mental health struggles. However, a more detailed analysis demonstrates the extent to which doctoral programs may grasp the gravity of the pervasive issues. According to this same study of 81 doctoral programs, only 9 programs or 11% believed that 3 or more of their trainees were psychologically impaired (Huprich & Rudd, 2004). Given that impairment can be simply a loss of professional functioning due to distress (Huprich & Rudd, 2004) and depressive and anxiety related symptoms among psychology graduate students frequently reach 40-50%, this suggests that programs may not realize the extent to which their trainees are impacted by mental health concerns.

While graduate students tend to be in a relative position of power with advantages due to their elevated social class as educated members of the public, greater future earning potential, and affiliation with an institution and future earning potential, this is juxtaposed on a temporary
condition of significant dependence on advisors or mentors and often little bargaining power around working conditions within academic labs or clinical positions. Highly demanding and disempowered work practices have been linked to mental health problems and stress for clinical psychology graduate students (Levecque, Anseel, De Beuckelaer, Van der Heyden, & Gisle, 2017). Additionally, while in graduate school, many students have low or no income, coupled with substantial debt (Mendoza, Villarreal, & Gunderson, 2014) and food insecurity (Bruening, Argo, Payne-Sturges, & Laska, 2017; Miles, McBeath, Brockett, & Sorenson, 2017), which may further complicate access to care.

**Emphasizing self-care: Helpful but not good enough**

One of the solutions often touted to address the prevalence of graduate stressors is the teaching or facilitation of self-care (Barnett & Cooper, 2009; Cieslak, 2016; Goncher, Sherman, Barnett, & Haskins, 2013; Keating, 2012; Shapiro, Brown, & Beigel, 2007). Self-care has been defined as the “engagement in behaviors that maintain and promote physical and emotional well-being” (Myers et al., 2012, p. 56), other conceptualizations have highlighted the focus on the ipseity, or sense of self and approach self-care more holistically (Bressi & Vaden, 2017). However, in this program design, the focus on self-care will center on external indicators of self-care including activities like sleep, mindfulness, meals, exercise, and hobbies, and the practical effects on wellbeing these may have.

Historically, self-care strategies were absent within the explicit organization of professional training programs, however a recent study suggests that self-care is increasingly emphasized, with 94% of clinical psychology programs in the United Kingdom providing material online that addressed self-care (Vally, 2018). That same study found that most programs also required students to engage in self-care practices that included individual therapy and
emphasized a diversity of self-care strategies. Unfortunately, this practice does not extend across the Atlantic. According to a large study of 177 doctoral psychology programs, of the 136 that had online handbooks, only 1/3 had a clinical psychology handbook that addressed self-care and only around 1/10 had a general psychology handbook that did (Bamonti et al., 2014). Bamonti and colleagues (2014) also addressed several concerns around the focus on self-care within these handbooks including a tendency towards reactive or treatment-oriented self-care and a lack of mechanisms to address two of the most common identified barriers to self-care: cost and time.

Numerous studies have found that when self-care improves, quality of life outcomes improve commensurately (Butler, Maguin, Carello, 2017; Meyers et al., 2012; Richards, Campenni, Muse-Burke; 2010; Shapiro, Astin, Bishop Cordova, 2005). While, self-care is indeed an important aspect of any life, there are indications that the uniform emphasis of the self-care approach is at odds with actual experience. Additionally, the narrative emphasis of self-care as improving coping, teaching new skills, and the absence of acknowledgment of structural causes of distress within many studies, suggests an individual deficit model. Yet, many of the stressors on students are due to competing demands on student time and effort. Students in the UC Berkeley study reported on average sleeping 6.6 hours a night, well below recommended levels (Graduate Happiness & Well-Being Report, 2014). This was not due to mismanagement of time, rather according to the qualitative data and self-report, many students indicated that the substantial burdens and demands of academic responsibilities required working long hours. Labor statistics also emphasize the role of structural forces and indicate that some graduate students have become increasingly poorly paid, required to work extensive hours, and suffer from inconsistent availability of healthcare depending on the institution (WPA-GO, 2017). Levecque et al. (2017) identified job demands and job control among the most important
variables correlated with mental stresses. As indicated previously, cost and time have been identified as the greatest barriers to wellness strategies, both of which are structural factors that students have very little control over (El-Ghoroury et al., 2012).

The consequence of the emphasis on self-care is often a focus on individuals and that ignores many of the systemic factors that contribute to overall stress for students. For example, in the UC Berkeley survey, stresses revolved around future payments for loans, career stresses, overall health living conditions and academic engagement (Graduate Happiness & Well-Being Report, 2014). Other studies have found that effective support and mentorship is significantly associated with decreases in anxiety and depression (Evans et al., 2018). Bamonti and colleagues (2014) have also noted that self-care interventions often lie parallel to students' needs because they require either finances or time, both of which are in short supply. However, the focus on self-care and stress reduction, is not misplaced. Certainly, stress reduction interventions are important within any context, it is the extent of the emphasis that is problematic. The vast majority of articles focus on individual self-care (this author found only three articles focusing on structural solutions for clinical psychology students). From a clinical perspective, this neglects the environmental and social impacts on student health. In contrast, experts on behavioral theory have noted that behavior is influenced by contextual reinforcements or punishments and is not simply due to individual factors (Biglan & Hayes, 1996; Schultz, 2006). Indeed, researchers like Biglan & Hayes (1996) advocate the inclusion of environmental variables within interventions on behavior in order for them to be effective. For graduate students in clinical psychology, the sheer volume and precipitous rates of depressive and anxiety symptoms endorsed among graduate students would also suggest more of a situational impact, rather than a pervasive skill deficit of coping mechanisms. One recent study found that graduate
students reported more stress than undergraduates, but significantly fewer mental health issues (Wyatt & Oswalt, 2013). Therefore, while individual changes are important, they also reflect a bias towards conceptualizing intervention solely as individual treatment. Consequently, a recent meta-analysis found that self-care interventions in graduate psychology had mixed results (Colman et al., 2016). That same meta-analysis found that in many studies, self-care interventions were effective in improving self-compassion, life satisfaction and decreasing distress. However, the authors also noted powerful effects from moderating variables. Given the environmental context in which graduate student distress occurs, an approach to addressing care could benefit from an implementation science approach that combines strategies that address both self-care and the structural barriers to health and wellbeing.

Using dissemination & implementation science to improve graduate student mental health

Dissemination and implementation (D & I) science began in the 1980s when social science researchers realized that research innovations were not percolating into clinical practice (Durlak, 2015). The subsequent decades involved a gradual proliferation of models, theories and frameworks. Implementation science aims to address several issues including both the lag and the lack of evidence-based practices (EBPs) in practice (Durlak, 2015). Some studies have estimated the delay to be as much as 17 years before research becomes widely disseminated into practice (Morris, Wooding, & Grant, 2011). Measurement of biomedical research delay is difficult, nonetheless, it has been identified as critical priority (Glasziou & Haynes, 2005; Hanney et al., 2015). Additionally, with millions of dollars being poured into developing crucial treatments that lack dissemination, the proliferation of research without commensurate change in practice is a pressing issue (Glasziou & Haynes, 2005). The gap between treatment and practice has real impacts on patient care. Numerous studies, including a recent analysis of adults from
1999-2010 that found that despite the availability of effective treatment, 60% of individuals had uncontrolled hypertension (Guo, He, Zhang, & Walton, 2012). Consequently, some have indicated concerns around the limited impact of research dollars on clinical practice (Sampat, 2011). Similar concerns have been noted in mental health care where routine gaps between effective practice identified in research and standard clinical practice has become a cause for concern (Proctor et al., 2009; US Department of Health and Human Services, 2006).

Implementation has been cited as one of the main solutions for the gap between EBP and research (Chan, Oldenburg, & Wiswanath, 2015; Grol & Wensing, 2004). There is substantial evidence that implementation strategies do assist in the uptake of research and EBP (Bauer et al., 2015; Glasgow et al., 2019; Logan & Graham, 2010). Whether for biomedical research (Grol & Wensing, 2004) or behavioral health (Chan, Oldenburg, & Wiswanath, 2015), dissemination and implementation science is perceived as methodology to reduce barriers and improve access to appropriate health care. Implementation science particularly, is well suited for this role. It promotes the study and development of theories that facilitate the uptake and appropriate adaptation of research findings to real world contexts.

With the increased interest in D & I, models have proliferated in recent years (Tabak, Khoong, Chambers, & Brownson, 2012). Because some models have decades of trials and research, while others have only several years, significant disparity exists within research portfolios for different D & I approaches. D & I models like RE-AIM, have research backgrounds consisting of hundreds of studies and thousands of citations (Glasgow et al., 2019), others have research histories consisting of dozens of studies or fewer (Tabak et al., 2012). The difficulty when deciding on implementation science not only revolves around which model to choose, but also how to best fit the model to the implementation context.
The Ottowa Model of Research Use

The Ottowa Model of Research Use (OMRU) was approached as a viable model for implementation after reviewing several meta-analyses and summaries of the most prominent dissemination and implementation models and frameworks currently used in the field (e.g., Nielsen, 2015; Tabak et al., 2012). OMRU was published by Logan & Graham in 1998 and revised in 2010 (Logan & Graham, 2010). It is an interdisciplinary model that contains both prescriptive and descriptive components (Logan & Graham, 2010). Its advantages include a recognition of a dynamic systems perspective that enables flexibility and adaptation within system feedback loops (Logan and Graham, 2010). It also shares a similar theoretical underpinning with other implementation models through its emphasis on Rogers’ (2003) theory of innovation diffusion. OMRU also has an extensive research and developmental background with nearly two decades of iterative evolution and offers complex and wide-ranging applications from shifts in organization practice (Zecevik et al., 2017), leadership required to facilitate nursing guidelines (Gifford et al., 2008), and smoking cessation (Giulanni et al., 2019). Because of its dynamic nature and focus on implementation science, it has the ability to contribute to the dissemination and implementation of programs to improve mental health in graduate students. The model is described in more detail below.

The core of the model revolves around two components; the AME, or Assessing, Monitoring and Evaluation component, which is prescriptive, and the six core elements. These six elements include the innovation (the chosen intervention to be implemented), the individuals adopting the innovation, environment receiving the implementation, the strategies that facilitate research translation into practice, adoption of intervention, and clinical outcomes (Logan and Graham, 2010). The six core elements will be discussed and defined.
The chosen **intervention or innovation** should allow for some flexibility in adaptation from research environment to practice environment (Logan & Graham, 2010). It should also be based on peer reviewed research. Approaches need to be selected with regard to both quantity and quality of evidence, as well as aligning them against some standard. Validated approaches have been found in such areas as guidelines (Burgers et al., 2004 Fervers et al., 2006; Graham et al., 2002) and clinical adaptations (Card, Solomon, & Cunningham, 2011; Chen, Reid, Parker, & Pillemer, 2013; Kravitsky et al., 2012).

**Potential adopters** include the clinicians, administrators and patients that may use the innovation. Importantly, OMRU highlights the participation of patients throughout the implementation process, a role not always overtly acknowledged by other implementation approaches. Key components of potential adopters include the categories of "awareness, attitudes/intention, knowledge/skill, and concerns" (Logan and Graham, 2010, p. 90). These categories may all vary across potential adopter groups with some having greater knowledge of the innovation, or some having more positive or negative attitudes towards the innovation. The clinical importance of patient attitudes towards EBT (evidence-based treatment) has been implicated in wide-ranging studies from diabetes (Nam, et al., 2011), depression (Dwight-Johnson et al., 2000), bipolar disorder (Chakrabarti, 2016), and clinical research and practice in psychotherapy (Lutz, Jong, & Rubel, 2015). Estabrooks et al. (2003) has noted that in reviews of the literature the most consistent finding is that attitude towards research predicts its use.

**The practice environment** refers to the organization or institution and includes the system components like policies, values, and physical structure or location. Overarching medical-legal frameworks like best practice guidelines, economic factors like insurance reimbursement, may come into play. Along with values, the historical memory of a practice
environment, including its culture and openness to change may impact adoption of innovation. This may also include current practices that are subject to replacement or alteration. Environmental components include aspects like lack of staff and time (Francke, Smit, de Veer, & Mistiaen, 2008), organizational and economic factors (Olivar et al., 2014; Scott, 2007), and organization capacity (Durlak & DuPre, 2008).

**Implementation strategies** are used to translate the innovation from research to practice. There is extensive evidence from the literature that implementation strategies can be useful in improving effect sizes of interventions (DuBois et al., 2002). Implementation interventions are also critical to evaluation, monitoring and adaptation of innovation from research to practice settings, which has been underscored within a systematic review of the literature (Durlak & DuPre, 2008). Conscious of the numerous barriers to research translation, implementation strategies rely on several different approaches to navigate possible obstacles. Barrier management, passive and active implementation strategies and follow-up activities all contribute to OMRU's proactive approach to obstacles to innovation. Obstacles may appear as cultural mismatches, lack of transparency around the utility of the intervention, or burdensome complexity for the potential adopter for example.

**Adoption** refers to the actual process where an innovation is assimilation within a given context. Because context and potential adopters differ from location to location, adoptions be disparate in appearance. OMRU defines the process of adoption as "knowledge use" (Logan & Graham, 2010, p. 93). OMRU relies on the work of Eastabrooks (1999) that refers to three varieties of knowledge including conceptual: a generalized knowledge that alters understanding or attitudes, instrumental: knowledge related to behavior and practice, and symbolic/strategic: knowledge used for the purpose of validating a certain ideological or intellectual position.
Outcomes refer to the significance of the innovation on the system, providers, administrators, patients- it measures the change on both system and personnel as a consequence of adoption of the innovation. Rigorous assessment and evaluation of outcome is advocated in OMRU (Logan & Graham, 2010). This reflects other recommendations in implementation science (Durlak & DuPre, 2008; Glasgow, 2002). Because outcome addresses the impact of innovation, it also should reflect the nature and adaptation of the specific chosen innovation/s.

Theory of diffusion and OMRU:

As stated previously, OMRU is based in part on the theory of innovation diffusion by Rogers (2003). This theory emphasizes in part that the perception of the intervention by possible adopters around categories like the complexity, compatibility, observability, relative advantage and trialability impacts the speed and extent of adoption for a given innovation.

The AME process

The prescriptive component of OMRU revolves around the AME, or assessing, monitoring and evaluation component. The AME process occurs throughout the implementation and works to verify the efficacy and approach of the model throughout. This entails organizational guidelines like needs assessments, psychometric scales.

Assessment addresses the gathering of information related to understanding the practice environment, potential adopters, and service users. This may occur both preemptively and concurrently with implementation. A variety of approaches are outlined in OMRU. Logan & Graham (2010) list qualitative approaches like interviewing, focus groups, quantitative approaches like surveys or questionnaires. Assessment of structural facets of the practice environment may also occur at this point. Logan & Graham (2010) provide examples like environmental scans, perceptions of providers, guideline analysis as methodologies to analyze
structural components. Proactive approaches during assessment also entail clarifying barriers and facilitating factors—summaries of both resources and obstacles.

**Monitoring** works conjointly with assessment. It follows up on previous analysis of barriers to address the emergence of new barriers and analyze the dynamic process of implementation. It is a necessary feedback mechanism. It allows the implementation to step out of a linear approach and to organically respond to shifts in the environment. Without flexibility, monitoring can become an intellectual rather than practical exercise connected to the realities of the implementation site. Monitoring as a whole helps identify follow-up activities, allows evaluation of the extent to which the innovation has penetrated or the "dose of the intervention received" (Logan & Graham, 2010, p. 95). Monitoring addresses the first three core components of OMRU: the intervention, implementation of intervention, and extent to which adoption has occurred. Methodology to monitor can be qualitative or qualitative. Any assessment that adds to understanding of the active process of implementation is important and accuracy is a critical piece of this. Following successful monitoring the next step is evaluation.

**Evaluation** is aligned to the innovation, practice environment, and adopters. It may be quantitative or qualitative. The goal is to accurately assess the impact of the innovation. This impact may entail consequences unforeseen by the implementation team.

**Community Based Participative Research and Approach**

The Ottawa Model of Research Use (OMRU) approach was chosen for this study in part because of its emphasis on systems, individualized care and consideration of patient care. However, like many implementation models, this approach tends to emphasize practitioners and systems. An important complement to this approach is a community-based participative research framework (CBPR). According to qualitative analyses of service sites in the UK, community
participation is often considered to be a "softer' priority" (Callaghan & Wistow, 2006, p. 589).

Yet, simultaneously, there has been an increasing trend moving towards permitting patients
increasing choice within their health care decisions (Edwards & Elwyn, 2009). Previous critiques
have been made of health care service systems that tend to approach a top-down, directive
approach to patient care. Critiques of this approach argue approaches that ignore patient
participation risk a homogenization of services structured off of majority demographics
(Horowitz, Robinson, Seifer, 2009). Furthermore, lack of community participatory integration is
often attributed to the belief of providers that their approach is impartial, belief in the inherent
superiority of professional knowledge and capacities (often conceptualized as cultural capital),
and a commensurate devaluation of the patient and community experience and perspective
(Callaghan & Wistow, 2006).

The inclusion of patients and service users as participants and active decision makers not
only addresses historical concerns around patient treatment, it fits well within the OMRU
approach and can provide significant advantages. Part of the core of OMRU is a significant
consideration of potential adopters and patient outcomes and participation (Logan & Graham,
2010). Further rationale for collaboration and inclusion of this important population can be
justified in that graduate students in clinical psychology or other mental health fields are often
better educated than the general population in regards to the etiology, course, and nature of
mental distress and they have experiential understanding of the barriers and difficulties of care.
Because this population often has significant experience in mental health treatments and burdens,
they are also well-placed to weigh the acceptability of different evidence-based treatments.

CBPR attempts to redress the former and informal power disparities that characterize
much of research-shifting from recipient to participant and from passive to active. It
acknowledges the expertise that communities have and seeks to couple that with the expertise that researchers bring. Callaghan and Wistow (2006) analyze this relationship in terms of the difference between 'consumer' and 'citizen'. Consumers have certain economic rights defined by their relationship with a given service, so they have rights to be "heard" (ex: through standard measures, patient tolerance or satisfaction questionnaires, physiological responses to treatment, etc) and a right "to exit" (ex: the right to refuse treatment, or participate in research) (p. 585). Alternatively, citizens have rights rooted with the foundation of the community and thus maintain "legal, political and social rights" (Callaghan & Wistow, 2006, p. 285). The rights of citizens are legitimized by a far broader context of relationships and behaviors and necessitate notions of accountability that are incorporated in their health community. CBPR can be framed as a transition from seeing patients and study participants not only as consumers, but also as citizens, empowered with rights and embedded with a community context (Horowitz et al., 2009).

Intervention

Many implementation approaches either perform a needs assessment (Bartholomew, Parcel, & Kok, 1998; Moulding, Silagy, & Weller, 1999) or assess for the fit between the intervention and the needs of service users first, before they implement the intervention (Logan & Graham, 1998; Logan & Graham, 2010; Woodbridge et al., 2014). Clearly, a prescription of a single intervention before adequate assessment would not align with either the OMRU model or a CBPR framework. Yet, evidence from the literature can identify both common issues and interventions that are found across a range of programs. Therefore, while the discussion of treatment approaches including needs assessments will be developed further during the program design component of this paper, a brief discussion of mindfulness-based strategies is worthwhile.
here. There is a substantial amount of evidence that mindfulness-based interventions can be highly effective in reducing stress among service professionals (Benzo, Kirsch, & Nelson, 2017; Brennan et al., 2019; Irving, Dobkin, & Park, 2009; Moore, 2008; Richards, Campenni, & Muse-Burke, 2010; Shapiro, Brown, & Biegel, 2007; Shapiro, et al., 2019).

Mindfulness strategies have several advantages that specifically mitigate the barriers (time and cost primarily) to student mental health previously identified. One study found that an intervention with clinical psychologists in training, as short as 10 minutes over 14 weeks improved participants’ self-report of mindfulness understanding, emotional and physical awareness, and improved self-kindness (Moore, 2008). Another study found that a single two-hour introductory session to mindfulness was as effective in promoting wellbeing as the standard 8-week course of mindfulness training (Shapiro, Lebeau, Tobia, 2019). Other studies have found that intervals as short as five weeks (Phang et al., 2015), four one and one half-hour sessions (Romcevich, Reed, Flowers, Kemper, & Mahan, 2018), or a two-week online training (Cavanaugh et al., 2018). There is also increasing evidence that mindfulness approaches can be delivered in highly cost-effective and novel ways. Internet-based interventions have been found to be effective in numerous studies (Cavanaugh et al., 2018; Wahbeh, 2018. One meta-analysis of randomized controlled trials (RCTs) on self-help acceptance and mindfulness-based interventions found that participants derived significant benefit from self-help or self-guided materials (Cavanagh, Strauss, Forder, & Jones, 2014). Studies looking at app-based interventions that are both highly accessible and not cost prohibitive have found promising results. One RCT found that using the mindfulness app Headspace was correlated with self-reported improvements on stress, life satisfaction and resilience after a 30-day period of 10-20 minutes of mindful practice each day (Champion, Economides, & Chandler, 2018). Another study found that after
analyzing 120,000 users and 5.5 million sessions, use of the mindfulness app, Stop, Breathe, Think was associated with self-reported positive improvements in mood and consistent use was associated with greater likelihood of long-term positive change (Athanas et al., 2019). Another mindfulness app, Wallflower, was also found to improve attentional control, reduce stress and improve mood in undergraduates who used the app compared to a cognitive training game (Walsh, Saab, & Farb, 2019). Similarly, another RCT using the mindfulness app Calm, found that at least 10 minutes/day of using the app was associated with improvements in stress, mindfulness, and self-compassion (Huberty et al., 2019). Finally, mindfulness groups provide important experiential training for students that may have secondary benefits. For example, one study on providing clinical psychology trainees with ACT training, a treatment modality that includes a significant focus on mindfulness, found that increases in mindfulness and acceptance which occurred as a part of a 12-week training reduced stressed and were correlated with better outcomes for trainees (Pakenham, 2015).

Mindfulness strategies have the advantage that they can be much less resource intensive than traditional psychotherapy interventions. Many psychotherapeutic interventions are cost and time intensive (Schulberg, Raue, & Rollman, 2002) with a direct correlation between the two variables (Maljanen et al., 2016). Recent trends have privileged shorter-term therapies for numerous disorders including personality disorders (Horn et al., 2016); depression (Driessen et al., 2015), adjustment disorder (Kramer, Pascual-Leone, Despland, & de Roten, 2015), and Generalized Anxiety Disorder (Lilliengren, Johansson, Town, Kisely, & Abbass, 2017). Despite the relative cost-efficacy of many psychotherapeutic treatments, one study estimated the 30-month direct cost of CBT or Psychodynamic treatment was 4704 and 5338 euros respectively per patient (Egger et al., 2016). Including indirect costs this number went up to 21,130, and 20,660
euros respectively. The authors estimated that a cost ≥30 euros per anxiety free day would have to be acceptable in order for the therapies to be considered cost-effective. While the evidence of mindful apps is still preliminary, the cost for apps like Headspace is $94.99/year and Calm is $79.99/year. The relative cost of app delivered care is significantly lower per year. Due to the recency of data, no studies to-date have addressed whether effect sizes would be commensurate between some of the more recent mindful interventions and psychotherapy. However, for institutions and organizations with limited financial resources creative ways to deliver accessible care may entail self-guided modalities.

Because of the numerous advantages and benefits to the specific population of graduate students, mindfulness-based approaches will be discussed extensively in this paper. While, Dimidjian & Segal (2015) point out that that there is a significant absence of effectiveness and dissemination studies for mindfulness-based approaches, noting that only one study in their review was at stage 5 (an experiment that studies effectiveness in practice, implementation, and dissemination of the given intervention). However, one recent study demonstrated that mindfulness-based stress reduction was effective in a self-paying, self-selecting community setting (Juul, Pallesen, Piet, Parsons, & Fjorback, 2018). Institutions and training programs can also improve data on mindfulness-based interventions by implementing programs that assess the effectiveness of mindfulness-based interventions in their communities.

The present project

The goal of this dissertation is to create a step-by-step guide for graduate programs to use to increase graduate student mental health. We will summarize the D&I OMRU assessment, monitoring, and evaluation steps to implement interventions for student wellbeing, with a focus
mindfulness-based interventions. We will summarize and distribute recommendations in a two-page disseminable document for graduate programs using D&I science.

**Method**

In order to identify the frameworks and interventions to use in this project design, the author first identified predominant barriers to care, both among students (e.g., cost and time) and amongst the overall population in the United States (i.e., cost). Mindfulness-based interventions were selected due to their low potential cost compared to short-term cognitive or dynamic psychotherapy and their wide-ranging application within the literature to address mental health concerns for students.

In order to adequately select an implementation model, a series of steps were taken. As indicated previously, D & I models have proliferated within the past decade. Determining a satisfactory model, or best fit could be a challenge. Models with substantial longevity, continued utility and evidence of efficacy within the research literature were preferred. The meta-analysis by Tabak and colleagues (2012) provided an overarching point of reference. Tabak and colleagues (2012) rated 64 different implementation frameworks on items like construct flexibility, the emphasis of either a dissemination and/or an implementation approach, and the socioecological framework. The review for this project proposal included prioritizing models that emphasized implementation, approaches with flexibility (identified by Tabak et al. (2012) or by the model itself), approaches that allowed for structural as well as individual interventions, previously validated implementation research, models that were oriented towards both practitioners and researchers and a model with a clear and accessible framework and theory. Both Tabak and colleagues (2012), Nilsen (2015) provided important meta-analyses of D & I models and implementation models were also researched within the literature. Many models had
limited information on their applicability, lacked details and specificity, were limited in their evidence base, and either were only geared towards research and/or did not include systemic interventions. OMRU was identified as a viable model as it met the criteria of a long-standing model (20+ years), an extensive evidence base, incorporation of structural and individual interventions, and can be flexibly utilized.

This program design used the OMRU model to guide and inform the development of an implementation model for the implementation of an intervention for graduate student mental health care. A CBPR approach was integrated as a framework to guide both the assessment and monitoring stages and inform the structure of the implementation. Program design will consist of a stepwise outline of implementing OMRU in a graduate clinical psychology program using a selection of assessments based on previous barriers and needs identified in literature. A discussion of evidence-based approaches to facilitate CBPR, mindfulness-based strategies and resources for training programs and institutions to be used will be included. Finally, a discussion of the limitations and concerns around using this approach will be provided, including the benefits and consequences of using an implementation approach to address gaps in the literature.

OMRU’s three primary stages; assessment, monitoring, and evaluation will organize the strategies, instruments, and interventions provided below. Within each stage, strategies, instruments and assessments will be detailed. This program design will prioritize instruments and data collection that facilitates successful implementation and pragmatic adoption of the EBP. This means that components will be discussed in terms of their additive value and labeled as either critical or ancillary to help potential implementers weigh the impact of each component.

Assessment: Initial assessment will require identifying both leaders and stakeholders within the community. Strategies will be provided to identify stakeholders. Initial assessment
should also include substantial community organizing. CBPR emphasizes that horizontal rather than stratified interventions. Given that schools are also communities, inclusive, multilateral approaches are useful in generating solutions that maintain community cohesion and bonds. Following the assessment of stakeholders, a list of measures will be provided that institutions could utilize in order to assess student needs. Structural measures to assess for different aspects related to adoption will also be provided (see Allen and colleagues (2017) for examples). Identification of interventions will also occur at this time. The project design will provide a series of several of the most common EBP mindfulness treatments for student mental health issues identified within the literature and cultural as well as structural recommendations as well. EBPs will center on mindfulness-based interventions as they are among the most common, most affordable interventions and as addressed previously, have limited barriers to implementation. Where applicable and possible, estimates of resource intensity of each intervention will be provided. Barriers to implementation derived from the literature will also be discussed at this point and potential solutions will be discussed.

**Monitoring:** While much of the bulk of implementation effort may occur during the initial phases of the Assessment stage, monitoring is critical. Strategies will be provided around monitoring that align with the theory of diffusion (Rogers, 2003), the theory that animates much of OMRU’s approach. Similar to the assessment phase, barriers to implementation derived from the literature will also be discussed at this point and potential solutions will be discussed.

**Evaluation:** Finally, assessments around treatment efficacy and recommendations towards sustainability will be provided with EBP guidelines on validated psychometric instruments and the development of sustainability guidelines.
As indicated above, during the OMRU process there are both prescriptive components (primarily AME). However, descriptive components which include the innovation, the individuals adopting the innovation, environment receiving the implementation, the strategies that facilitate research translation into practice, adoption of intervention, and clinical outcomes will be integrated at each stage of the process.

OMRU’s six core elements also will inform and guide the methodology.

The **intervention** includes modalities that allow for adaptation to the practice environment. Flexibility and substantial peer reviewed research base are equally important. Additionally, interventions should be aligned to some standard. In this program design, because there are few standard guidelines for clinical practice within the field of clinical psychology, the intervention is aligned with a standard aimed at improving quality of life and improving access to treatment and not a diagnostic category which may only incompletely encompass the distress of students (for example, burnout is not a diagnostic category in DSM-V). Mindfulness-based interventions fit these qualifications.

**Potential adopters** include the traditional category of participants. As this is a project design proposal, no specific populations are identified. However, participants in the implementation framework should reflect potential adopters as defined by OMRU and include both potential providers, administrators, and service users (i.e. students). From a CBPR framework, faculty should also be included within the assessment of outcomes as the roles of mentors and participants in program culture cultural are crucial to challenging negative schemas and empowering students to use preventative strategies.

The **practice environment** is identified as a clinical psychology program.
Implementation strategies will include barrier management and active and passive implementation strategies like Flottorp and colleague’s (2013) checklist of determinants of practice, and Lewis, Scott, & Marriott’s (2018) methodologies for advancing the assessment phase. According to OMRU, implementation strategies need to be consistent with the theory of diffusion (see theory of diffusion and OMRU).

Adoption will be touched on briefly by this project design. There are instruments to measure adoption that will be assessed for possible inclusion in this project design. However, the extent to which assimilation of the intervention/s is considered successful will also depend on the assessment phase and is beyond the scope of this paper.

Outcomes according to OMRU, measure the significance of the impact on potential adopters. Therefore, scales will be selected that are validated, evidence-based that reflect change in both systems and individuals. A discussion of both barriers and advantages of different measurements will be provided.

Results

The results below will comprise a comprehensive guide to implementing a mindfulness intervention through OMRU’s AME process with detailed recommendations for implementation interventions for graduate school programs to improve graduate student mental health. In each section (Assessment, Monitoring, Evaluation), we will provide an overview of the background, and a step-by-step guide, including a presentation and evaluations of measures that can be used, along with special considerations.
Assessment

Overview

OMRU breaks the assessment phase into three separate modules comprising 1. innovation, 2. potential adopters, and 3. practice environment (Logan & Graham, 2010). Modules are meant to provide structure, but not necessarily indicate a chronological process. Systems are interconnected; signifying that concurrent interventions at times may be necessary or initial strategies may inform future steps. Innovation includes the development and characteristics of the intervention. Potential adopters include psychometrics like awareness and attitudes towards the intervention, proficiency or skill with the interventions and hesitation or concerns around the intervention. Practice environment includes the assessment of and adaptation to the structure of the practice environment (institutional, or organizational framework), the social and cultural attributes, patient population, and economic considerations. Each of these modules will be used in the presentation of steps to take below.

Focusing on CBPR strategies specifically can improve inclusivity and humility in the assessment phase. CBPR frameworks emphasize assessments of population needs and concerns prior to intervention selection as critical. A CBPR framework can guide qualitative data collection of different shareholder perspectives. Per OMRU and CBPR, our assessment guide focuses on how to conduct focus groups, needs assessments, and consider adaptations to an intervention, with a focus on mindfulness interventions for graduate students.

Focus groups

Focus groups provide several advantages for an approach integrating OMRU and CBPR. Focus groups provide nuanced and qualitative assessment of needs (Benshoff, Cashwell, & Rowell, 2015). They also can contribute to greater validity within an approach or intervention as
they can supplement understanding for complex multivariable conditions (Powell & Single, 1996). Additionally, they assess patient perspective (Krueger & Casey, 2000), providing an important opportunity for integration and adaptation of the intervention. Finally, focus groups are widely used in social science and behavioral interventions (Eborall & Morton, 2017), so there is a body of research and examples to guide practice.

There are a wide range of approaches to focus groups. While many studies may use focus groups as part of their methodology, few provide methodological details or operationalization when describing their process. When considering the use of focus groups, Powell and Single (1996) note several scenarios where focus groups have particular utility:

1. Where there is a gap in existing knowledge and data is required before a questionnaire or hypothesis can be constructed
2. For convoluted issues where additional data will contribute to overall validity.
3. Where multiple variables may moderate the outcome, focus groups allow researchers to identify salient concerns and priorities.
4. Where quantitative measures may provide or have provided opaque or unclear results and statistical power or results may be lacking or questionable.

**Composition and settings of focus groups.** There are guidelines for the composition and settings of focus groups. In general, they are composed of between 4-12 individuals to maximize participation and heterogeneity of perspective (Kreuger & Casey 2000). Duration of focus groups ranges from 1-10 sessions (Powell & Single, 1996). Sampling methods to increase heterogeneity and reduce sampling bias are crucial (Powell & Single, 1996). Heterogeneity of groups may be facilitated by methods including, random sampling and community outreach. Settings are also important for focus groups. Neutral settings permit greater freedom of
conversation and create an environment of openness (Powell & Single, 1996). Focus groups should also be led by a moderator or facilitator, note taker and timer (O'Neill, Small, & Strachan, 1999). Moderator characteristics are important as good facilitation skills, ability to navigate controversial or sensitive themes, and address concerns about opinion disclosure assist in guiding the conversation (Powell & Singleton, 1996). Moderators should also be able to facilitate flow of conversation and ensure equitable contributions from all members of the focus group. Implementors of focus groups may want to include users of the intervention. For example, institutions may want to train students to facilitate discussions of students to better gather open-ended material. In situations where social desirability bias or that facilitators may be subject to significant bias around framing questions, neutral facilitators may be selected, including individuals outside of the social groups studied. In one participative action research study (another name for a CBPR approach), research associates that participated in focus groups were pulled from the community and used to great effect (O'Neill, Small, & Strachan, 1999).

**Effectiveness of focus groups.** There are several factors that have been identified to ensure that focus groups are effective. Open-ended questions are considered to be particularly advantageous in eliciting patient perspective (Powell & Single, 1996) as they permit the greatest freedom of patient response. Kreuger & Casey (p. 41, 2000) provide a useful list of questions that may be useful within a focus group:

"Tell me about your experiences with ________?

When people talk about ______ what do they say?

What are the barriers that people face? What keeps people from _______

What are the incentives that get people to ________?
What would it take for you to____?

Tell me about the last time that you tried to change."

**Methods for focus groups.** Semi-structured interviews may be useful and have been implemented successfully in other studies (Kumer & Urbanc, 2020). Other methods of developing questions are using initial focus groups as brainstorming to identify issues and concerns; then deriving questions from this accumulated data (O'Neill, Small, & Strachan, 1999). Pre-group questionnaires can also be useful in assessing for important topics for focus groups and divergence of perspective (Bloor, Frankland, Thomas, & Robson, 2002). Techniques like needs assessment (covered below) can provide useful data that can then inform questions and discussion for focus groups.

**Recording.** One other critical aspect of focus groups is recording. Recording information retrieved from focus groups can be accomplished either by note takers or audio or video recording sessions that can later be transcribed. Recording sessions is not typically advised in this case as implementers of an intervention and reviewers of the recorded material may have dual roles, either as students, administrators, faculty or other members of the institution. This may impact the anonymity of focus group participants. Safeguarding feedback acquired during focus group sessions is crucial as will be discussed in the Concerns section.

**Example focus group creation.** An example of a focus group for establishing an intervention for graduate students is below:

**Step 1: Identification of knowledge gaps:** Focus groups should address gaps in knowledge for a given program. Questions should be focused on the given population. For example, what do students think of a mindfulness intervention? Do they have concerns about
possible barriers including time and interest? Are there other areas that students feel have a greater impact on wellbeing that they would like to address? What ways would students like interventions to be implemented? Once critical gaps in knowledge have been identified, these can be included in a semi structured interview.

Step 2: **Formation of semi-structured interview.** Following the needs assessment, a semi-structured interview should be created to address both gaps in knowledge and concerns identified by the needs assessment. Goals of the semi-structured interview should be to assess the following: What are the attitudes towards the intervention implemented? Are there concerns or significant excitement around the intervention? Discussing focus group confidentiality is important if needs assessments and previous data gathering have identified areas which may be of concern to participants. This might include maladaptive coping behaviors, substance use, or current or previous history of mental illness. Ensuring adequate protective structures to facilitate freedom of responses is crucial to data gathering. As a component of CBPR, building community trust is often a secondary gain of this approach. Recognizing the possibility for conflicts of interest to arise between the implementation team (which may include, students, faculty, administrators and other staff) and individuals participating within the focus groups necessitates a proactive approach to prevent role conflicts.

Step 3: **Assignment of focus group roles.** Focus group facilitation requires the assignment of three different roles: Facilitator/Moderator, Timekeeper, Recorder. These roles provide both structure and facilitate the production and collection of data. It is useful to use the semi-structured guideline developed previously and ensure that facilitators are familiar with the semi-structured interview and have reviewed questions with the implementation team. See facilitator and note taker guide below for more information.
Step 4: **Determining duration and size of focus groups.** The duration of a focus group can be anywhere from 1-10 sessions. Each session is recommended to last between half an hour to two-hours (Masadeh, 2012). In this scenario we recommend a single session, maximum of two-session focus group. This mitigates the amount of resources expended. Focus groups should be kept within 4-12 individuals.

*Facilitator/Moderator guide:* Facilitators ideally should reflect target groups. Faculty facilitators for faculty, student facilitators for students. Strategies include 1. Facilitate conversation to address semi-structured interview concerns, 2. Identify focus group participants with low engagement and facilitate their participation. 3. Address sensitive topics which could include frustration towards institutional structures, concerns around stigma, issues surrounding access including race and class, and other concerns. It is advisable that the implementation team and facilitator/s discuss in advance possible concerns and worries around sensitive topics and identify mechanisms for addressing them.

*Note Taker Guide:* Note taker and recorder roles are often self-explanatory. However, the implementation team may desire to train note takers on policies regarding confidentiality, anonymity, or other protective guidelines established for the focus groups.

**Concerns.** Focus groups, while a useful resource and one that aligns well with OMRU's framework, have some limitations. Bloor, Frankland, Thomas, & Robson (2002) note that focus groups tend to underreport intra-group differences and recommend that focus groups be used adjunctively. Additionally, concerns around the anonymity and possibility of retaliation may impact focus group conversation. Focus groups in this CBPR adaptation are meant to facilitate conversation between administration, faculty, students and other stakeholders. Negative consequences in response to shared perspectives within focus groups should also be avoided as
they would undermine that approach. Programs concerned about such possibilities should
consider options to mitigate such eventualities. Additionally, the approach of CBPR aims to
increase a sense of community and shared purpose. Consequences for feedback shared during
focus group sessions would fatally undermine the legitimacy of any effort purporting to
ameliorate student wellbeing.

Focus group conclusion. Focus groups can be used throughout a given study or
implementation process (Eborall & Morton, 2017). During the assessment phase they can be
used to determine and guide implementation through needs assessment or climate monitoring
(Kreuger & Casey, 2000). During the monitoring phase they can be used to determine
effectiveness and inform recursive change. Finally, during the evaluation phase, focus groups
can provide process evaluation and feedback (Kreuger & Casey, 2000).

Needs assessments

Needs assessments can be defined as a methodology for ensuring efficacious and
equitable provision of care (Wright, Williams, & Wilkinson, 1998). A needs assessment can be
varied in its approach, but is categorized by what Wright, Williams, & Wilkinson (1998) referred
to as an "objective and valid method" to align care to the needs of a population. Accurately
assessing needs, provides a vantage point for institutions and programs to determine feasible and
effective interventions. In both OMRU (Logan & Graham, 2010) and CBPR (Collier, Munger, &
Moua, 2012) needs assessments play an important role in the inclusion of different stakeholder
voices and initial assessment. Within CBPR, needs assessment can encompass focus groups
(Collier, Munger, & Moua, 2012), self-reports, to in-depth interviews (Cardemil et al., 2007). In
many needs assessment studies, assessment tools are developed and used within the specific
study (Bertocci, Hirsch, Sommer, & Williams, 1992; Cardemil et al., 2007; Hyun, Quinn,
Madon, & Lustig, 2006; Hardré & Hackett, 2013). While this offers advantages of tailoring assessments to populations, it often leaves questions around validity and reliability unaddressed. Indeed, several reviews noted sizable absences of reliability or validity measures for psychometric needs assessments (Asadi-Lari & Gray, 2005; Evans, Greenhalgh, & Connelly, 2000). In order to best assess for possible quantitative needs assessments to use within this study, around 34 different measures were identified within two meta-analyses of the literature and subsequently reviewed for inclusion.

One consideration for selection of one or more needs assessment measures includes availability of resources. Some needs assessments require interviews or are extensive questionnaires running in into the dozens of questions. This can result in both extensive staff time administering and subsequently scoring and analyzing the assessment. While this may be feasible for some institutions or programs, it is unclear whether more resource intensive approaches engender greater advantage. In one the most comprehensive health needs assessment reviews, not a single needs assessment was in self-report format (Asadi-Lari & Gray, 2005). This also undermines the participative nature of the CBPR approach as evidence suggests that needs filtered through the perspective of assessors or clinicians may not align with those of patients (Slade & Thornicroft, 2020).

Another consideration is that many previously validated needs assessment tools have been developed for adults with serious mental illness, not for community populations. In one review, 5 out 8 or 62.5% of mental health needs assessments were interview or semi-structured interviews primarily focused on adults with serious mental illness (Asadi-Lari & Gray, 2005). Many of the most validated measures like the Support Needs Questionnaire (Davis & Burns, 2015), Camberwell Assessment of Need (CAN) (Slade & Thornicroft, 2020) and the Cardinal
Needs Schedule (an adaptation of the MRC Needs for Care Assessment Schedule) (Marshall, Hogg, Gath, & Lockwood, 1995), Health of the Nation (Pirkis, Burgess, Kirk, Dodson, Coombs, & Williamson, 2005), were all initially developed for patients with serious mental illness. In order to address the unique concerns of the broader population, assessments were chosen that had wider population validity.

Finally, assessments should try and measure areas that are of likely concern to both implementers and participants. Needs assessments are not required to definitively measure all the needs of a population. Rather, focus groups provide an important dialogic auxiliary component that can elucidate additional concerns and areas of emphasis. Needs assessments are another method to assess for areas of quality improvement and can be used to inform subsequent action. In the following section several needs assessments have been identified. Strengths, weaknesses and characteristics of each will be discussed.

**Avon Mental Health Measure (AMHM).** The AMHM is freely accessible measure, developed in accordance with CBPR methodology which incorporated service users' feedback to guide development (Rhea, 2002). This is a community-oriented measure that is meant to assist service users in articulating and asserting their needs (Evans, Greenhalgh, & Connelly, 2000). With this focus on empowerment, it lends itself particularly well to CBPR. In particular, the AMHM aims to improve the identification of unmet need (Le Grand, Kessler, & Reeves, 1996) AMHM encompasses five separate categories comprising 28 items. It uses a 5-point scale assessing severity (Hunter et al., 2004). The categories consist of physical, social, behavioral, access, and mental health. According to one study of 700 patients, the AMHM was preferred by a percentage of 65% to 0% to the HoNOS, a common mental health assessment. (Hunter et al., 2004). This may reflect that it was designed by service users, uses very simple language and
provides opportunities for service users to express their needs in their own language (Evans, Greenhalgh, & Connelly, 2000). Uniquely, the AMHM orients itself towards the radical goal of fulfilling patient needs first, not institutional or organizational priorities (Le Grand, Kessler, & Reeves, 1996). This is articulated in challenging institutions and organizations to not solely treat patients within the narrow confines of diagnoses and obligatory treatments that may reflect more the nature of the capabilities or preferred role of an organization, rather than the objective needs of a patient (Le Grand, Kessler, & Reeves, 1996). While these results are highly encouraging, they do not address the concerns that the AMHM thus far has no specific studies analyzing its psychometrics (Evans, Greenhalgh, & Connelly, 2000). While many of its items have face-validity, it is a short measure, designed for self-report, and its open-ended nature makes more quantitative analysis difficult. For a needs assessment aiming to acquire significant qualitative data, the AMHM may provide useful data and its previous success in another large-scale study suggests substantial clinical and epidemiological utility.

**CAN.** The first guidelines for the Camberwell Assessment of Need (CAN), were provided under the name *CAN: Camberwell assessments of need: A comprehensive needs assessment tool for people with severe mental illness* (Slade, Thornicroft, Loftus, Phenan, & Wykes, 1999). CAN offers numerous advantages to a CBPR needs assessment. It is a widely studied and implemented measure which is testified by its use in nearly 100 studies (Slade & Thornicroft, 2020). It has been translated in numerous languages (Slade & Thornicroft, 2020). Its psychometrics have been established and validated (Andresen, Caputi, & Oades, 2000; Trauer, Tobias, & Slade 2008). The second edition of the CAN guide was recently published by Slade & Thornicroft (2020). CAN and its related measures (including the Camberwell Assessment of Need Short Appraisal Schedule-CANSAS and the self-report scale the Camberwell Assessment
of Need Short Appraisal Schedule-Patient-CANSAS-P) were developed initially to assist in the identification of needs for severely mentally ill populations (Slade & Thornicroft, 2020). They aim to address holistic concerns around wellbeing that are not comprehensively addressed in standard therapy or clinical treatment. One of CAN’s primary advantages is that it assesses multiple needs of patients. Addressing 22 categories, CAN covers many areas that contribute to quality of life (i.e., Accommodation, Food, Looking after the home, Self-care, Daytime activities, Physical health, Psychotic symptoms, Information on condition and treatment, Psychological distress, Safety to self, Safety to others, Alcohol, Drugs, Company, Intimate relationships, Sexual expression, Dependents, Basic education, Digital communication, Transport, Money, Benefits). The CAN has have been used successfully with several different populations including asylees (McColl, & Johnson, 2006), community mental health (Junghan, Leese, Priebe, & Slade, 2007), and hospital and community settings (Slade et al., 2004). The most recent guide to the CAN, the aptly named *Camberwell Assessment of Need* (Slade & Thornicroft, 2020), notes that the CAN may be used across multiple populations which includes those with severe mental illness and other service users of community care. The CAN also assesses several perspectives including services users, staff (clinicians and others), and caregivers (Slade & Thornicroft, 2020). Recommended versions for this implementation design include the CANSAS and CANSAS-P due to both their ease of administration and low impact on time consumption.

**Summary of needs assessments.** Needs assessments should be used to inform both focus groups and the subsequent adaptation phase. They are meant to provide broad sketches of what the population may need but can be used to identify individual concerns. When needs assessments are used, significant care should be taken to safeguard participant privacy as certain
categories of assessment including: psychosis, drug use, and several others, may carry significant stigma. Needs assessments also address the limitations of other validated measures advocated for in this program design. Many of these other scales do not capture the social determinants of health identified in previous studies and of interest in this current program proposal. There has been substantial evidence previously provided in this proposal of implementation projects that did not address needs, or social determinants of health. Assessment of unmet needs must be an important feature of a sustainable accountable implementation programs, including time, sleep, and possible economic earning. Should the inclusion of a validated measure be possible, which is recommended, the CAN is short and has empirical support.

**Adaptation**

Once a needs assessment is completed and an intervention is selected (e.g., mindfulness intervention per this paper’s introduction), adaptation of the intervention must be considered. This section describes adaptation strategies that can be used throughout the Assessment period. This step, as articulated above, is not meant to follow its precursors, but both inform and complement them. In order to facilitate adaptation, guidelines are necessary to safeguard validity and ultimately, replicability of the intervention. While many studies have acknowledged extensive adaptation of existing interventions, often for new contexts, or populations, few have systematized the process of adaptation. OMRU, highlights adaptation as an important component of its implementation process and in order to address this crucial component several recommendations are provided including guidelines for adaptation.

When adapting a given intervention several aspects need to be considered. Does the adaptation change the fundamental nature of the therapy so that the 'curative' or active component of the therapy is altered? Doing so would undermining the evidence base behind the
intervention. What are the necessary steps to safeguard validity? And what aspects may need to be altered in order to increase external validity? Glasgow, Vogt, & Boles (1999) note that adaptation to community contexts is crucial as effect sizes found in controlled research contexts often attenuate when translated to community or practice contexts.

Previous research has found that appropriate adaptation permits effective interventions and can even improve intervention efficacy (Lara et al., 2011). Studies have demonstrated in efficacy in adaptation in wide ranging areas from asthma (Lara et al., 2011), parent management training (Domenech Rodriguez, Baumann, & Schwartz, 2011), and HIV (Gaydos et al., 2008; Lightfoot et al., 2007; Martinez et al., 2014). In fact, a meta-analysis in 2013 suggests that adaptations often improved efficacy in many different conditions (Barrera, Castro, Strycker, & Toobert, 2013). In order to aid in the process of adaptation, Card, Solomon, & Cunningham (2011) provide a well-regarded guideline in delineating strategies to assist adaptation of existing interventions to novel or different contexts: 1. The identification of an appropriate intervention, 2. Acquisition of intervention materials, 3. Development of program implementation guidelines-designing the implementation model, 4. The identification of "core components" which include active agents of treatment, 5. The identification of misalignments between intervention and context, 6. Adaptation of the model or treatment, 7. Adaptation of the original program/intervention materials. Several examples from the literature illustrate how different components of these steps can be used:

1) **Identify an appropriate intervention.** This can be addressed through assessment modalities like the focus groups and needs assessments previously identified. Appropriate interventions should be evidence-based. Ideally, interventions should also have dismantling studies to determine therapeutic components of the treatment: see examples of Cognitive
Processing Therapy (Resick, Galovski, Uhlmansiek, Scher, Clum, & Young-Xu, 2008),
Dialectical Behavior Therapy (Linehan et al., 2015), and CBT for Irritable Bowel Syndrome
(Ljotsson et al., 2014).

Card, Solomon, & Cunningham (2011) also have several important guiding questions for
programs seeking to identify interventions. Questions include:

How does the intervention relate to the behavioral or health needs of the population/s
under consideration? Would the intervention be acceptable for the given population? This
question reinforces the need for appropriate data gathering during focus group and needs
assessment components. Does the program have adequate resources to implement the
intervention?

2) Obtain Intervention Materials. Obtaining intervention materials can be difficult. For
example, MBSR can be expensive to obtain and disseminate, therefore publicly available or
inexpensive modalities may be selected instead.

3) Develop program guidelines. This reflects similar developmental processes
previously defined in the implementation approach. Card, Solomon, & Cunningham (2011)
defines a program model as a method of illustrating integral aspects of the intervention's focal
groups including relevant populations, implementation strategies, program components,
immediate and long-term goals; all causally linked. This method aims to develop the links
between intervention and outcomes and to discern how adaptation may facilitate these linkages
(Card, Solomon, & Cunningham, 2011).

Program model development occurs through several steps:

a. Compile components of intervention.
b. Link active ingredients of intervention to proposed mechanisms of change and outcomes

c. Identify both immediate and long-term outcomes and potential causal connections between outcomes.

4) Identification of 'core components.' This step is vital when considering adaptation. This component should ideally use dismantling studies to identify components of treatment that provide the greatest efficacy. For example, one study looked at Focused Attention (FA) and Open Monitoring (OM) as two active ingredients of mindfulness-based interventions (Britton et al., 2018). FA is described as the practice of executive function control over attention geared towards a single stimulus and OM (Britton et al., 2018). OM is considered to be an awareness of automatic thoughts, emotions and perceptions, that seeks to change the patient's relationship to thoughts, emotions, and perceptions (Britton et al., 2018). This is similar to an ACT approach of acceptance, where patients are guided to changing their relationship with symptoms (Harris, 2009). The practice on non-judgment is considered to be crucial for the development of OM. The authors noted however, that OM approaches were considered to be "counterintuitive" resulting in increased changes of belief and this in turn may reflect increased barriers to implementation. Both OM and FA were found to be significantly associated with decreased emotional reactivity (Britton et al., 2018). Another study broke down these components even further. The authors found that while monitoring (the awareness of experience experience) of the present moment decreased negative emotional experience, the presence of acceptance (non-judgement, openness) was connected with an increase of positive emotions by the end of the study, suggesting a unique role that acceptance plays in not only reducing negative emotions, but increasing positive affect (Lindsay et al., 2018). Additionally, acceptance has also been found to
be crucial to the development of techniques for stress reduction in mindfulness interventions. (Chin, Lindsay, Greco, Brown, Smyth, Wright, & Creswell, 2019). With few dismantling studies currently available for mindfulness-based intervention, these identified mechanisms can still provide guidelines of core components necessary to safeguard during the adaptation process. Examples from the literature provide models where other aspects of mindfulness interventions including frequency (Shapiro, Lebeau, & Tobia, 2019), duration of intervention (Romcevich, Reed, Flowers, Kemper, & Mahan, 2018), and context of the intervention (Cavanaugh et al., 2018) have all been adapted with success.

5) The identification of misalignments between intervention and context. An example of this step is a study aimed to address obesity and excess weight in school children. In order to better adapt a previous intervention to the needs of preexisting federal programs in the school they reduced the frequency of intervention sessions to better align with the local needs of their population and found comparative efficacy (Buscemi et al., 2014). Identification of misalignments between intervention and context aligns with both previous discussions of the assessment period in addressing possible barriers and can be addressed as well during the monitoring stage (see section below).

6) Adaptation of the model or treatment. This step refers to the weaving together of previous identified components to create a new adapted model.

7) Adaptation of the original program/intervention materials. Adaptation of materials should relate only to the necessary revision of outcomes and components which have been altered to better fit the population, adaptors, and context of the intervention. Card, Solomon, & Cunningham (2011) break this section down into 5 important subqueries.
i. Language: does the language of the materials fit the needs and culture of the patient population.

ii. Evidence base: Does the intervention reflect current research in the field and best practice.

iii. Cultural appropriateness: are materials appropriate for the culture. For example, if implemented at a clinical psychology program, a mindfulness intervention can assume a relatively high level of mental health literacy.

iv. Clinician and staff training: Have materials and intervention modalities been appropriately adapted and disseminated to relevant staff.

v. Sustainability and appropriateness of materials: As a component of monitoring, this adaptation model suggests reviewing assessment materials, checklists, and other evaluative materials for continued relevance and appropriateness.

**Adaption in practice for mindfulness interventions.**

As identified previously in this paper, mindfulness interventions offer a low-cost, low resource effective intervention and have extensive evidence of efficacy with populations that undergo extensive work stress such as medical residents and medical students (Brennan et al., 2019; Rotenstein et al., 2016). There are already several guides to increasing wellness and reducing stress among medical residency programs, including a guide on how to implement a mindfulness and wellness program (see Brennan & McGrady, 2015). While there is a substantial amount of evidence on medical students, or undergraduates, there is little data on the implementation of mindfulness programs for clinical psychology graduate programs or other graduate programs. Additionally, substantial differences exist between clinical psychology programs and medical schools.
Most graduate psychology programs are small. Nearly 891 graduate programs were tallied in the most recent APA Summary Report and the average number of students enrolled in clinical psychology programs was 5-15 (APA, 2019). Compare this to the average number of students enrolled in a given year in a medical program which averages around 127. The approach of medical schools who have recently introduced specialized clinics to address student mental health needs may not be viable for many smaller clinical psychology programs with limited financial and institutional resources. However, while psychology programs may not be able to directly expand access to mental health services, several other opportunities exist.

There is a substantial body of literature on low-cost, easily disseminated interventions. Numerous mindfulness interventions have been found to be effective within 10-30 minute doses over a period of several weeks (Moore, 2008; O'Leary & Dockray, 2015; Paholpak et al., 2012; Sears, & Kraus, 2009; Yamada, & Victor, 2012; Zeidan, Johnson, Diamond, David, & Goolkasian, 2010; Zeidan, Martucci, Kraft, McHaffie & Coghill, 2014). Moore (2008) described the impact of a program short as 10 minutes over 14 weeks. The advantages of this approach include a relatively short impact time which could be assigned after general classes. The study found moderate significant improvements in mindfulness and self-kindness. Disadvantages to this study include lack of a control group, and small sample size. Additionally, while mindfulness and self-kindness are associated with greater wellbeing (Baer, Lykins, & Peters, 2012; Bluth, & Blanton, 2014); no clear reductions in stress were demonstrated by Moore’s (2008) study.

Other promising studies like Shapiro, Lebeau, & Tobias (2019) have shown that short trainings in mindfulness are effective. A study by Jain et al. (2007) demonstrated in a random control trial with three arms, that MBSR was more effective than either a control condition or
relaxation. This study provided a 4-week 1.5-hour MBSR intervention for medical students, diverging from the 2.5 hour 8-week standard MBSR approach by Kabat-Zinn (Jain et al. 2007). This study maintains significant strengths as methodologically it addressed differences among randomly assigned participants, it also assessed effect sizes and possible mediators for groups finding that group assignment led to a reduction in rumination and that this was accounted for the significant decrease in distress.

Subsequent studies have validated short-term interventions with mindfulness with one as short as 5-weeks (Phang et al., 2015) and a two-week online training (Cavanaugh et al., 2018). While mindfulness impacts over the long-term are still in need of further study. There is some conflicting evidence that suggests that an 8-week MBSR may have positive neurological impacts similar to long-term meditation (Gotink, Meijboom, Vernooij, Smits, & Hunink, 2016). Long-term (over 1 year) gains have been found for mindfulness and exposure based interventions for IBS (Ljótsson et al., 2011; Zomorodi, Abdi, & Tabatabaei, 2014), diabetes (van Son, Nyklíček, Pop, Blonk, Erdtsieck, & Pouwer, 2014), and anxiety (Miller, Fletcher, & Kabat-Zinn, 1995). MBSR, can be costly, up to $610 for an 8-week course (UC San Diego, 2020) or around $666 per person total cost (including space and support staff) for a 6-week MBSR course for participants with breast cancer (Lengacher et al., 2015). Such costs may be unfeasible for many programs, though from a public health point of view, psychotherapy often costs between $50-200 a session and given a standard 12-week treatment approach could quickly run into $600-2400 in costs solely for the patient. The cost for an 8-week MBSR, looks comparable and perhaps more cost effective considering previous findings that provision of therapy services can run into the thousands of dollars (Egger et al., 2016).
Options for intervention.

Option 1. As part of an adaptation framework for a mindfulness intervention. A recent meta-analysis found that stand-alone mindfulness interventions were effective in reducing both anxiety and depression and had positive impacts on mood (Blanck et al., 2018). The recommendation of this paper is to engage participants in a 10-30-minute mindfulness exercise that involves both FA and FOM. A sitting mindfulness meditation for 10 minutes following the protocol of Yamada & Victor (2015) is an example of an effective intervention. This approach emphasizes integration within a classroom setting.

As noted above, a mindfulness intervention should include both monitoring and acceptance components (Lindsey et al., 2018). Other studies have described that monitoring without acceptance, leads to suboptimal outcomes (Chin et al., 2019). Mindfulness activity that involves paying attention to one’s breath, allowing thoughts and feelings to arise without judgment, and engaging in subsequent reorientation to the task is a suggested framework to deliver initial mindfulness practice. As studies often engage in heterogeneous activities, mindfulness practice does reflect a ‘process rather than destination’ approach. Whether engaging students in progressive muscle relaxation, or a simple breathing mindfulness practice, the components of engaging effortful attention on the present moment and the practice of nonjudgmental acceptance of feeling and thoughts and sensations in that moment are the key to effective mindfulness practice.

One option for implementation could be to make time at the beginning of a first-year clinical orientation class for a 10-30-minute practice. For programs with conflicting requirements like accreditation and credit hour requirements, alternatives can be reviewed under option 2 and option 3 below. As the experiential component can be readily integrated into a clinical class,
there is little reorganization needed. Programs may also want to consider how the mindfulness practice could be utilized to leverage clinical teaching on providing mindfulness skills to patients. Finally, before beginning such a practice in a class programs interested in data collection may be interested in collecting pre and post reports on attention (Attentional Control Scale), stress (Perceived Stress Scale), and mindfulness (Mindful Attention Awareness Scale).

Following Card, Solomon, & Cunningham's (2011) outline,

1. The identification of an appropriate intervention: a 10-minute sitting meditation focusing on openness to experience and acceptance during the present moment.

2. Obtain intervention materials: In this case, a program could reach out to the original study authors for a protocol, however, following other validated mindfulness sitting interventions which focus on the same approach would be commensurate.

3. Develop program implementation guidelines "develop program model": Implementation guidelines would follow the processes set out in the AME stages in OMRU. Additionally, important components of this intervention including the integration into classroom engagement are important components and would require determining appropriate candidates.

4. The identification of "core components" which include active agents of treatment: This intervention works to expand participants use of OM and acceptance, two important active components of mindfulness interventions that have been shown in dismantling studies to be effective galvanizers of positive change in participants.

5. The identification of misalignments between intervention and context: Important questions here include: Does the program have classes that can incorporate mindfulness exercises? Are there professors/teaching assistants that are trained or can be trained to
deliver the mindfulness exercise? What other obstacles might the program encounter when attempting to implement this intervention?

6. Adaptation of the model or treatment: Previous adaptations of MBSR and mindfulness interventions have demonstrated that even short-term, brief interventions can have significant effects. Adaptation of the model demonstrates reliable resilience and effectiveness in the face of adaptation. Programs can find evidence-based standards by which to model necessary adaptations to the intervention. As the example intervention has already been significantly adapted for educational programs, minimal additional adaptation is necessary.

7. Adaptation of the original program/intervention materials: Program may want to choose a sitting meditation exercise that aligns with pre-existing goals and that implementors are familiar with. Any adapted intervention should maintain the active treatment ingredients previously noted.

**Option 2:** A program has several options for adapting mindfulness-based interventions to a graduate context. Possibilities include training interested tenured faculty in MBSR and offering clinical and experiential opportunities for students to practice and learn about MBSR. Additionally, there is currently a free, online MBSR class offered through this site.

**Option 3:** Providing subsidized subscriptions to mindfulness apps and orienting students to benefits and opportunities with given apps.

**Rationale adaptation.**

*Identify core components.* Mindfulness offers present-focused approaches that can be flexibly attuned to multiple programmatic goals including meditation, relaxation and self-
compassion. Mindfulness approaches address several pieces of the assessment and adaptation process. They are inexpensive, build on clinical skills that are within a value system for students, offer experiential components, reduce stress, improve wellbeing and can have long-term benefits for practitioners. Mindfulness approaches are also accessible and can be found online.

*Identify mismatches.* Mindfulness approaches avoid many of the pitfalls of other interventions as they are easy to implement, simple, and easily sustained through a variety of mechanisms (to be discussed) with little financial input. Mindfulness approaches including MBSR align well with most institutional and programmatic goals in that they tend to increase concentration, reduce rumination, and build on clinical skills for students.

*Adaptation of model.* Previous adaptations of MBSR have demonstrated that even short-term, brief interventions can have significant effects. Adaptation of the model demonstrates reliable resilience and effectiveness in the face of adaptation. Programs can find evidence-based standards by which to model necessary adaptations to the intervention.

*Assessment summary*

Assessment is a crucial period where the program can identify stakeholders, refine the intervention, estimate both severity and scope of the problem or concerns, and begin to identify barriers to implementation. It is also the stage where implementation first occurs. The Assessment phase provides a crucial foundation, but it is a single step and requires further observation and alteration. These refinements occur during the Monitoring phase that will be explained below.
Monitoring

As identified in the previous section, assessment and adaptation are geared towards aligning the intervention, needs, and context as best as possible. However effective an assessment phase may be, barriers and obstacles may occur during the Monitoring stage when the intervention begins to be implemented. The Monitoring stage is focused on identifying barriers to implementation and verifying that implementation is functioning in accordance with the model. For example, given the previous guideline of the 10-minute sitting meditation adapted for use within a course and classroom, the implementation team would want to ensure several questions like: Has the individual facilitating the mindfulness activity received sufficient training? Are students engaged in the training? Are there aspects of the mindfulness meditation that may be useful to modify during subsequent trainings? Assessments that may be useful during this phase include the Acceptability of Intervention Measure (AIM) and Intervention Appropriateness Measure (IAM)-both of which assess for feasibility within the intervention context. While the Monitoring phase is an active process, ideally addressed by the program in situ, there are some resources from the literature that can provide assistance during this time. Potential barriers to implementation are described, including stigma, time, and diverse populations. A table has also been provided that summarizes many interventions and solutions to barriers that may arise during implementation of a mindfulness intervention.

Stigma

One meta-analysis found that young adults frequently indicated stigma and embarrassment as barriers to help-seeking (Gulliver, Griffiths, & Christensen, 2010). These authors also indicate that interventions in response to these barriers can include greater education around mental
health concerns, mitigating the impacts of stigma and increasing self-determination among individuals (Gulliver, Griffiths, & Christensen, 2010).

**Time**

One common barrier to mindfulness-based interventions is the amount of time they consume (Compen, Bisseling, Schellekens, Jansen, van der Lee, & Speckens, 2017; Schoultz, Macaden, & Hubbard, 2016). Common interventions are providing treatment remotely and flexible to meet patient schedules (Compen et al., 2017). In another study, participants listed time and travel as the single greatest obstacles, but also acknowledged that mindful practices helped them reorient their relationship with time management (Schoultz, Macaden, & Hubbard, 2016).

**Diverse populations**

Several papers have noted that mindfulness interventions may interact differently with diverse groups of individuals (Spears, Houchins, Bamatter, Barrueco, Hoover, & Perskaudas, 2017; Sobczak, & West, 2013). Spears et al. (2017) notes that in their qualitative sample, individuals generally expressed significant interest in mindfulness. However, their participants also noted concerns around mindful awareness generalized to environments where significant vigilance is required, and focused attention can be dangerous for an individual. They also noted that establishing safety was crucial and closing eyes for mindfulness practice was often uncomfortable. The authors detail five separate recommendations which include substantial orientation to the nature of mindfulness and second, distinguishing the term from possible conflations like "meditation". Thirdly, they note that acknowledging barriers and collaboration between facilitators and participants is helpful in mitigating obstacles to practice. Fourth, the authors suggested incorporating discussions of spirituality or framing practice in ways that may
align with the spiritual practice of individuals. This is similar to recommendations made by Sobczak & West (2013) who also articulated that with African American participants spirituality can be an important value to incorporate into mindful practice. The final recommendation of Spears et al. (2017) includes a discussion that empowerment can be a powerful secondary gain for individuals from marginalized populations.

**Facilitators**

Identifying obstacles is an important component of the overall monitoring phase, yet identifying facilitators is equally crucial. Several important points should be mentioned here. High engagement leads to better outcomes and more satisfaction (Banerjee, Cavanagh, & Strauss, 2017). Positive beliefs about mindfulness also reduces barriers and improves outcome (Langdon, Jones, Hutton, & Holtum, 2011). Practicing behavioral techniques to help participants set realistic goals, creating space and activities for participants to integrate the mindfulness practice into their values (ex: thought exercise on how the benefits of mindfulness can help with student goals on stress reduction, academic improvement, etc.).

**Measures for monitoring and evaluation**

The focal point of OMRU is an approach that combines thorough assessment with strategic adaptation and alignment of intervention. Primary to an appropriate needs assessment are validated tools to assess adopter openness and needs. Martinez et al. (2014) notes that reviews in the field have noted large gaps in psychometric validity for measures. A series of assessments with psychometrics have been provided (see Table 2).

**Evaluation**

Evaluation in OMRU assesses for the efficacy and impact of the intervention. Both qualitative and quantitative approaches may be used that evaluate economic factors, patient
outcomes, administrative changes, and unintended consequences (Logan & Graham, 2010). A variety of tools for evaluation will be discussed and a practical example will be provided.

According to Straus et al. (2013) outcomes can be framed in three separate categories: Structural indicators are assessed through organizational facets to identify change. Process indicators describe the assessment of patient care including orientation to treatment. Outcome indicators describe factors that contribute to overall patient well-being and the ultimate focus on the intervention or the process of implementation. Evaluation can occur at multiple levels of the intervention. This includes the level of the patient, system, or provider (Straus et al., 2013). For graduate school programs, this would be at the level of the student, system, and faculty/administrator/staff.

To organize framing questions for the Evaluation period, Straus et al. (2010) provides the PICO framework as a methodology of organizing the Evaluation phase. PICO stands for P: population of interest, I: the intervention C: any group that the treatment group may be compared to, and O: outcome/s. The PICO framework can be used to help design outcome goals or questions that will shape the types of evaluation that may occur. Using the previous approach of delineating knowledge and outcome, use of PICO can help providers tailor the tools of the Evaluation phase to the type of knowledge and practice desired as outcomes.

To aid in using PICO, outcome measures may use several different scales to standardize and operationalize desired outcomes. The Attentional Control Scale, Perceived Stress Scale, and Mindful Attention Awareness Scale are all excellent psychometrics to use when assessing pre and post results and can allow programs to make comparisons with other studies which have used these metrics including: Atanes et al. (2015); Bao, Xue, & Kong (2015); Cavanagh et al.
(2013); and Edwards, Adams, Waldo, Hadfield, & Biegel, (2014). Outcomes may be compared to previously published studies with similar demographics and interventions.

Finally, institutions may want to integrate the Evaluation phase within preexisting structures in the school. Integrating reviews of mindfulness implementation during end of year, or end of semester faculty meetings ensures that evaluation and sustainability are incorporated into the implementation program. Engaging students and service users in this process is also crucial to facilitate transparency and equitable perspectives.

Conclusions

Mental health within post-graduate institutions is recognized to be a significant concern with elevated rates of suicidal ideation, depression, and anxiety. While studies have noted this concern since the early 1990s, despite nearly 30 years of research, few substantial interventions have been committed to a public mental health crisis. Recently, many medical schools have offered counseling programs, wellness campaigns and other mental health interventions for their students and universities overall have increasingly provided access to counseling for the students, either at the institution or through health plans offered through affiliated university insurance programs. Unfortunately, many students within clinical psychology programs still lack access whether due to stigma, time constraints, financial concerns, or worries around confidentiality due to clinical placements at counseling centers that provide care for students within a university system. Because many clinical psychology programs are substantially smaller than medical schools and lack equivalent resources. Necessary adaptations need to be made to an intervention for those students and program.

These adaptations address the unmet needs of students and the greatest barriers to student mental health access (finances and time). Solutions to specific obstacles to mindfulness practice
(low motivation, time, and difficulty of habit formation and cost) are also provided. Ultimately, this is a guide with a recommended intervention adapted to the major obstacles identified in the literature, with embedded strategies and approaches geared towards empowering programs to further refine any intervention to their specific needs. Iterative processes are encoded within each phase, with the opportunity for programs to continually refine their intervention with minimal expenditure of resources.

The OMRU process is a straightforward process that relies on three steps, Assessment, Monitoring, and Evaluation. Each phase is dynamic and engages flexible steps that may be concurrent or linear. That flexibility and adaptability of OMRU, is one of its greatest strengths and its focus on practical applications made it the primary choice for an implementation model to guide interventions.

As part of the OMRU framework, knowledge translation forms an integral emphasis and one that is particularly facilitated by Community-Based Participative Action frameworks. Several studies note that CBPR engages patients and participants to more fully inhabit their social and cultural reality. It aims to increase local consciousness and raise critical awareness (Kelly, 2005; Rasmus, 2014; Strickland 2006). Ideally through the process of observation and equitable participation, not the hierarchy of pedagogy. Because of its emphasis on equitable participation between all parties within a system, CBPR engenders a high degree of accountability level for that system. Sometimes the mechanisms of care can themselves be iatrogenic, systems which work well for one group may not work well for another because of imbedded biases or unawareness. The extensive literature on attenuated and suboptimal outcomes for patients of color is a testament to that. The ability of CBPR to encourage community engagement and incorporate community perspective are the most effective antidotes
to many of these unintended consequences and ultimately promote stability and sustainability of interventions. Jull & Graham (2017) note that both research translation work and CBPR "expand the recognition of who the knowledge users are and who may have the capacity for action" (p.6).

It is also clear that the many concerns facing post-graduate education, whether in medicine, academic doctoral programs, or clinical psychology graduate programs, are ultimately systemic in nature. Increases in the prevalence of anxiety and depression are likely due to the circumstances surrounding the nature and demands of these educational institutions. Which is why these systems have a vested interest in improving their efficacy and experience that they offer. The provision of mental health support not only will improve engagement in clinical training programs, but has advantages for the provision of care by those same trainees. With cheap, accessible, interventions, the question is not what to do, but why wait.

Table 1. Monitoring: Potential barriers to mindfulness implementation and solutions

<table>
<thead>
<tr>
<th>Barrier</th>
<th>Assessment</th>
<th>Intervention</th>
<th>Problem identified (studies)</th>
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</table>
| Lack of engagement of students (a.) | Qualitative: focus groups  
3-item mindfulness intention scale (see below) | Incorporate feedback (may include providing better rationale, changing intervention slightly (reducing/increasing time) or changing the narrative of the delivery for the active ingredients (e.g. finding a new mindfulness exercise that accomplishes previous goals)  
Additionally, in a study for undergraduate students, adequate explanation of the benefits of mindfulness, rather than the possibility of preventing future stress was advocated by Rizer, Fagan, Kilmon, & Rath (2016). | (Rizer, Fagan, Kilmon, & Rath, 2016) |
<p>| Lack of engagement of students (b.) | Using Fit, Stigma and Value scale (FSV) (validated on health service students and graduate students in counseling seeking mental health services) | Address possible concerns around stigma or ideas like 'as a mental health professional, I don't need help'. | (Rizer, Fagan, Kilmon, &amp; Rath, 2016) |
| Stigma and embarrassment | Education around stigma, increasing participant or patient agency. Utilizing group-based practices to help destigmatize distress and difficulty and increase normalization of mindful practice (Wyatt, Harper, &amp; Weatherhead, 2014). Individuals may struggle with stigma associated with mindfulness practice; believing that the practice itself will be interpreted as an index of psychopathology by their | (Gulliver, Griffiths, &amp; Christensen, 2010; Watson, Black, &amp; Hunter, 2016) |
| Time limitations and demands | Focus Groups | Help patients or participants develop different relationships with time. Offer intervention via other mediums (e.g. video, online, etc). This paper also provides numerous examples of truncated treatment schedules that have been found to be efficacious. Additionally, a structural adaptation of incorporating mindful practice into preexisting activities would ameliorate the impact of time limitations on frequency of engagement (see previous example of incorporating mindfulness practice into the classroom). MI techniques to explore ambivalence and address possible barriers to committing to time may also be effective. | (Compen, Bisseling, Schellekens, Jansen, van der Lee, &amp; Speckens, 2017; Langdon, Jones, Hutton, &amp; Holttum, 2011; Martinez, Kearney, Simpson, Felleman, Bernardi, &amp; Sayre, 2015; Schoultz, Macaden, &amp; Hubbard, 2016; Wyatt, Harper, &amp; Weatherhead, 2014) |</p>
<table>
<thead>
<tr>
<th>Topic</th>
<th>Method</th>
<th>Recommendations</th>
<th>References</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diverse participants.</td>
<td>Focus Groups</td>
<td>5 recommendations: 1. Explanation of term mindfulness and 2. differentiating mindfulness from colloquial homonyms like 'relaxation'. 3. identifying barriers and collaborating with participants to address them. 4. incorporation of spirituality into intervention. 5. addressing and facilitating empowerment through improving participant agency in their lives.</td>
<td>(Spears, Houchins, Bamatter, Barrueco, Hoover, &amp; Perskaudas, 2017; Sobczak, &amp; West, 2013)</td>
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<tr>
<td>Long practices</td>
<td>Semi-structured interviews</td>
<td>Reduce length of practice. Practices may also be partitioned throughout daily activities (Watson, Black, &amp; Hunter, 2016), or incorporated into existing activities (religious study, contemplation of nature, eating, etc.).</td>
<td>Banerjee, Cavanagh, &amp; Strauss, 2017</td>
</tr>
<tr>
<td>Negative mood states impeding practice</td>
<td></td>
<td>Preventative engagement with practice, distress tolerance and setting habitual engagement may be helpful here. Self-criticism due to lapses in practice could also contribute to negative mood and developing strong capabilities in self-kindness and non-judgment would be useful in mitigating the negative consequences of self-critique.</td>
<td>(Langdon, Jones, Hutton, &amp; Holtum, 2011)</td>
</tr>
<tr>
<td>Difficulty in maintaining practice</td>
<td>Developing a schedule and identifying habitual space within daily activities to practice (e.g. practicing mindfulness every day after breakfast). Flexibility in practice was also noted as helpful to maintain engagement as moderating length of practice was sometimes necessary. Additionally, approaching lapses in practice with non-judgment and gentleness were crucial. Strengthening positive beliefs about mindfulness was also identified as an important component of returning to mindfulness. Supplemental or booster sessions may also be useful in reengaging participants who have decreased frequency of practice. Finally, group support for mindfulness was found to be helpful in</td>
<td>(Langdon, Jones, Hutton, &amp; Holtum, 2011)</td>
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<tr>
<td>Impatience and boredom with practice</td>
<td>Developing motivation for practice by linking engagement with positive outcomes and values for participant.</td>
<td>(Langdon, Jones, Hutton, &amp; Holtum, 2011)</td>
<td></td>
</tr>
<tr>
<td>Complex and difficult concepts</td>
<td>Adequate explanation and orientation to mindfulness practice is crucial</td>
<td>Wyatt, Harper, &amp; Weatherhead, 2014</td>
<td></td>
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<tr>
<td>Expectations for rapid change</td>
<td>Creating realistic expectations of the rate of change. Coupling mindfulness practice to process and not outcome. Open-minded approaches in Wyatt, Harper, &amp; Weatherhead (2014) were also found to be better associated with positive outcomes.</td>
<td>Wyatt, Harper, &amp; Weatherhead, 2014</td>
<td></td>
</tr>
<tr>
<td>Focus on individual distress, not at the social and environmental causes of suffering</td>
<td>Addressing participant concerns during assessment phase are crucial to identify systemic factors in the perpetuation and cause of distress among participants. Alleviating these factors is an important component to mindfulness engagement. Please see the Mindfulness, Behavioral Change, and Decision-Making: Experimental Trial (Pykett, Lilley, Whitehead, Howell, &amp; Jones, 2016) for a program decision on improving decision-making, change oriented behavior, and increasing empowerment for participants.</td>
<td>(Crane, 2017)</td>
<td></td>
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<tr>
<td>Cultural incongruence of practice</td>
<td>Practice may be associated with different cultural groups and the time commitment may conflict with roles that individuals may have at home (e.g. caretaker). Facilitators may want to highlight how mindfulness practice can also strengthen family engagement and support individuals in caring for others.</td>
<td>(Watson, Black, &amp; Hunter, 2016)</td>
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<tr>
<td>Motivation</td>
<td>Participants may feel the desire to push away practice in the moment, telling themselves that they will practice later, this is unfortunately, oftentimes a method of procrastination. Instead, treating mindfulness as a discipline-something done regardless of state or outcome-develops the practice.</td>
<td>(Kabat-Zinn, 2017)</td>
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</table>
Distractibility

Approach bodily and environmental distractions as transient states-, hold them "gently and lightly in awareness" (Kabat-Zinn, 2017, p. 1713). Additionally, beginning with yoga or another practice may be easier than jumping straight into mindfulness practice (Kabat-Zinn, 2017)

Sleepiness

Important to gain sleep before attempting mindfulness. Other interventions can include cold showers, splashing cold water on the face, meditating with eyes open, and meditating standing up (Kabat-Zinn, 2017).

Idealization of practice

Approach mindfulness practice with self-compassion, self-love, and acceptance (Kabat-Zinn, 2017)

<table>
<thead>
<tr>
<th>Assessment</th>
<th>Measures</th>
<th>Validated</th>
<th>Citation</th>
<th>items</th>
<th>notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Implementation leadership scale</td>
<td>Implementation leadership</td>
<td>Reliability and validity measures conducted-no alpha, used convergent correlation (.05-.5)</td>
<td>Aarons, Ehrhart, Farahnak, 2014</td>
<td>12</td>
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<tr>
<td>Acceptability of intervention Measure (AIM)</td>
<td>Acceptability</td>
<td>CFA and Cronbachs alpha .85, Pearson correlation coefficients reliability: .8</td>
<td>Weiner et al., 2017</td>
<td>4</td>
<td>Needs predictive validity</td>
</tr>
</tbody>
</table>
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Appendix A: Two-page summary and guide of OMRU mindfulness implementation

Implementation Guide to a Graduate Mental Health Program:

An application of the Ottawa Model of Research Use (OMRU)

The following is a guide to an implementation program using OMRU to address mental health concerns in a graduate psychology program.

<table>
<thead>
<tr>
<th>Present Problem:</th>
<th>Epidemiological studies and surveys have found a public mental health crisis in professional graduate education. Of medical students and up to 40% of graduate students are currently experiencing significant symptoms of depression.</th>
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<tr>
<td>Overview of OMRU:</td>
<td>It is an interdisciplinary implementation model that contains both prescriptive and descriptive components (Logan &amp; Graham, 2010). It includes a dynamic systems perspective that enables recursive feedback. It is broken down into 3 easily accessible stages.</td>
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</table>

**Intervention:**

We suggest a 15-minute mindfulness sitting meditation integrated into curriculum as previous research suggests that 1) time constraints are the most common barrier to mindfulness practice 2) financial concerns are primary stressor for graduate students and a significant barrier to accessing care. 3) numerous studies have demonstrated efficacy in mindfulness intervention adapted for brief time scales.

**Phase 1: Assessment**

This stage includes: Identification of stakeholders, refinement of intervention, identification of obstacles.

- **Steps:**
  1. Set up collaborative workgroups that reflect all stakeholders involved: students, faculty, administration and other staff.
  2. Use a needs assessment to determine scope of concerns in population (see reverse for guide).
  2b. Using the results of the needs assessment develop semi-structured questionnaires for focus groups derived from stakeholders to determine intervention and potential obstacles.
  3. Determine intervention: We suggest a mindfulness intervention, (see reverse) given the low-cost, ease of implementation and general transtheoretical acceptability of mindfulness approaches.
  4. Adapt intervention: Using feedback from focus groups and needs assessment, adapt intervention using best practice approaches (see reverse).

**AME:** The core of implementing a program to address mental health in psychology graduate mental health programs.

**Needs Assessments:**

1. CANSA-S: Camberwell Assessment of Needs Short Appraisal Schedule – Patient

   **Training required?** No

   **Measurement Source:** [http://www.researchintorecovery.com/CANs2](http://www.researchintorecovery.com/CANs2)

**Focus Group guidelines and steps:**

A. Identify knowledge gaps.

B. Form semi-structured interview, assign focus group facilitator roles (Facilitator, Time keeper, Recorder).

C. Determine duration and size of focus groups (4-12 individuals, 1-10 sessions).

D. Disseminate invitation to focus groups, ensure that focus groups maintain heterogeneity.

E. Encourage safety and support free flow of dialogue.
Adaptation:

1. The identification of an appropriate intervention.
2. Acquisition of intervention materials.
3. Development of program implementation guidelines-designing the implementation model.
4. The identification of "core components" which include active agents of treatment.
5. The identification of misalignments between intervention and context.
6. Adaptation of the model or treatment,
7. Adaptation of the original program/intervention materials.

Phase 2 Monitoring:
This stage aims to identify and address barriers as they arise. A table has been provided of the most common barriers identified by the literature.

<table>
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<th>Common barriers to mindfulness engagement:</th>
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<tr>
<td>Long-Practice</td>
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<tr>
<td>Cultural incongruence of practice</td>
</tr>
</tbody>
</table>

Assessment of attitudes towards the intervention can be effective in

A. Acceptability of Intervention Measure (AIM)
B. Intervention Appropriateness Measure (IAM)
C. Feasibility of Intervention Measure (FIM).

Evaluation

Final phase of OMRU centered on assessing the impact of intervention and efficacy of intervention related to initial goals.

We suggest several steps:
1. Set up mental health review period as a component of semestery or yearly faculty reviews to assess efficacy of mental health interventions.
2. Review impacts of intervention using PICO model.

PICO:

PICO stands for P: population of interest, I: the intervention C: any group that the treatment group may be compared to, and O: outcome/s.

Citations: ¹(Rotenstein et al., 2016) ²(Evans et al., 2017) ³(Straus et al. (2010) ⁴(Card, Solomon, & Cunningham, 2011)